

2-24-2025

Effective Strategies for Mitigating Bidding Corruption for U.S. Infrastructure Contracts

Alan Edward Kulevich
Walden University

Follow this and additional works at: <https://scholarworks.waldenu.edu/dissertations>

This Dissertation is brought to you for free and open access by the Walden Dissertations and Doctoral Studies Collection at ScholarWorks. It has been accepted for inclusion in Walden Dissertations and Doctoral Studies by an authorized administrator of ScholarWorks. For more information, please contact ScholarWorks@waldenu.edu.

Walden University

College of Management and Human Potential

This is to certify that the doctoral study by

Alan E. Kulevich

has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

Review Committee

Dr. James Glenn, Committee Chairperson, Doctor of Business Administration Faculty

Dr. Matthew Knight, Committee Member, Doctor of Business Administration Faculty

Chief Academic Officer and Provost
Sue Subocz, Ph.D.

Walden University
2025

Abstract

Effective Strategies for Mitigating Bidding Corruption for U.S. Infrastructure Contracts

by

Alan E. Kulevich

MBA, Roosevelt University, 2021

BA, Robert Morris University, 2010

Research Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Business Administration

Walden University

February 2025

Abstract

Fraud in the U.S. government and corporate construction bidding process remains a critical issue, driving up project costs, distorting competition, and undermining financial forecasting. Business owners face financial losses and competitive disadvantages due to fraudulent bidding, while regulators struggle to enforce fair practices, and taxpayers bear the burden of inflated costs. Grounded in the fraud triangle theory, the purpose of this qualitative multiple-case study was to explore successful strategies to mitigate fraud in the government and corporate construction bidding process. The participants were 10 construction managers from the Department of Transportation, Department of Justice, and private sector, all experienced in fraud mitigation. Data were collected through face-to-face semistructured interviews, historical data, and publicly available documents. Through thematic analysis, six primary themes emerged: psychological and cultural factors contributing to unethical behavior, oversight gaps in existing controls, the role of technology in enhancing transparency and reducing fraud, the impact of ethics training on accountability, the necessity of rotating evaluators and external audits to mitigate bias, and the importance of rationalizing prevention through a strong ethical culture. A key recommendation is for Department of Transportation leaders to enhance internal controls using state-of-the-art auditing technology to improve transparency in the bidding process, which is pivotal to creating an ethical organizational culture. The potential implications for positive social change include improving the quality and efficiency of public infrastructure projects and minimizing abuse of taxpayer funds.

Effective Strategies for Mitigating Bidding Corruption for U.S. Infrastructure Contracts

by

Alan E. Kulevich

MBA, Roosevelt University, 2021

BA, Robert Morris University, 2010

Research Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Business Administration

Walden University

February 2025

Dedication

I dedicate this study to my mom, who taught me the value of education and where it can take me in life. I will never forget all you went through to give me a better life. And do not worry, Mom; during this process, my pencils were always sharpened.

I would also like to thank you, Abbie, for being patient and helping me throughout my studies. This has not been an easy time, but you helped me along the way no matter what. I look forward to the journey of our future together.

Acknowledgments

I thank all of the teachers who have given their time to help advance my education. This has been a long scholastic journey, but a journey that has been worth persevering. Sister Teresa, my fourth-grade teacher who never gave up on me, taught me never to give up on my education. The ability to now refocus my education to improve the infrastructure for the greater good of the people of the United States is a rewarding experience. Education will give me a chance to create the possibility for all to have better opportunities through a more expansive, well-built infrastructure. Education is the cornerstone and the mortar that holds the building blocks of our country together. Education is also the compass, square, and plum that teaches us whom we should be and how we should treat each other. Thank you, Dr. Glenn.

Table of Contents

| | |
|--|----|
| List of Tables | vi |
| Section 1: Foundation of the Project..... | 1 |
| Background of the Problem | 1 |
| Business Problem Focus and Project Purpose | 2 |
| Research Question | 2 |
| Conceptual Framework..... | 2 |
| Assumptions, Limitations, and Delimitations..... | 4 |
| Assumptions..... | 4 |
| Limitations | 4 |
| Delimitations..... | 5 |
| Transition | 5 |
| Section 2: The Literature Review | 7 |
| Theoretical Framework..... | 8 |
| Fraud Triangle Theory | 9 |
| Fraud Management Lifecycle Theory..... | 11 |
| Motivation for Committing Corruption | 12 |
| Review of Literature | 13 |
| Construction Cartel Collusion..... | 13 |
| Government Leader Involvement | 14 |
| Financial Incentives for Corruption..... | 16 |
| Motivation Created by Low Protection..... | 18 |

| | |
|---|----|
| Opportunity | 19 |
| Corruption Plagued by Unpredictability | 27 |
| Rationalization | 28 |
| Strategies for the Diminishment of Corruption in Infrastructure | |
| Construction | 39 |
| Section 3: Research Project Methodology | 42 |
| Purpose Statement | 42 |
| Role of the Researcher | 42 |
| Validity and Reliability | 44 |
| Reliability | 44 |
| Validity | 46 |
| Participants | 47 |
| Recruitment | 49 |
| Research Method and Design | 50 |
| Research Method | 50 |
| Research Design | 51 |
| Population and Sampling | 54 |
| Population | 54 |
| Sampling | 57 |
| Data Saturation | 58 |
| Triangulation | 59 |
| Ethical Research | 59 |

| | |
|---|----|
| Procedures for Withdrawing | 61 |
| Informed Consent..... | 62 |
| Data Collection Instruments | 62 |
| Interview Protocol..... | 63 |
| Member Checking..... | 63 |
| Semistructured Interviews | 64 |
| Company/Government Publications | 64 |
| Archival Data: Documents/Archival Records | 65 |
| Data Collection Technique | 65 |
| Data Organization Technique | 67 |
| Compiling | 70 |
| Disassembling..... | 70 |
| Reassembling | 71 |
| Interpreting..... | 71 |
| Concluding..... | 72 |
| Reliability and Validity..... | 72 |
| Reliability..... | 72 |
| Validity | 73 |
| Dependability | 73 |
| Credibility | 74 |
| Confirmability..... | 74 |
| Transferability..... | 75 |

| | |
|---|-----|
| Section 4: Findings and Conclusions | 76 |
| Presentation of the Findings..... | 77 |
| Research Question | 77 |
| Theme 1: Psychological and Cultural Factors | 79 |
| Theme 2: Combination of Pressure, Project Complexity, Insufficient Oversight, and Desire for Monetary Gain..... | 86 |
| Theme 3: Improved Oversight and Use of Technology to Increase Transparency, Efficiency, and Security of Bidding Process..... | 95 |
| Theme 4: Punitive Actions, Enforcement Mechanisms, and Whistleblower Protections..... | 101 |
| Theme 5: Ethics Training and Capacity Building..... | 108 |
| Theme 6: Improved Regulatory Framework, Rotating Assessors, and Using Independent Auditors | 111 |
| Business Contributions | 115 |
| Recommendations for Professional Practice | 116 |
| Implications for Social Change..... | 118 |
| Recommendations for Action | 118 |
| Recommendations for Further Research..... | 121 |
| Reflections | 122 |
| Conclusions..... | 122 |
| References..... | 125 |
| Appendix A: Interview Protocol..... | 150 |

Appendix B: Interview Questions.....154
Appendix C: Right to Withdraw From Study and Destroy Data With Documents.....156

List of Tables

Table 1. Summary of Resources in the Literature Review 8

Table 2. Research Question and Corresponding Themes 79

Section 1: Foundation of the Project

Background of the Problem

The purpose of this study was to gain an understanding of how corruption in the bidding process of infrastructure construction projects occurs and also how to diminish the problem of corruption in infrastructure construction. Infrastructure construction projects are funded through taxpayer dollars provided by the federal government of the United States and similarly by governmental bodies internationally for infrastructure development, which helps spur economic growth. Most infrastructure development, such as construction projects, equates to billions of dollars in funding annually. The monetary funding of construction projects typically comes from taxes raised to promote these projects and the economic growth of the nation. The expenditure of billions of taxpayers' dollars also presents the opportunity for corruption to abscond these funds through a plethora of different sources such as individuals or organizations.

Corruption in infrastructure construction bidding takes multiple forms and is instigated by many sources. The business problem of infrastructure construction bidding corruption occurs because of the amount of funds that can be pilfered from the projects, thereby slowing the economy, which creates the need for further research. The complexities and nuances need to be further examined to develop strategies to diminish this long-term governmental and construction industry problem. Further exploration and illumination of the problem and strategies to diminish the problem was addressed in this study.

Business Problem Focus and Project Purpose

The problem is that the bidding process created by some U.S. agencies' leaders and bid on by the different managers of public corporations in the construction industry is flawed and leads to lower economic growth, project cost overruns in infrastructure projects, wasting of taxpayer dollars, and lowering of government tax receipts. The purpose of this qualitative multiple case study was to identify and explore the effective bidding process improvement strategies created by the U.S. agency leaders and bid on by the different managers of corporations in the construction industry.

Research Question

What effective strategies do U.S. agency managers use to mitigate fraud in the government bidding process to increase economic growth, reduce wasted taxpayer dollars, and increase government tax receipts?

Conceptual Framework

The fraud triangle theory (FTT) was appropriate as a framework for this study to demonstrate connections among pressure, opportunity, and rationalization. The theory and concept that grounded this study included the FTT framework created by Cressey (1953), focusing on motivation, opportunity, and rationalization. The three components of the fraud triangle assisted in identifying and exploring strategies that government agencies can use to improve internal bidding processes, protocols, and regulations to mitigate fraud in the U.S. agency bidding and awarding process. This research was conducted through interviews with agency leaders and construction corporation managers to identify and explore how the agency leadership needed to improve their bidding

process to reduce corruption, improve contractor performance, track fraud, and save taxpayers billions of dollars annually.

The FTT has been used primarily for tracking fraud in the accounting industry, yet this theory provides a conceptual lens for researching corruption in any industry, including the bidding of infrastructure construction projects for the government. To study how the opportunity for corruption is established, I researched governmental bidding controls, internal continuity for ethical culture, and accounting practices to track project phase completion. The research was also conducted on the incentives that bolster corruption, such as how personal debts and financial addictions lead to corrupt activities in the bidding process. Rationalization, or the justification of corruption, such as all government projects have some corruption, needed to be understood to construct this fraud triangle research of the corruption of the bidding process on infrastructure construction projects. To diminish corruption in the U.S. agency bidding and awarding process, I used the FTT to identify and mitigate this ongoing problem of fraud in the government contracting process because this theory focused on the elements adversely affecting the bidding process. The framework of the FTT as my lens for this study supported the production of strategies to reduce corruption in the U.S. agency bidding and awarding process to improve contractor performance and diminish corruption to save taxpayer dollars annually.

Assumptions, Limitations, and Delimitations

Assumptions

Researchers make assumptions based on impressions, and the assumptions are claims established without evidence or established truth (Clair et al., 2022; De Houwer et al., 2019). In constructing a qualitative study, research develop questions are based on assumptions of the business problem. Research questions designed on assumptions are then vetted throughout the research process of collecting information or conducting interviews to establish evidence (Coleman, 2022). One assumption in the current study was interviews conducted with U.S. agency managers would identify strategies to diminish fraud in the bidding process of infrastructure construction projects, save tax dollars, and increase government tax receipts. An additional assumption was that the strategies to diminish infrastructure bidding construction corruption, developed from interviews conducted with U.S. agency managers on their corruption investigations, would be best explored using a qualitative multiple-case study design.

Limitations

Limitations are parameters or boundaries that can diminish the strength of research validity (Coleman, 2022; Mwita, 2022a). Mwita (2022a) noted that with the researcher's understanding of each research approach, there can be benefits and limitations on how the research method is applied to the study for which the findings and the technique are produced. It is important not to minimize the purpose of the limitation section of a qualitative study because limitations represent weaknesses of the study that need to be recognized (Ross & Bibler Zaidi, 2019; Yin, 2018). Qualitative research

depends on the information collected, such as the source and the age of the information, and more reputable sources or current literature could bring the findings into question (Coleman, 2022). Mohseni et al. (2022) acknowledged that understanding a study's limitations can enhance the strength of the study. Limitations can be alleviated through the use of proper citations with the most current dates because this becomes a strength based on the power of the data (Worrall & Cohn, 2023). The possibility of participants needing help recollecting facts of corruption issues in infrastructure bidding corruption without referencing original files of situations was a possible limitation in the current study.

Delimitations

Delimitations are an effort on the researcher's part to establish parameters on which to focus a study (Coker, 2022). Delimitations are the choices of the researcher to restrict the focus of the study, increase validity, and ensure research completion (Coker, 2022; Coleman, 2022). The primary delimitation of the current study was the focus on corrupt bidding on infrastructure construction projects in the United States. Corruption in the bidding process on infrastructure construction is a global problem, but for the purpose of this study I explored only the United States. The secondary delimitation was that all interviews focused on U.S. agency leaders, Department of Justice (DOJ) investigators, and construction corporation managers interested in infrastructure construction bidding.

Transition

Section 1 established the business problem, infrastructure construction bidding corruption, and the parameters of how this problem was studied to gain a more intrinsic

understanding of the business problem. Section 2 provides the literature review of recent publications, professional journal articles, government publications, and books on bidding corruption, which established the need for further study of the business problem. The loss of government funds through pilferage and the diminishment of the U.S. infrastructure led to slower economic growth for the country (The White House, 2021). The business problem, infrastructure construction bidding corruption, and the literature review in Section 2 demonstrated the need for further study of the business problem.

Section 2: The Literature Review

In this literature review, I explored how bid rigging and other corrupt acts lead to fraud in infrastructure construction contracts and strategies for U.S. agency leaders to employ in infrastructure contract bidding to diminish the problem of corruption. The employment of specific processes, protocols, and internal controls used in the bidding process strategies of infrastructure construction projects may reduce the risk of corruption and increase economic growth to enhance the economy (U.S. DOJ, 2022c, 2022d; U.S. Securities and Exchange Commission, 2023). The infrastructure project size, complexity, geographic location, labor pool, and logistical need were the parameters used to establish strategic plans for reducing corruption (Baer, 2023; Rashidi et al., 2023; The White House, 2021). I explored the business problem, interviews, recent literature, government archives, and the research question. I investigated the current strategies used by U.S. agency leaders to prevent corruption in the bidding process. The problem of bid rigging on infrastructure construction projects has been a long-term historical problem that has evolved and changed to be adjusted to surpass the changing anticorruption strategies (Chadee et al., 2024).

I expanded my search to several topics that were related to bid rigging, which is a long-term problem on infrastructure construction projects. My research material was collected and sourced through multiple facets such as Google Scholar, *Harvard Business Review*, ProQuest Research, Sage Publishing, U.S. DOJ, and U.S. Department of Transportation (DOT), as well as searchable databases available through Florida International University and the Walden University Online Library. Pertinent

informational content was collected using the following search terms: *construction industry, infrastructure corruption, roadway construction corruption, contract bidding corruption, infrastructure effects on the economy, U.S. DOT, subpar roads and bridges, and governmental infrastructure bidding corruption*. During the development of this study, I collected 90 references from government sources, peer-reviewed books and journals, and internet sources and webpages. Of the 161 sources collected for this literature review, 95.7% were published between 2020 and 2024, which equates to (4.3%) being older than 5 years. One hundred forty sources were peer-reviewed journal articles, 11 were government sources, and eight were books (see Table 1).

Table 1

Summary of Resources in the Literature Review

| Reference type | Number more than 5 years old | Number less than 5 years old | Percentage less than 5 years old | Total |
|--------------------------------|------------------------------|------------------------------|----------------------------------|-------|
| Books | 2 | 6 | Less than 1% | 8 |
| Government journals | 0 | 9 | 100% | 11 |
| Peer-reviewed journal articles | 5 | 137 | 96.5% | 142 |
| Total | 7 (4.3%) | 152 | 95.7% | 161 |

This literature review began with a synopsis of U.S. agency leaders' difficulties in reducing corrupt practices and improving the infrastructure bidding process to enhance economic growth.

Theoretical Framework

The theory that I used as the lens through which to explore fraud in the infrastructure bidding process was the FTT. Through this lens, I explored the suitability

of U.S. agency leaders' strategies to create and apply new methods of diminishing corruption in the bidding process for infrastructure construction projects. The FTT evaluation centered around published peer-reviewed articles and government publications pertaining to the three sections of the theory: (a) pressure, (b) opportunity, and (c) rationalization. All sections are relevant to constructing a total strategy for diminishing infrastructure bidding corruption (Cressey, 1953). I used my literature review to explore ways in which different stakeholders diminish bid rigging on infrastructure projects. I concluded the literature review by demonstrating how the information collected created a better understanding of the business problem and addressed the research question.

Fraud Triangle Theory

Cressey (1953) hypothesized that the fraud triangle was developed when a trusted individual or individuals perceived or focused on financial security or expansion that could not be solved through legitimate means and realized that their trusted position was an ideal position from which to pilfer firm or agency funds. In the context of the current study, fraud was considered the starting point of bid rigging for awarding contracts on infrastructure construction contracts with the government. Cressey created the FTT in the early 1950s.

The FTT focuses on three main principles that cause fraud: pressure, opportunity, and rationalization (Cressey, 1953; Mangala & Soni, 2023; G. M. Y. Owusu et al., 2022). Monteiro et al. (2022) noted that the leading cause of infrastructure construction corruption is the lack of transparency in the process. This bolsters the level of opportunity, leading to greater rationalization for fraudulent acts. When contractors and

other construction companies recognize the vulnerability created by the lack of transparency, social-cultural factors help rationalize fraudulent behaviors, leading to embezzlement, bid rigging, and other fraudulent activity (Monteiro et al., 2022; E. K. Owusu, Chan, & Wong, 2021; Yun et al., 2015). Diminishing fraud in the bidding process was the focus of the current study based on understanding the vulnerabilities often inherent and embedded in the bidding process. By better understanding the bidding process, I hoped to promote a more transparent bidding process that is less prone to the nefarious activities of some involved in the process.

The evolution of the FTT involved the expansion to the fraud diamond theory, which was introduced by Wolfe and Hermanson (2004) with ideas about transparent bidding practices and mitigating nefarious activities. In addition to the FTT, the capability is the technical knowledge needed to manipulate the system (Soneji, 2022). The fraud perpetrators need advanced competencies and an understanding of the mechanics of the bidding process of infrastructure construction to exploit the system. In 2011, the fraud diamond theory further evolved into the fraud pentagon theory developed by Crowe Howarth (Marks, 2012). The fraud pentagon theory added arrogance as a key dimension to the theory, demonstrating that an offender may also be focused on committing fraud with the original elements of pressure, opportunity, rationalization, and capability (Tjahjani et al., 2022). This evolution demonstrated that the original theory was viable, yet changes needed to be made to accommodate different rationales by perpetrators of fraud.

The rationales used for fraud are similar to the motivators of bribery for awarding infrastructure construction contracts. As Cressey (1953) proposed, there are three steps to motivate fraud. The fraud process is motivated by pressure, enhanced by opportunity, and then mentally rationalized, which is a substantial portion of the bid-rigging process. Some construction corporations' survivability necessitates using fraud by marginal firms to stay solvent, thereby leading to bid rigging on infrastructure construction contract awards, which leads to lowered economic growth, wasted taxpayer dollars, and lower government tax receipts. Understanding the fraud problem, especially bid rigging on infrastructure construction contracts, was best understood with the use of the FTT, but another theory for understanding fraud is the fraud management lifecycle theory, which can also enhance the bidding process, improve contractor performance, and save taxpayer dollars.

Fraud Management Lifecycle Theory

The FTT was helpful in the development of findings on the cause of bidding corruption and provided the lens through which to identify and improve existing strategies for addressing the elements found in every fraud, which are pressure, opportunity, and rationalization. Corruption in the bidding process is exacerbated by instability in governmental structures (Signor et al., 2023; Zhai et al., 2021), such as raised costs of similar projects because of higher corruption among government leaders (Oluseye, 2024). Other theories addressed the problem of fraud in addition to the FTT, including the fraud management lifecycle theory (FMLT).

The FMLT is composed of eight parts that establish the lifecycle of fraud that has direct implications in business. The eight components of the FMLT are (a) deterrence, (b)

prevention, (c) detection, (d) mitigation, (e) analysis, (f) policy, (g) investigation, and (h) prosecution to be studied for comprehension and diminishment strategies (Isibor, 2022). To appropriately alleviate fraud, there has to be a balance between competing and complementing to achieve the fraud management lifecycle (Isibor, 2022). The primary use of the FMLT is focused on the financial industry, which does not focus on the construction industry. I concluded that the FMLT was not the most appropriate theory for studying bid rigging. The first portion of the FTT is motivation.

Motivation for Committing Corruption

Motivation refers to incentives that motivate stakeholders to carry out corruption (Cressey, 1953). A major driving force of motivation is to maintain a particular lifestyle, addictions, and mounting bills or debts, which drives individuals to commit fraud. Cressey (1953) described motivation as a driving force to commit fraudulent behavior. In this manner, motivation created within construction cartels for being awarded infrastructure construction contracts is exacerbated, which drives proper competitive bidding out of the market (X. Wang et al., 2023; Yap et al., 2022). The original concept was that the primary motivator of fraudulent behavior was of a financial nature and that financial greed drove illegal actions, especially with the prompting of construction cartels. An additional facet of motivation is what would be considered job pressure. Employees feel pressure to reach performance or financial goals, which are often achieved through fraudulent schemes. Additionally, bid rigging and other corrupt behaviors become accepted behaviors motivated by pressure, the motivated behaviors of construction cartels.

Review of Literature

Construction Cartel Collusion

Bid rigging refers to fraudulent actions in which corrupt stakeholders enable companies to submit noncompetitive bids (X. Sun & Chen, 2022). The motivated pressure created inside construction cartels to maintain high rates of bid rigging is systemic, with rules and punishments created for employees, government officials, and other associates of the cartels engaged in fraudulent bid rigging (Signor et al., 2023). Bid rigging is a continuous problem that contributes to the overall corruption of construction companies and stakeholders.

The psychological aspect germane to bid rigging has deep roots in how the cartels function and how those rules are established so that if one of the construction companies in the cartels looks to stop taking part in the corrupt bidding practices, the others use intimidation and barriers to prevent the dissenting company from opting out of the bid-rigging process (X. Sun & Chen, 2022). Signor et al. (2023) also noted that motivation is created by the actions of bid rigging in the side finance produced by large-scale infrastructure projects in the form of subcontractors. Signor et al. analyzed four countries' key criteria in developing bid rigging detection. On the other hand, X. Sun and Chen (2022) used quantitative measures to analyze the human behaviors of bid-rigging processes. Both Signor et al. and X. Sun and Chen outlined the prevalence of bid rigging.

Construction stakeholders who are involved with cartel groups are influenced by a fear of retaliation or punishment. Subcontractors on infrastructure megaprojects are typically going to make hundreds of millions of dollars in profits, so other members of

the cartel who do not win the bid are given subcontractor status as an incentive to remain in the cartel (Baer, 2023; Signor et al., 2023). Morofuji and Kurahashi (2023) studied the relationship with construction companies and found that construction companies connected to cartels were threatened with severe punishments. Baer (2023), Signor et al. (2023), and Morofuji and Kurahashi expounded on the impact that cartels have on construction companies.

Evidence indicated the impact of collusion between construction stakeholders and cartel members. A Federal Trade Commission (2024) report indicated that the closeness of members of colluding construction corporations typically includes a deeper level of silence to protect all cartel members. The construction cartels also impart corruption and collusion because of the lack of punishment and the amount of funds that influence cartel members to continue corrupt behavior (Lyra et al., 2022). A systematic literature review revealed that labeled data and machine learning techniques were some of the most used methods in highlighting collusion between construction stakeholders and cartels (Lyra et al., 2022). The findings of Lyra et al. (2022) reinforced what was outlined by the FTC report, which focused on the steps taken by construction stakeholders to protect cartel members.

Government Leader Involvement

Internal motivation to participate in corruption in the bidding process is also created by government leaders or representatives who participate in acts such as bid rigging. Bribes and kickbacks in the form of financial incentives or other gifts to influence government leaders to award contracts also undermine competitive bidding

(Harnois & Gagnon, 2022; Kawai & Nakabayashi, 2024). Bertelli et al. (2021) reinforced this by stating that in many infrastructure bidding practices, government representatives have the ability to arrange for bidders to win particular construction projects under pressure for money or under blackmailing threats. In many cases, once officials become corrupted, they align the project details to fit the bidding needs of the construction cartels that give the best financial bribes (Saim et al., 2018).

The internal motivation among government leadership can be introduced to other leaders through influence peddling, leading to increased corruption in future projects by previously honest firms (Gheorghiu et al., 2021). In most infrastructure construction projects, corruption, as far as bid rigging is concerned, takes place in the beginning stages, such as planning, which leads to pressure in the form of motivation from government agency leaders and construction corporation managers to plan projects that are corrupted or compromised infrastructure projects. Government leaders often partake in corrupt activities to retain political power through campaign financing or influence.

Government leaders also use the bidding and the awarding of contracts to retain political status and position, if not promotion. Bertelli et al. (2021) discussed that in most democratic countries (including the United States), infrastructure construction projects are given to construction companies who contribute to keeping government officials in their elected seats. Amoah and Steyn (2022) mentioned that contracts are often awarded in return for political gain. In some cases, government leaders need to be more up-to-date with bidding and procurement processes already in place to control which construction corporations are awarded the infrastructure contracts (Alsamarraie & Ghazali, 2022).

Political success, political status, and position retention are motivators for corruption. In many countries, participation by government representatives has become a long-term corruption-motivated behavior.

A significant understanding and drawback to corrupt behaviors is that they become generational in political parties. Jones and Pereira Neto (2021) stated that corrupt behavior by government officials became a normative motivation to recreate the cycle continuously for decades. A region in Italy had almost 23% of all infrastructure projects corrupted solely because of fraudulent bidding practices by government leaders (Decarolis & Giorgiantonio, 2022). The findings of Jones and Pereira Neto (2021) and Decarolis and Giorgiantonio (2022) reinforce the perspective that material gain incentivizes political corruption. However, the methods offered by both pairs of authors are reflective of a perspective that focuses on different places and circumstances.

Financial Incentives for Corruption

The most significant motivation to practice fraudulent bidding activity comes from the financial incentives, whether for the graft to government leaders or kickbacks to construction contractors, because of the exorbitant amount of funds anticipated to be generated in large infrastructure construction projects. Financial numbers can be staggering globally regarding the expenditure of funds; in 2017, four countries, the United States., Netherlands, Germany, and Greece, spent almost 30% of general expenditures on infrastructure construction (Lyra et al., 2022). This was reinforced by the Odebrecht case in Brazil, where the Odebrecht Construction Corporation participated in massive bid-rigging schemes that led to cost overruns on projects as high as 71%, while

competitive bidding contracts typically only ran into cost overruns of 6% (Campos et al., 2021). Campos et al. (2021) and Lyra et al. (2022) both reinforced the view that an increased budget in infrastructure projects is notable evidence of potential corruption-related incentives.

As with most infrastructure construction projects, large-scale financing with federal funds provides the opportunity for corrupt pilferage at an increasing rate. The motivation to collude is typically financially motivated to win infrastructure contracts through bid-rigging, and this collusion has increased at an escalating rate (Bertelli et al., 2021; Fan et al., 2023; Muller-Mahn et al., 2021). In Japan in 2019, it was estimated that 95% of all bids were corrupted through collusion. China also reached approximately 70% of bid-rigging collusion in large-scale infrastructure projects in the same year (Zhang & Li, 2022). Increased corrupt activities present more opportunities for understanding the problem and ways to diminish the problem. The need for further study presents more evidence to produce anti-corruption strategies on the government's part.

Strategies for anti-corruption can be based on studies related to understanding the financial trail, as monetary gain is the primary motivator for corrupt activities. The amount of financial gain to be gathered corruptly leads to a devious mindset of different manners of collusion in bid-rigging and creates a need for further study (Chen et al., 2022; Federal Trade Commission, 2024; Kuhn & Pardos-Prado, 2021). The U.S. Department of Justice (2022a) described in California where one public official received close to eight hundred thousand dollars in cash payments, home remodeling, and other gifts in exchange for guiding contracts to a single contractor. Bernatt and Jones (2023)

studied how the procurement and bidding process is the most susceptible to collusion; therefore, the most significant pressure to commit corruption is on bid-rigging. The understanding of this level of financial corruption directly affects the economy and lessens the number of future projects that can be achieved as funding is diminished. The large-scale financial reward is a key motivator for corruption, but low governmental protection of the bidding process also instigates the bid-rigging process.

Motivation Created by Low Protection

The planning and bidding stage can be viewed in two stages of the FTT, the two sections of which include motivation and opportunity. The lucrateness of bribes and financial gains motivate governmental leaders to commit corrupt acts (Bernatt & Jones, 2023). Campos et al. (2021) supported this by outlining that the punitive fines levied against the Odebrecht Construction Corporation for many years of corrupt acts were approximately two and a half billion U.S. dollars. This is further supported by the fact that 700,000,000 euros is taken annually in countries like Germany by itself (Zhang & Li, 2022). The three authors' findings support the view that the financial incentives provided by low protection in the planning and bidding stages can further incentives corruption.

The motivation to commit corruption is enhanced when there are very low regulatory barriers to prevent corruption, especially to megaprojects and infrastructure construction projects, which are so lucrative. U.S. Securities and Exchange Commission (2023) publications demonstrates that even if construction corporations are caught and convicted, the amount of recovered funds is far lower than the original amount that was absconded through corruption bidding acts. With so many strategies and methods to

diminish corruption and few of these methods being imparted, such as benchmarking and transparency, there is good reason for repetitive motivation for corrupt acts by construction managers and government officials (Jones, 2021; Seth et al., 2021).

Increased levels of judicial protection of the bidding process for being awarded infrastructure construction projects would rightfully diminish the problem of corruption. Increased levels of motivation for financial rewards through corruption stimulate the creation of opportunities to commit fraudulent acts.

Opportunity

Opportunities for corruption are created and taken advantage of by construction cartels and government leaders regularly. Cressey (1953) viewed opportunity from the FTT in two manners: when a trusted employee commits fraud, and when an employee has the technical skill to improvise systems to create corrupt opportunities. Opportunity is also enhanced by any chance presented through deficiencies or lack of governance and internal controls in processes that are taken advantage of by personnel to be capitalized on for corrupt reasons (Kagias et al., 2022; Sandhu & Saluja, 2023; Suryani & Fajri, 2022). Alsamarraie and Ghazali (2022) indicated that even in developed countries, minute changes are made to upgrade internal controls as a preventive strategy to diminish corruption. Antiquated processes, contract guiding, the unpredictability of infrastructure construction projects, and labor and material prices can all create opportunities to be capitalized upon by construction cartels to implement bid-rigging strategies that diminish competitive practices of infrastructure construction. Because of the antiquated bidding

process, information to be utilized for creating corruption is enhanced, and new opportunities for corruption evolve.

The second section of the FTT, the opportunity, is a catalyst in the efforts of construction cartels and certain government leaders in the corrupt act of bid-rigging. Understanding the bidding process and collecting information is not difficult as the rapidity of change in anti-corruption regulatory and policing tactics is seldom proactive, so strategies do not occur to diminish corrupt acts (Wallimann et al., 2022). An above-average amount of information is attainable by construction cartels, primarily through collusion, because of the bidding process on infrastructure construction projects, as all concerned need to understand the project details (Fan et al., 2023). General information, as mentioned, is the knowledge that can be easily attained by employees, leaders, outside contractors, and anyone who has an interest in the bidding process of infrastructure construction projects that could also be used for bid-rigging. The bidding process also needs to be approached in terms of how the bidders work in collusion as a way to attempt to be awarded infrastructure construction contracts fraudulently.

Opportunity for Collusion and BidRigging

The approach to bidding can be influenced by how bidders, independently or as a colluding group, bid on infrastructure construction projects. Independent cartel group members competing against one legitimate competitor, known as many-to-one and multigroup competition scenarios, were examined concerning the collision of bid-rigging and how this opportunity changes the dynamics of competitive bidding (Y. Sun, 2021). X. Sun and Chen (2022) demonstrated that when anti-corruption barriers are low, corrupt

group initiatives are stimulated to try and commit fraudulent acts like bribery or bid-rigging. By the illegal act of colluding, construction cartels can overcome anticorruption barriers by sharing information to take advantage of bidding on contracts tendered by the government. What enhances the chance of getting away with fraudulent activities through new opportunities, such as bid rigging, is the collusion created by construction cartels, which gives an unfair advantage to the cartel over independent, honest bidders.

Collusion established by construction cartels in bid-rigging creates new opportunities because of the systematic nature of fraud in the bidding process and the ability of a cartel group to adapt and overcome anti-corruption strategies that are slow to change or evolve with new forms of bid-rigging. The U.S. Department of Justice (2022a) and U.S. Securities and Exchange Commission (2020) acknowledged the economic drag that bribery and bid-rigging have on our economy, creating economic stagnation in business and infrastructure, wasting tax dollars, and lowering gross domestic product (GDP). Inconsistency in investigation and punitive measures in the form of legislation allows for further and often increased criminal activity and theft of public funds (Korotkiy, 2022). The policies and legal expectations set by the U.S. DOJ and Securities and Exchange Commission (SEC) are based on policies developed within the U.S. borders to enhance economic development through the diminishment of corruption. The sheer volume of new infrastructure construction projects is increasing annually, yet new anti-corruption measures take longer to develop and implement to combat the corruption problem, such as bid-rigging and bribery (Lehtinen et al., 2022).

Infrastructure construction needs to be expanded and developed for continuous economic growth, yet corruption diminishment is not aggressively prevented with the funds allotted. The problem of bid-rigging in governmental procurement is further exacerbated by the sheer volume of services, materials, and labor needed, that anti-corruption policies cannot be created and kept current to combat attempts of corruption strategies by different colluding cartels (Signor et al., 2023). E. K. Owusu et al. (2019) observed that corruption has the propensity to grow exponentially, so much so that because of the slow process of creating an anti-corruption strategy and getting it approved, anti-corruption cannot keep pace. Separate but equal efforts must be developed to enhance infrastructure construction and anti-corruption policies to allow infrastructure construction projects to be bid on competitively and not be corrupted. The involvement of government leaders and representatives further bolsters the problem of bid-rigging and bribery.

Opportunity Derived by Government Involvement

Government officials and agents' involvement in corrupt acts such as bribery and bid-rigging add further problems to the possible detection and diminishment of the bidding fraud problem. There were more than 330 convictions of public officials in 2023, and of this group of convictions, 30, the single largest group, were due to procurement fraud (U.S. Department of Justice, 2024). The U.S. Department of Justice (2022b) discussed the direct link between a California Department of Transportation (CDOT) contract manager receiving bribes for guiding contracts to a corrupt construction firm. In many cases, the corruption of U.S. government representatives leads to the further

stagnation of anti-corruption strategies as the process of creating and implementing new strategies is hampered or slowed to allow corrupt practices to continue for financial gain. The problem of corrupted officials by the strategies and opportunities of the construction cartels is so vast that there have to be agents or middle people to take care of financial transactions.

Multilayers of financial representatives have to be in place to act as a stopgap to protect the upper layers of construction cartel representatives. Graycar (2022) noted that some government officials' corruption levels led to intermediaries to help transfer finances, such as kickback brokers or shelf companies. The problem of further corruption is increased because the lack of modernization of the bidding structure retards the level of corruption tracking (Abdou et al., 2022). Without effective modernization by government leaders and agents, on purpose or by oversight, the bidding process is woefully susceptible to bribery and bid-rigging. Deficient modernization of infrastructure construction bidding processes prolongs antiquated processes but stimulates further corruption and repeated opportunities for further pilferage.

Lack of innovation in the bidding process has led to deficiencies in security and allowed for the continuation of corruption, which now leads the bidding process to an antiquated state. The increased need for procurement has been vastly elevated, yet the system to maintain and protect procurement, such as innovation and better legislation, has not been expanded (Abdou et al., 2022; Korotkiy, 2022; Patanakul et al., 2016). The support of the findings is that electronic bidding can assist regulators in monitoring the bidding process closely, but this bidding style also opens the process to electronic

hacking (Rashidi et al., 2023). Regulators, according to Abdou et al. and Rashidi et al. (2022), can contribute to the mitigation of corruption.

Z. Wang et al. (2022) discussed the need for multiple facets in an anti-corruption strategy to reduce the problem of corruption in procurement, such as innovation in control measures. The U.S. Department of Justice (2022b) and U.S. Securities and Exchange Commission (2020) implied the need for quarterly review and higher rates of record keeping through efficiently trackable electronic systems to reduce the opportunities for corruption. Lack of innovation in bidding increases the chance of corruption for U.S. government leaders, agents, and construction cartels. Construction cartels further employ innovation and evolution unhindered because of the slow level of innovation in anti-corruption, and the DOJ is not prepared for continuous innovation to diminish theft and pilferage of government funding.

Opportunity for Corruption Through Evolution

The opportunity for corruption can evolve unhindered if left unchecked. The White House (2021) proposed that the advancement of the need for procurement in infrastructure leaves the door open for unscrupulous contractors and an increasingly corrupt government bidding process. Innovation in improving internal controls in the bidding process and increasing regulatory oversight is the key to reducing the ongoing bid-rigging issue. This lack of innovation is often deliberately sabotaged by government officials looking to keep a primitive bidding process in place in an effort to continue to benefit from corrupt financial practices.

In several cases, government officials look to keep legislation to innovate the bidding process to protect infrastructure construction primitive; in this manner, corruption and ill-gotten financial gain are worth the risk. Y. Sun (2021) acknowledged that innovative improvements in competitive bidding on construction contracts lead to reduced corruption and more substantial projects completed with reduced funding waste. The White House (2021) supported the idea with a report highlighting that infrastructure procurement opportunities can be filled with corruption if innovation improvements are not made.

Opportunity for Corruption Through Unpredictability

Opportunities for corruption in infrastructure construction projects have also developed due to the unpredictability of budgeting for construction projects. E. K. Owusu, Chan, and Shan (2021) illuminated that the greater the number of potentially unpredictable events that might occur in a project (outliers), the less accurate forecasting project costs become, and the greater the opportunity for misrepresentation of likely costs in the budgeting process, which is frequently capitalized on for financial gains by corrupt government officials and representatives of construction corporations. When compensations for irregularities are afforded in public and private construction contracts, the public sector rarely examines the accountability of funds that are paid out (E. K. Owusu et al., 2019). Any open loophole in infrastructure construction contracts leads to higher levels of kickbacks and bribes in the way of pilfered public funds designated for the project. Unpredictability or irregularities in construction projects are described as anything that is not covered in the original contract.

Unpredictability in construction comes from the need for additional building materials, labor, or time to complete the construction project due to lack of planning or unforeseeable project needs, often leading to massive cost overruns and project delays, as these needs were outside of the original details of the contract. The Odebrecht Construction Corporation, through corrupt actions in the bidding process, increased overages on infrastructure construction projects by almost 71% (Campos et al., 2021). Wasteful government spending is inherent and all too common in infrastructure projects that, if left unchecked, nurtures fraud, embezzlement, bribes, and kickbacks (Kervalishvili, 2022). Reduction of unpredictability through more controlled supervision, use of data from past projects, and strict audits may diminish unpredictability and fraud. A greater need for tested processes such as benchmarking ensures higher on-time and on-budget completion levels.

Historical data collected from past infrastructure construction projects demonstrates that controlled audits, benchmarking, and well-maintained government supervision diminish corruption and advance construction projects. He et al. (2021) outlined that the opportunity for corruption in the different stages of construction projects can increase without a benchmarking process, so projects that originated in corruption, especially in the bidding process, tend to be further corrupted during later stages of the project. The problem of corrupt oversight during the contracting and bidding portion of an infrastructure construction project is typically capitalized on by construction corporations by inflated labor costs, misappropriation of materials, and other fraudulent acts (Cao & Wang, 2023). Construction unpredictability is also viewed as a universal

problem as all countries, without regard for the level of development, experience the issue of fraud established by unpredictability.

Corruption Plagued by Unpredictability

Corruption caused by unpredictability in infrastructure construction projects occurs globally in stable and undeveloped countries. Zhao et al. (2022) examined the problems of procurement in remote locations as this creates issues for labor and material allocation for project needs. In the beginning stage of procurement, which is the most susceptible to corruption, the amount of project needs and the prices are typically inflated fraudulently to steal public funds meant for infrastructure projects (X. Sun & Chen, 2022; Weingartner et al., 2021). X. Sun and Chen (2022) noted that cognizance of the weakness of the planning stage of procurement leads construction cartel members to give bribes or kickbacks to government officials for inflation for the needs of future infrastructure construction projects. The problem with procurement in remote geographic locations is that project needs such as land, labor, capital, and technology are not always readily available in this type of procurement, so a premium can be charged for project needs. The importance of understanding opportunity, primarily described in the FTT, gives a better understanding of frequently used fraud schemes such as bid-rigging.

Opportunity within the FTT illuminates many ways for construction cartel members and government officials to implement fraudulent schemes to steal government funding for public construction projects. When low barriers to prevent corruption in the bidding process exist, the opportunity to commit fraudulent acts, especially on construction for infrastructure projects, and the inclination to carry out collusive fraud,

such as bid-rigging, is increased (Cui, 2023; Sanchez-Aguayo et al., 2021; X. Sun & Chen, 2022). Collusion within construction cartels emphasizes how the opportunity for corruption evolves and weakens competitive bidding. In many cases with construction cartels, the enticement of an opportunity for sizable financial rewards through fraud leads to collusion, bid-rigging, and bribery.

The salient fact is that corrupt government leaders and construction cartels have pilfered billions of dollars in the past from infrastructure construction projects, and this behavior entices the opportunity for reproducing the corrupt behavior. Opportunity or even the perception of an opportunity to commit fraudulent acts entices construction cartels and government officials to partake in bid-rigging, collusion, bribery, kickbacks, and multiple other fraudulent acts as a way to receive illegal compensation in the form of absconded public tax dollars (E. K. Owusu et al., 2020). In the FTT, illegal activities implemented by construction cartel members and government officials that are viewed as an opportunity are also bolstered by the rationalization that corrupt acts are a standard procedure or protocol because of past practices (Amoah & Steyn, 2022; Kervalishvili, 2022). Corrupt behavior has created a long-term mistrust of the construction industry and government officials. An opportunity such as corruption stimulated by low barriers to prevention typically increases rationalization for continuing to commit the corrupt act.

Rationalization

Rationalization does not always equate to truth, as rationalization can also be viewed as an opinion. Cressey (1953) conceptualized rationalization as a belief that any funds, gifts, trips, or gains from corrupt actions are earned and worth attempting, even

with the possibility of legal repercussions. Several authors perceived or contextualized rationalization from an organized perspective, where, if there is no regular reinforcement that corruption is unacceptable behavior, corruption will manifest within an organization because of the possibility of reward (Lee et al., 2021; Suryandari et al., 2023).

Rationalization of fraudulent acts, when deemed acceptable in construction cartels and corrupt government officials, manifests and becomes standard operating procedures. Bid-rigging and bribery have occurred in construction for so long that it is common practice.

Psychological Aspects of Corruption Rationalization

Repetitive behavior, especially corruption in construction, has a profound psychological effect, particularly when this behavior is rewarded with illegal financial gains. Past practices, such as collusion, bid-rigging, and especially bribery, are considered acceptable behaviors and, in some cultures, bribes are even promoted to make sure the construction project is completed (Machado et al., 2021; Monteiro et al., 2022). The psychological aspects of corruption are supported by authors who find that corrupt acts in the infrastructure construction industry or even in the construction industry are rationalized as part of the business as this behavior has been continuous and tolerated for hundreds of years, so corruption is socialized into the rationalization of the industry (Li et al., 2022; Opoku et al., 2022).

Rationalization in the concept of the FTT can be deconstructed to consider the different facets of how government representatives and construction cartel members turn from regular employees to corrupt links. A negative corporate rationalization is also trained as a perpetrated behavior, which also produces a feeling that the perpetrators will

never get caught and even tempts innocent employees (Baer, 2023). The rationalization for committing these acts, such as collusion, bribes, bid-rigging, and kickbacks, keeps reoccurring due to the grandiose amount of funding associated with infrastructure construction projects and repeated rationalization (Bhagat & Jha, 2023; Fazekas et al., 2022; Yang et al., 2022). The first link in this correlation is the psychological aspects; this helps produce a personality type that changes ordinary workers to corrupt individuals. Long-term corruption within the construction industry also bolsters a rationalization for participating in corruption. The exploration of this psychological rationalization, as well as financial gain and power, provides a reason for illegal acts in the infrastructure construction industry.

Psychological Theories on Aspects of Rationalization

Even with a plethora of psychological studies into the negative aspects of corruption, the problem continues to manifest and spread globally because of financial enticement and political power, which becomes a rationale for perpetrating fraud. An early example of a psychological study on negative behaviors would be the cognitive dissonance theory (CDT) created by Festinger (1957). CDT describes the psychological malaise encountered when confronted with adverse cognitions (Sharma & Kalra, 2024). Matorera (2022) proposed that systematic corruption tends to erode business ethics and creates an atmosphere of corruption entitlement as a form of CDT. The essence of this theory, as it pertains to corruption in bid-rigging for the awarding of infrastructure construction contracts, is that billions of dollars in funding become a rationalization for

the risk of financial reward. Other theories, such as the attribution theory, support the rationalization for committing corrupt acts even with positive intentions.

Another theory that supports the fact that large-scale financial entitlement leads to corrupt behaviors is the attribution theory. The attribution theory (AT), created by Heider (1958) and Kelley (1967), proposed that people establish rationalizations that amplify their behaviors because of long-term external causations. The behaviors are reinforced by the fact that members of cartels capitalized on the problem of corruption for financial gain due to the lack of anti-corruption strategies (David-Barrett et al., 2020). The purpose of negative reinforcement for corrupt behaviors is to diminish the long-term aspects of bid-rigging.

A common factor in most of the literature reviewed for this study is that corruption is a long-term problem that is universally global and cultural, so in many cases, illegal behavior is a common practice, and many employees are taking part in the practice. The problem of historical corruption in the construction business is that it has been passed down, even within construction corporations, as it is typically family-oriented, and this long-term connection extends to corrupt government officials, which presents a sense of normalcy to the corrupt behaviors (Fazekas et al., 2022; Jones & Pereira Neto, 2021). Khadim et al. (2021) elucidated that the construction community strongly believes that the construction industry works better with the employment of corruption in construction projects, as corruption ensures the completion of the construction project. The concept of corruption rationalization is perpetuated because of

the lack of long-term reinforcement, which has started to appear as a standard business practice (Fierro et al., 2024; E. K. Owusu et al., 2020).

Long-Term Rationalization

The long-term aspects of corruption have been well-documented, as the process of rationalization can be traced, but this still is not a deterrent to collusion, bid-rigging, and kickbacks (Lee et al., 2021; Wallimann et al., 2022; Yap et al., 2022). Ivanyna et al. (2021) documented that long-term corruption in infrastructure construction projects is perpetrated because of the chronic nature of illegal activities, which has also diminished the quality of the roadways. The long history of corruption has also developed a significantly diverse range of corruption methods to avoid anti-corruption strategies (De Jong et al., 2009; Mugellini et al., 2021; Zakari & Button, 2022). Even with new changes in anti-corruption strategy, the new laws typically cannot keep pace with corruption. An important facet of corruption is that it will evolve to find new ways to pilfer and transform government funds into construction cartel bank accounts.

Bid-rigging in infrastructure construction bolsters many types of corruption but eventually leads to money laundering to move absconded funds. The evolution of corruption has many dimensions according to different authors, such as bribery, bid-rigging, kickbacks, extortion, embezzlement, and money laundering (Opoku et al., 2022; Zakari & Button, 2022). Boly and Gillanders (2023) supported this claim by finding that the long-term levels of corruption within government leaders in the bidding on infrastructure construction projects create distrust of all government construction projects. The historical nature of corruption in infrastructure construction has perpetuated

a negative rationalization that illegal behavior is an accepted and common practice. The problem of corruption is stigmatized because of the lack of change and historical behavior that is obvious to taxpayers creates negative connotations.

Because of the long history of illegal infrastructure bidding and construction practices, government construction projects are stigmatized by perceived negative results. Adverse psychological effects of collusion precipitate a weakened competitive bidding market, and this problem weakens strategies for preventing corruption (Bhagat & Jha, 2023; Lee, 2022; Wawrosz, 2022). The concept was reinforced by Martin et al. (2023), who stated that the bidding and planning portion of construction projects has high rates of corruption. Because collusion and corruption in bid rigging are so prevalent, most construction cartels tend to train and promote illegal behaviors. Financially reinforced behavior is therefore accepted by all levels of corrupt construction corporations.

Rationalization of Perpetrated Illegal Behaviors

Once corruption in infrastructure construction bidding is rationalized as acceptable, construction cartels establish a heightened code of conduct to further perpetrate the problem of illegal activities. Li et al. (2022) found that new infrastructure construction projects have expanded exponentially, yet the long-term investigation of fraud in these projects has not expanded at the same rate, empowering corrupt behaviors. The prosecution of fraud does little to reduce bid-rigging and other illegal behaviors, so when strategies to diminish corruption are reduced, the rationalization is increased (Korotkiy, 2022; Li et al., 2022). There is an indication that little is being done to diminish the role played by persecution.

Most construction competitors have the mindset, or rationalization, to preplan for going over budget, increasing the chances of delays, and sometimes getting the project canceled and not returning any funding (Khadim et al., 2021). The problem of corruption is further increased when a code of conduct is established within a construction corporation that promotes illegal activities. Acceptance into construction cartels comes with a belief or rationalization that bid-rigging is not only accepted but should be repeated for the betterment of the cartel.

Rationalization, the third part of the FTT, posits that once illegal activities are deemed acceptable, the behavior is repeated, so when an entire corporation rationalizes corruption as acceptable, the members of the corporation embrace corruption. Suryani and Fajri (2022), in an analytical study, emphasized that illegal business structures can convert employees into criminals. Several authors supported this concept by outlining the significance of how construction stakeholders can manipulate bidding processes (Ghahari et al., 2023; Imhof & Wallimann, 2021).

Erfani et al. (2021) proposed that entire construction corporations work together to manipulate numbers in bidding on construction while also working together to hide corrupt behaviors. Corruption also has much complexity to be perpetrated; training in strategies of corrupt ways to circumvent government legislation is a trial-and-error system and a big undertaking. Corruption of infrastructure construction projects is such a massive undertaking that multiple parts of a corporation have to collude for fraud to transpire.

Trained and Perpetrated Behaviors

In some instances, the problem of corruption is not just an individual problem but can encompass and permeate an entire corporation or even a collusive group of corporations (i.e., a construction cartel). The issue of collusion, such as bid-rigging and other illegal behaviors, is so significant, especially in the construction industry, that it has gained a patina of legitimacy and is often considered acceptable behavior, especially among construction corporations (Campos et al., 2021; Fierro et al., 2024). David-Barrett et al. (2020) established that even within governmental leaders, there is a culture in which bribery is not only accepted but looked forward to as a financial reward as part of the government position. Government leaders consider illegal funds from kickbacks and bribes as normal behavior in the work position. Once government officials have held a position for a number of years, corruption becomes an accepted practice.

Corruption becomes a cognitive behavior for government officials and is considered as a bonus with the position. Government officials construct two rationalizations in infrastructure projects, first is that bribery becomes a widespread behavior, and that this behavior of corruption is shared with construction cartels through the elimination of competitors for the same contracts (United Nations Office on Drugs and Crime, 2015). Further evidence is that government leaders' influence enhances the rationalization that corruption in bidding on infrastructure projects is appropriate, and this problem leads to the evolution of corruption for future issues.

Government officials' involvement in infrastructure construction bidding corruption is more rampant than previously realized. In many cases, the strategic process

for the detection and prevention of corruption in the government bidding process is purposely allowed to fall into obsolescence solely for the perpetration of corruption (Signor et al., 2023; United Nations Office on Drugs and Crime, 2015; Wachs et al., 2021). Baer (2023) noted that multiple international construction corporations took turns winning bids on infrastructure construction projects in Brazil, and this whole illegal bidding process was allowed to manifest through government interference in the bidding process. The most significant indicator of government involvement in corruption in bid rigging comes directly from data collected from government sources (Jeong, 2021; Kuhn & Pardos-Prado, 2021; Moriyani et al., 2023). The problem of bid-rigging and fraud on infrastructure construction projects is proven to be more widespread than originally anticipated. Trained rationalization of corruption is not solely perpetuated by government leaders and officials but by the largest of international construction corporations.

Government officials are not the only representatives of trained collusion; government documentation and journal articles show a cohesive pattern of large-scale, long-term construction corporations' collusion in bid-rigging. Monteiro et al. (2022) demonstrated that construction corporations consistently bid rig on infrastructure projects because of the likely lack of detection and the weak enforcement of penalties. The longevity of the repetitive trained or expected collusive behavior of bribery in infrastructure bids has even diminished the infrastructure to a substandard level (Ivanyna et al., 2021; Signor et al., 2021). High levels of reoccurring trained corruption are fully rationalized to the point of diminishment of the quality of the infrastructure. Participation and training in corruption of bidding on infrastructure projects are further rationalized

because of the belief that the perpetrators will either never get caught, or even if they are caught, the penalty is worth the risk.

Rationalization of Never Being Caught, With No Fear of Penalties

Low levels of tracking for corrupt activities on infrastructure bidding, along with very low financial penalties, also reinforce the rationalization to keep construction companies colluding to commit bid-rigging. Authors find that the process of collusion in bid-rigging is complex, with the need for multiple construction corporations, government representatives, and intricate planning to be accomplished (Khadim et al., 2021; Zhu, Zheng, et al., 2021). Graycar (2022) reinforced this by stating that bid-rigging in procurement is above the level of an individual, and yet the level of tracking on the part of the government is not advanced to meet the challenge. The level of challenge to collude to win bids on infrastructure projects without heightened anti-corruption strategies demonstrates the reason for continued corruption in the infrastructure construction industry.

Fear of financial or judicial penalties by construction cartel members and government officials is also very low as the government is either very slow to take action or the penalties are usually minimal. There is a common consensus among authors that corruption can thrive in infrastructure construction, especially in the bidding phase, and the governmental systems cannot keep pace with new strategies to contend with the corruption problem (Monteiro et al., 2022; E. K. Owusu et al., 2020; E. K. Owusu, Chan, & Wong, 2021). Zhai et al. (2021) reinforced this by outlining that the level of infrastructure construction projects is ever-expanding, and the strategies to diminish

corruption are not being advanced at the same pace to diminish corruption. The lack of fear of legal repercussions is also diminished because of the financial rewards, which can be in the billions and trillions of dollars that can be pilfered. Financial gains typically are the cause of so many different groups colluding to achieve the financial rewards.

Financial Gains From Corrupt Rationalizations

The main incentive for rationalizing corrupt behaviors, such as bid-rigging on infrastructure construction projects, is financial gain. In 2014, \$9.5 trillion (estimated in U.S. dollars) was allotted to be spent on government procurement internationally, but \$2 trillion was siphoned off due to illegal activity (Graycar, 2022). Busu and Busu (2021) reinforced the statistics by stating that developing countries usually afford 10 to 15% of GDP to infrastructure projects and procurement of land, labor, and technology, while more developed countries can spend up to 25% of GDP on construction procurement. The numbers presented for international government procurement and the effects of corruption can be intimidating, but these numbers need to be translated into the effects in the United States. The findings of Busu and Busu and Graycar (2022) reinforced the views that financial gains are the key aspect of corrupt rationalizations.

Measurements of corruption are best measured through the translation and examination of financial expenditures projected for a project, as well as the estimated amount of funds pilfered through corruption by using variance analysis, especially when these numbers are applied to United States infrastructure expenditures. The estimated gross domestic product of the United States for the fiscal year 2023 was just over \$27 trillion (U.S. Department of Commerce, 2024). The estimated rate of 25% of a developed

country's GDP is invested in procurement and also established that about 20% of all finances designated for government procurement is pilfered, so with these parameters established then about \$6.75 trillion is pilfered annually from U.S. infrastructure construction projects (Busu & Busu, 2021; Graycar, 2022). The primary purpose of this study was to diminish corruption and save \$6.75 trillion in taxpayer dollars for future projects, which is an important reason to reduce bid-rigging.

Strategies for the Diminishment of Corruption in Infrastructure Construction

The overall purpose of this literature review was to demonstrate the need for further exploration and identification of strategies to improve the bidding process on infrastructure construction projects, for the diminishment of corruption such as bid-rigging. Carbone et al. (2024) demonstrated through collected research to illuminate the problem of corruption in procurement. For example, the bidding process of infrastructure construction continues to evolve and expand, and there is a continued need for anti-corruption exploration. The historical and unrealized level of corruption promotes the need for further study to establish anti-corruption strategies to be employed in infrastructure construction. The main emphasis of this study is on the bidding process as this phase is most susceptible to corruption.

A bidding process needs to be developed with a stringent tracking process that can adapt as corruption evolves. Because of the uncertainty any construction project confers, the bidding phase of any construction project is the most susceptible to infringement by corruption, so continued research of the bidding phase of construction is essential to explore and identify anti-corruption strategies (Zhu, Cheng, et al., 2022). The

literature I have explored presents multiple reasons for further research on corruption in bidding during the procurement process of infrastructure construction projects.

The entire process of bidding and infrastructure projects is very similar to new construction mega-projects as there need to be many layers of oversight bolstered by redundant processes to track financial expenditures to prevent corrupt behaviors and actions. The study of construction mega-project completion is essential as it provides approaches for closer scrutiny of all phases of the construction project to reach total fruition, and avoid delays, failure as well as (corruption) misappropriations (Damayanti et al., 2021; Z. Wang et al., 2023). Exploration of strategies derived through this literature review, implemented by government leaders and construction managers, could diminish the misappropriation of funds with corrupt intentions. Further emphasis needs to be placed on changing the view of corruption in infrastructure for the devastation it establishes.

Strategies intended to change the psychological perception of the construction industry and government leadership, with emphasis on the negative enhancement of how corruption pilfers taxpayers' funds, slows the economy, and lessens the caliber of the U.S. infrastructure, provide the possibility diminishing corruption in infrastructure bidding practices. The negative connotations because of corruption attributed to bidding on infrastructure construction projects lead to the weakening of competitive bidding practices and attributes to pilfered funds and diminished infrastructure (Lee et al., 2021; E. K. Owusu, Chan, & Wong, 2021; Z. Wang et al., 2023). The creation of positive psychological processes in infrastructure bidding will lead to positive acceptance of anti-

corruption strategies for the betterment of the construction industry and government officials (Graycar, 2022; Opoku et al., 2022; The White House, 2021). The exploration of a positive psychological change in conjunction with stricter construction phase processes and punitive repercussions has the possibility to diminish infrastructure corruption. Strict processes may help control opportunity and rationalization for the diminishment of infrastructure bidding construction.

Stricter construction phase processes, regulatory oversight, and penalties may help deter corrupt actions because of the higher possibility of being caught, sizeable punitive penalties, and jail time. Closer oversight is established in all phases of infrastructure through benchmarking, auditing, and closer tracking, proven to create higher levels of responsibility in the reduction of corruption (David-Barrett et al., 2020; Saim et al., 2018; Zhu, Cheng, et al., 2022). Stringent enforcement of punitive fines and jail penalties has a higher propensity to diminish corruption in infrastructure construction projects (E. K. Owusu, Chan, & Wong, 2021; Patanakul et al., 2016; Zhu, Cheng, et al., 2022). Further exploration of the psychological factors that contribute to corrupt acts in infrastructure bidding, anti-corruption strategies based on strict construction phase processes, and penalties for breaking the rules of these processes, could increase better usage of taxpayer funds, strengthen the infrastructure, and enhance economic growth.

Section 3: Research Project Methodology

The purpose of this qualitative multiple-case study was to explore strategies to diminish bid rigging and other fraudulent acts on infrastructure construction projects, which could improve economic growth and the proper use of taxpayer funds. The traditional research process was the foundation of this study, developed in accordance with Walden University's standards. Section 2 covers the process of gathering and assembling the needed data to conduct this study; this information includes descriptions of participants for semistructured interviews, ethical research, population and sampling, data collection instruments and techniques, and data organization methods. The process of assembling this information is discussed in subsections through the research and design method, including data analysis approaches such as coding; This section is designed to establish rigor, reliability, and validity in the study.

Purpose Statement

The purpose of this qualitative multiple-case study was to identify and explore the effective bidding process improvement strategies created by the U.S. agency leaders and bid on by the different managers of corporations in the construction industry to diminish corruption.

Role of the Researcher

My main goal as a researcher was to conduct this study by collecting data from participant interviews, published governmental historical data, and literature reviews. Governmental historical information, professional peer-reviewed journals, and semistructured interviews were employed to produce triangulated results. Using primary

and secondary data to juxtapose findings strengthens validity and credibility and reduces limitations within a study (Ajayi, 2023; Yin, 2018). The primary focus of data collection in the current study was semistructured interviews and archival data in the form of published governmental historical data.

Interviews are an essential data collection method because they allow the participant to provide full illumination of the details of their response. Question structure for the interviews in the current was also essential because open-ended questions allowed the participant to explore the topic with the help of government archives and current and past cases of prosecuted bid-rigging fraud. Interview questions were designed to focus on the bidding process of infrastructure construction projects and how this process can be corrupted. The interview questions were informed by the conceptual framework and the literature review.

The interview questions also focused on extracting the best information for producing anticorruption strategies to enhance the strength of the bidding process, which aligned with the problem statement. The purpose of these questions was to extract information from the participants. In this qualitative research, I acted as the primary data collection instrument by organizing and conducting the interviews and collecting information in the form of government archives. The importance of data collection is triangulation through several sources, a cohesive link of the data, care with vetting of electronic sources, and a case study database (Priya, 2021). The data collected from interviews and governmental findings were key, and the exploration of past and current cases of bid rigging provided a better understanding of how corruption can transpire. The

process of conducting a qualitative study was also strengthened with the development of interview protocols.

Validity and Reliability

Validity and reliability are intended to mitigate researcher bias. Systematic oversight has to be followed by the researcher throughout the development of the study to ensure proper procedures to identify and reduce the possibility of researcher (Shaheen et al., 2023; Yarborough, 2021). Validity and reliability are bolstered with ethical interviews, verbatim transcription of interviews, member checking, data from reputable sources, multiple sources of information, and concise transcripts and records for auditing. Researcher journaling also helps to establish a link between steps, ideas, values, and beliefs during the study.

Reliability

Reliability was ensured through journaling. Self-realization and journaling, whether developed previously or during the study, helped me create a bond with the study principles, build a connection with the participants and the concern for their protection, and combine all phases for the duration of the study. The ability for self-reflection, primarily through journaling during a study, helps ground a researcher and creates awareness of their beliefs (Alt et al., 2021; Tahmasbi et al., 2022). The journaling process allowed me to build my convictions for this study and the needed determination for completion. Journaling also allowed for fact-checking during the study process, which also helped reduce bias and bolster the validity of the study. Validity requirements in

qualitative research projects include member checking, verbatim translations, and valid sources such as government archives.

I followed the protocols for proper data collection and the transformation of the findings in the completed study. The Walden University Institutional Review Board (IRB) and *The Belmont Report* provided the ethical guidelines for this study. Ethical research practice was reinforced by my role as a researcher in following procedures such as participant consent, privacy, and maintaining confidentiality, which aligned with my study's purpose. Credibility is established in a study by collecting data through multiple methods, which has the highest propensity for supporting validity in both qualitative and quantitative studies. Accuracy and validity are the main goals of all researchers in a study; for these reasons, I used triangulation in my research.

My role as a researcher at Walden University confirmed the need for integrity, regard for participants, and ethical practices in the study. Walden University (n.d.) developed guidelines that researchers are expected to follow to set standards for ethical practices, social responsibility, and fair treatment of participants. After the IRB approved my study (#08-21-24-1168268), all ethical interview practices were followed in the data collection.

Reliability is the anticipation of the consistency of the study development to the findings that will be created from it. The purpose of reliability is that the study is replicable with the agreement of other researchers (Vu, 2021). The demonstration of reliability is the true quality of the study. Truthfulness and consistency of gathered data and information reduce error and improve quality.

Validity

The proposition for the parameters of validity in a qualitative study pertains to the outcome and conclusion, which is focused through the lens of validity and reliability, leading to the rigor of the findings. As the researcher, my primary focus was the diminishment of ethical issues, but it also included generating informed consent from the participants, participant protection, and confidentiality, which are based on the Walden University IRB and *The Belmont Report* procedures. The Walden University IRB and *The Belmont Report* created a standard that is considered a norm based on honesty, researcher integrity, and fairness in a study, which is the expectation of the Walden University IRB process. By following the IRB and *The Belmont Report* parameters, I established research integrity while continuing to enhance knowledge through this ethical process.

The focus of this study was to maintain fidelity to strict academic rigor and bolster a culture of educational enhancement. The Walden University IRB's main three pillars are quality, service, and change (Walden University, n.d.). Strict parameters of excellence and strict caliber are what the IRB delivers to education and research. The IRB is geared toward efficient and effective resources for all researchers to achieve the highest standards of honesty and professionalism. Walden University is geared toward the search for academic innovation that will present positive change for research programs.

Participants

The interview participants for this multiple-case study were government leaders, construction managers, and DOJ investigators with (a) a minimum of a bachelor's degree, (b) 5 years of experience in the infrastructure bidding process, and (c) an understanding of how the bidding process can be corrupted. Participant selection is a critical element in developing a qualitative study because this is imperative for establishing validity and reliability (Bonisteel et al., 2021; Capili, 2021). The current study aimed to explore possible strategies for the diminishment of infrastructure bidding corruption; only government leaders and construction corporation managers with experience in the bidding process were credible participants for this study. Understanding the process of committing corruption in the bidding process required experts in the government who had expertise in infrastructure construction. The participants for this study were contacted through professional contacts, and this process was established initially through email outreach. Partnership agreements were made between prospective participants and me, as the IRB required.

The sample comprised multiple experts familiar with the bidding phase of the construction process because this phase is the most susceptible to corruption. Walden University (2024) proposed that it is appropriate to include government representatives, professional organizations, and trade affiliations as potential participants in a doctor of business administration study. The use of sampling of representatives from the DOJ who had investigated bidding fraud, government representatives who were in the process of

bidding, and construction managers who approached the bidding process ensured viable sources of data and information for this study.

For the purpose of this study, I employed purposive sampling from a target population to select participants with backgrounds and expertise. Purposive sampling provides a rich source of pertinent data to correspond with the needs of the research question and the intention of the study. The objective of purposive sampling is to gather experienced and knowledgeable participants to collect information on the phenomenon that is the focus of the study (Flemming & Noyes, 2021; Thomas, 2022). Purposive sampling helps establish the intrinsic participant traits needed to conduct interviews for the collection of information for the satisfaction of the research question, which bolsters transferability and credibility of the study.

As the researcher, I developed and employed a recruitment document to properly select participants from the DOJ, government leaders in the bidding process, and construction corporation managers who participate in the bidding on infrastructure contracts. The parameters for inclusion included (a) knowledge and experience in the bidding process, (b) having at least a bachelor's degree, (c) 5 years of experience in the bidding process, and (d) having been successful in understanding the problem of bid rigging with infrastructure contracts. Participants were initially contacted through email, with the possibility of phone contact. I was able to explain the goal of the study, and I introduced the consent form. The forms of contact allowed me to build rapport and make the participants comfortable, helped me promote an understanding of the study, and

allowed me to explain participants' right to withdraw from the study at any time for whatever reason.

Recruitment

Recruitment of participants has to be meticulous because of the procedures that need to be followed. Ethical standards need to be met, and building rapport to elicit the best and most useful data from the participants is essential. After I received approval from the Walden University IRB, I began recruiting participants. I researched what major construction corporations engage in infrastructure construction to contact the bidding department to find study participants. The DOJ and the DOT representatives were contacted through the individual department that tracks corruption in infrastructure construction and participants in the bidding process. From the information collected, I developed a participant list. I started with email contact to establish communication with a general explanation of the purpose of the study. The next step was setting up a phone conversation with the participants, in which I explained the consent form, which included eligibility requirements, the study procedures, the voluntary nature of the study, inclusion criteria, and the ethical expectation of the protection of the participants. The final part of the process, with the consent of the participants, was Zoom/in-person/telephone interviews that followed the parameters of the interview protocol.

As an employee of the DOT, I was able to establish contacts with members of the department who participated in the bidding process for infrastructure construction projects before IRB approval. Additionally, I had professional contacts at the DOJ; through these established contacts, I was able to develop contacts with members of the

teams that investigate infrastructure bidding corruption. As the researcher, I was able to expand and develop contacts to recruit expert participants with knowledge of the problems of infrastructure bidding. My connections established within the DOT allowed for the emailing of consent forms and interview questions.

The point of being selective with participants was to recruit participants who met the study's inclusion criteria and whose expertise could address the research question. Priya (2021) established that participant selection and development provide a valid part of triangulation. The participants' information focused on their fieldwork in bidding corruption and added validity and consistency. Developing strict criteria for choosing participants was important, and this goal was in alignment with the research question.

Research Method and Design

Research Method

I employed qualitative methodology to explore current problems in the bidding process to develop anticorruption strategies to diminish bid rigging and corruption. Demonstrating how characteristics of individual occurrences are explored with the assistance of the perception of a phenomenon is the objective of a qualitative study (Maxwell, 2021; Small, 2021). The purpose of quantitative research is to collect data in the form of numbers and inferential statistics to examine differences between variables or groups and to test a hypothesis. Results derived from a sample drawn from a larger population are typically generalizable to the population from which the sample was taken (Barroga & Matanguihan, 2022; Ghanad, 2023). Qualitative methodology was the more appropriate approach for exploring infrastructure bid rigging because it allowed for

collection of data such as government-published historical data, semistructured interviews, and past corruption actions that were identified and punished.

The focus of qualitative methodology is to build intrinsic knowledge of events and their subjective and often nuanced perceptions (Tenny et al., 2022). The employment of nonnumerical data to comprehend experiences or phenomena is the direct purpose of conducting a qualitative study (Tenny et al., 2022). As the researcher, I obtained my goal of conducting a qualitative study by exploring an experience or phenomenon with methods such as open-ended questions and conversational communication. This qualitative method addresses human aspects and the lived experiences of participants to explore the phenomenon under study (Tenny et al., 2022). Qualitative methodology helps illuminate the human experience of particular events.

Conducting interviews with members of the DOJ and collecting the information created the ability to explore the production of a qualitative study. Qualitative exploration provides concepts and strategies for improving and changing the bidding process, and this need for ideas and concepts indicates that quantitative studies are not suited for this type of study (Taherdoost, 2022). Mixed methodology is complex and time-consuming, so qualitative research methodology using inductive techniques was the most rigorous and valid way to produce this study (Taherdoost, 2022).

Research Design

The current study was a qualitative multi-case study focused on the phenomenon of bidding corruption in the infrastructure construction industry. Tenny et al. (2022) described five types of qualitative research designs: narrative, phenomenology, case-

study grounded theory, and ethnography. A case study is a typical method for exploring a phenomenological occurrence from multiple lenses (Closa, 2021; Priya, 2021). An effort to explore the long-term consistent problem of bid-rigging on infrastructure construction projects and how to diminish this problem with new anti-corruption strategies was best explored with the overarching goal of observing this real-life problem.

There are many qualitative designs used for studying this problem, such as a narrative inquiry, which would be employed if I were explaining another person's life. Yang et al. (2022) discussed that narrative inquiry is focused on the researcher explaining another person's life story. This study is not focused on one person's perspective of corruption in the bidding process, so I did not employ this method because of the expansive nature of the infrastructure bidding process.

Ethnographic inquiry, based on multiple individuals' perceptions, would have been another option. Black et al. (2021) identified that ethnographic research involves observing people and places to explain ideas and behaviors. The ethnographic style of inquiry would not be suited for this study.

A qualitative research study that is constructed with a phenomenological design explores a lived experience that was observed by multiple people and each individual's understanding of the phenomenon (Closa, 2021). The phenomenological design is generally aimed at people who experienced an event and explores their perspective of the event. As a researcher, I did not employ the phenomenological design, which delves into the personal perspectives of an event.

Multiple-case study is the most appropriate design for my study to produce strategies for the diminishment of corrupt bidding practices on infrastructure construction projects, as multiple cases are designed to explore and build themes. Through the observations and interpretations of multiple cases help substantiate and detect themes using qualitative data (Adams et al., 2022; Wu et al., 2021). A qualitative case study provided the best explorative lens that illuminated the problem of fraud, such as bid-rigging in infrastructure construction projects, which allowed for ways to diminish corruption through anti-corruption strategies. The development of themes related to bid rigging fraud prevention has the propensity to minimize corruption, enhance the infrastructure, and reduce construction corruption throughout the industry.

The ability to observe multiple cases in a qualitative study, with a plethora of information sources, allows for diversified themes to be produced. Detailed information in qualitative case studies is typically gathered from multiple sources such as interviews, document analysis, and observations (Closa, 2021; Priya, 2021). A secondary benefit is that these case studies helped illuminate a conceptual framework and models for the creation of anticorruption strategies in the bidding process of infrastructure construction projects. My choice of the qualitative case study method produced an all-encompassing, overarching, illuminating viewpoint to diminish corruption in the bidding process of infrastructure construction projects, which produced insights and comprehension that may bolster anticorruption procedures for the future in the construction industry and infrastructure construction projects.

Population and Sampling

Population

The population for this qualitative multi-case study included individuals in the bidding phase of infrastructure construction projects, primarily from three groups: DOT leaders who construct and publish the bidding process, construction managers, and members of the DOJ who investigate fraud in infrastructure construction bidding. The focus of the interview participants for this multiple case study was individuals from the three mentioned groups with a minimum of a bachelor's degree, 5 years of experience in the bidding process on infrastructure construction projects, and who have overcome the bidding corruption problem. This study was also comprised of a population of Justice Department investigators from around the United States who have intrinsic knowledge of the perpetration of fraud on infrastructure projects, with a minimum of 5 years of experience and a minimum of a bachelor's degree. Yang et al. (2022) specified that researchers should be selective in choosing the most effective strategy for sampling to find the most reasonable sample size for answering the research question. An estimated sample size of participants for a qualitative multi-case study typically is between 15 to 30 participants to achieve data saturation of a study (Bekele & Ago, 2022). The sample size planned for data using interviews was approximately 10 participants or as many participants as needed to reach data saturation. In an effort to gather the most productive participants for semistructured interviews for my study, I considered members of the DOJ, government leaders in infrastructure bidding, and construction corporation managers involved in the bidding process. Several sources were used to locate

participants, such as DOJ archives, government publications, and construction corporations that are typically large enough to accomplish infrastructure construction projects. To do this, I secured partnership agreements with the relevant stakeholders.

To be selective in choosing participants, I used purposive sampling, also known as subjective or judgmental sampling. Purposive sampling is simple and straightforward but selective, improving rigor and developing trustworthiness, as the subjects are chosen on purpose (Thomas, 2022; Yang et al., 2022). Purposive sampling is selective, as the participants are chosen based on the need of the sample to help explain the research, which helped me choose participants who added to the knowledge of how to diminish infrastructure bidding corruption. With the employment of purposive sampling, participants were selected from within the construction field based on their knowledge and experiences to provide valuable data on infrastructure bidding corruption. My focus was on participants working for the DOJ for the U.S. government who had a proven record of overcoming the problem of fraud in the bidding of infrastructure projects, 5 years of experience, and a minimum of a bachelor's degree, government leaders with a minimum of a bachelor's degree and 5 years of experience and the same for construction corporations. There are other forms of sampling, such as cluster sampling, but purposive supported the validity and rigor of this study.

I would also have been able to use cluster sampling because of the vast difference in infrastructure projects in the United States, which could be used as a secondary to purposive sampling in the development of this study. Cluster sampling, however, tends to induce bias and error in the data (Makwana et al., 2023). Cluster sampling does not tend

to produce the same stringent data and develop the same level of trustworthiness as purposive sampling. I wanted to avoid the possibility of error with participants, as exploring the participants' data helped enhance trustworthiness and achieve data saturation.

With the use of a recruitment document that I developed, I was able to be discerning with my choice of participants who had overcome the problem of infrastructure bidding corruption and those with whom I secured a partnership agreement. The recruitment document was developed to be discerning in determining qualified participants based on their title, educational background, experience with bid rigging, and understanding of the corruptibility of the bidding process, including an understanding of the entire bidding phase. The recruitment document contains inclusion criteria including (a) knowledge and experience in the bidding process, (b) having at least a bachelor's degree, (c) 5 years of experience, and (d) having an understanding of the problem of bid-rigging with infrastructure contracts. Once contact was established, I screened the participants through phone conversations, at which time I discussed the purpose of the study, the inclusion criteria, and interview protocol (see Appendix A). In this manner, I could warrant that participants recognized and were comfortable with expressing needed information on the research topic.

I interviewed 10 participants in my multiple-case study, a number achieved after reaching data saturation. Bekele and Ago (2022) explained that 15-30 participants typically help qualitative studies reach data saturation. The importance of data saturation is necessary for the reliability of the findings, but the participant size depends primarily

upon the thematic methodology, and the researcher does not need to assemble any more data as no new information will be revealed (Subedi, 2021). After data have been collected to the point where repetitious data starts to appear, data saturation has been reached (Mishra & Dey, 2022; Yang et al., 2022). As a researcher, after conducting 10 semistructured interviews, I expounded through the thematic analysis process that I reached data saturation, which was established by no new information being achieved from an additional interview. Through the verbatim transcription of the interviews collected, member checking, and other documentation, I assembled and reviewed the coded data collected using Yin's (2018) thematic methodology technique and provided confirmation of data saturation.

I conducted the interviews via Zoom conferences, Teams, over the phone, and in face-to-face settings. A recruitment document was developed based on the bidding process of infrastructure construction projects and distributed to the participants for further data collection. The importance of setting a safe, comfortable environment was provided using Zoom and phone conversations. The participants established the interview timing, so the interviews lasted 30 to 45 minutes without interruption. The purpose of allotting time, space, and comfort to the participant was to provide the opportunity to elicit the best data for the study.

Sampling

In this multiple-case study, I employed purposeful sampling to choose a sample, at which point data saturation was reached. Using a homogeneous method guaranteed that the participants met or exceeded the eligibility criteria, which helped bolster the level

of expertise of the sample (Thomas, 2022; Yang et al., 2022). Researchers must continue to conduct interviews until data saturation is accomplished to answer the research question (Yang et al., 2022). So, data saturation is achieved when even though more interviews are conducted, no new themes or ideas are illuminated. An additional recruitment document I developed based on the infrastructure construction project bidding and distributed to the participants. While conducting interviews, I continued to do member checking and in-depth research in government archives until no new themes were illuminated.

Data Saturation

Data saturation becomes a critical factor when conducting qualitative research, with the use of triangulation to establish a credible study that addresses and or answers the research question. Saturation is a threshold-based interpretation of how confident the researcher is that the data levels are achieving thematic saturation (Mwita, 2022a). The researcher's use of many processes and the level of data collection need to be developed to assess the complexity of the study (Priya, 2021). A conclusion in a study is fully developed with themes and categories that develop through coding of participants' responses and member checking for insights through the data that is employed as evidentiary material. Saturation is necessary to conclude the study.

Data saturation is a challenging prospect for a new researcher because it involves a significant number of participants who must be interviewed to fully cover the research topic to the point that no new information is produced. Researchers need to understand the spectrum of data and material through the categories and codes to achieve the level of

saturation required for a fully developed study (Mwita, 2022b). The level of data saturation is strictly achieved with information that bolsters themes and produces richness through the complexity and depth of the study, not to be confused simply with just a particular number of participants. As a researcher, I knew it would be challenging to identify the data saturation point in this study, but a critical factor in identifying this level is that after conducting numerous interviews with no new information and with the assistance of my chair to determine the level of saturation, this level was reached. Proper data saturation bolsters validity and reliability in a research study.

Triangulation

My intention with this study was to practice data triangulation, as two or more sources for data collection establish a more rigorous for producing a study that has credibility and reliability. The use of two key methods, including interviews and archival data for data collection, resulted in the point of view of a more comprehensive understanding of a phenomenon (Bans-Akutey & Tiimub, 2021; Kinter & Haase, 2022). A better understanding of triangulation comes from a defined concept of multiple methods, such as qualitative and quantitative methods, producing a richer, more overarching understanding of phenomena. Triangulation is the current and best standard to define the validity of a study, but it can also enhance accuracy and help better illuminate understanding.

Ethical Research

The information collected for this study mainly consisted of data collected from human subjects via interviews, and *The Belmont Report* of 1979 covered the protocols to

be followed when doing research with participants. *The Belmont Report* established three ethical principles to protect the well-being of the participants: respect for participants (people), beneficence, and justice (Bezzano et al., 2021; Grant, 2021). Respect for individuals incorporates autonomy for participants and that participants are entitled to protection. Beneficence for participants is developed by the researcher respecting the participants' decisions and bolstering benefits to participants while diminishing harm. Justice is established through fair selection and equitable benefits with a fair share for all involved. The National Research Act also bolsters ethical treatment with *The Belmont Report*. Both of these principal foundations of ethical research act as guidelines to protect the welfare of the participants, develop informed consent, encourage participants, bolster confidentiality, and identify the need for ethical committee review and approval (Bezzano et al., 2021; Grant, 2021). The ethical standards are strict protocols to be met by all researchers. In addition to my ethical responsibility to provide strict parameters for the care of the participants, it is also my responsibility to understand the process for participants to withdraw from the study.

I carefully planned to protect the participants throughout the study. One method I employed was assigning pseudonyms (e.g., P1, P2) to the participants instead of using their names to protect their confidentiality. The letters were assigned sequentially, with the first participant designated as P1. One purpose of my role as the researcher is to increase understanding and diminish damage while determining if my research could enhance society, assist communities, and benefit individuals. The overarching concept of a research study is to benefit all of society, not just a certain part of society.

Protecting the confidentiality of study participants throughout the study and interview process is imperative. I secured the participants' personal information by establishing codes for each participant, a method recommended by Yang et al. (2022). Safeguarding data and participants is also imperative and the main responsibility of the researcher. Protecting data and the identity of the participants from accidental or intentional exposure is an important ethical standard (Bezzano et al., 2021; Grant, 2021). The data that were transcribed verbatim become essential information that needs to be safeguarded for a period of at least 5 years. Study data also needs a highly secure manner of safekeeping; I secured all documentation in a fireproof safe to protect the information and the participants' identities and will do so for 5 years. As an additional precaution, external hard drives will be erased, paper copies will be shredded, and digital records will be encrypted and then erased after the 5-year time period.

I am genuinely cognizant of my ability as a researcher. I may have instilled my own biases into my study, which could possibly have affected the outcome, so I attempted to adhere to all ethical research standards and the process that entailed. The role of the researcher must be aligned with the ethical process of assembling a research study to produce illuminating and ethical findings (Priya, 2021; Yang et al., 2022). As a doctoral researcher at Walden University, I relied on the IRB as a strict failsafe to ensure ethical research practices in this study.

Procedures for Withdrawing

Participants were allowed to withdraw from a study whenever they chose and for whatever reason they chose. Participants can safely withdraw from a research study at

any time of their choosing and for any reason they feel important, and most important, with no repercussions (U.S. Department of Health and Human Services National Institutes of Health, n.d.). It was my obligation as the researcher to advise the participants that they could withdraw from the study at any time with no obligation by simply submitting an email of their intention to withdraw from the study. A withdrawal form may be found in Appendix C.

Informed Consent

As the researcher, I was obligated to provide a clearly written consent form to each participant. Protection and respect for participants are foundational principles, with informed consent establishing the parameters (Bezzano et al., 2021; Grant, 2021). Grant (2021) determined that the researcher must have developed a clear understanding of this responsibility before any interaction is established with participants. The importance of the consent form is the establishment of clarification that zero financial payments were made available to the participants.

Data Collection Instruments

The data in this study were collected from highly knowledgeable and qualified participants in the form of semistructured interviews. Additionally, I used other information, including archival data published from government corruption findings and member checking for triangulating the data. Priya (2021) described data collection instruments in qualitative research as procedures for gathering data to illuminate the answers to research questions. In this study, data were collected through semistructured interviews, member checking, and government-published archival information. As the

researcher, I was the main data collection instrument, but with the assistance of semistructured interviews as the primary source of data collection; because of participants' intrinsic knowledge, interview protocols were used.

Interview Protocol

Interviews provide a rich and illuminating understanding of a qualitative research study by collecting participants' ideas and feelings about an event related to the research topic. The creation of interview protocols elicits relevant and important data and requires creating a plan, which is then refined (Shoozan & Mohamad, 2024). Protocols for semistructured interviews establish processes and parameters that create a direction for the interviews and data to be collected in a reliable manner (Shoozan & Mohamad, 2024). Additionally, Yang et al. (2022) described the importance of interviewers asking secondary questions as needed to elicit a better understanding of participants' replies. The interviews should be timed long enough for participants to fully elucidate their experiences and understanding of an event or phenomenon. Interviews were carried out face-to-face, in Teams, or on digital platforms such as Zoom following an interview protocol (see Appendix A). Partnership approvals were secured before the interviews were conducted.

Member Checking

The interview data were further verified through the process of member checking. Member checking is when the researcher provides the interviewee with a synthesized collection of the data to verify that my findings truly mirror the participants' experiences. Given the opportunity to vet the data produced from interviews, participants can review

their own words to reduce mistakes and enhance validity (McKim, 2023). The process of preparing the synthesized interpretations of the transcripts and presenting them to the study participants for review was important as this strengthened the validity of the information produced in the study.

Semistructured Interviews

I used semistructured interviews to gather data for this study. Adeoye-Olatunde and Olenik (2021) described semistructured interviews as typically guided by protocols, which include scripted questions, follow-up questions, and probing prompts so that the researcher may collect all imperative data from the participant. The interviews in this study consisted of open-ended questions that were predetermined and presented to the participants before the interviews. In building rapport with the participants, open conversation and further questions were employed to elicit full descriptions of the participants' experiences. The interview protocol was reinforced with member checking to guarantee the accuracy of the collected interview data, as member checking allows the participants to elucidate their interview responses further.

Company/Government Publications

The main difference between company and government publications on infrastructure bidding corruption is that companies may choose not to disclose records, while government publications are typically published and obtainable as they are public records. Company records may be disclosed if the company was involved in prosecution by the DOJ. Bid-rigging in infrastructure construction projects has had long-standing

notoriety and has often been prosecuted by the DOJ, making these cases of bid-rigging and other forms of fraud a matter of public record.

Governmental publications provide a glimpse into the strategies stakeholders have used to overcome corruption in infrastructure construction bidding, which also provides information for this study. Government publications are numerous and well-documented with evidence, which creates an elaborate experiential lens of the corruption problem in bidding. By reviewing and coding government publications, themes emerge.

Archival Data: Documents/Archival Records

Documents and archival records provide a rich description of organizational mechanisms, whether these organizations are publicly or privately owned. Corporate documents and paperwork show the organizational culture, hierarchy, structure, and economic outlook of the business in which the organization participates, which would not normally be afforded to the researcher (Yang et al., 2022). The process of using organizational documents and archives also enhanced study triangulation, as data collection techniques led to cross-validation of information. Most government documents and archives are public records, which allowed for triangulation of data.

Data Collection Technique

Qualitative multiple case studies employ data collection using semistructured interviews, in-depth interviews, member checking, and multiple forms of document data analysis. Priya (2021) described qualitative research as a way of understanding the background and experiences of participants through interviews, member checking, and document analysis in a non-statistical manner. Delving into the participants' viewpoint of

the business problem is where a rich understanding is developed for a qualitative study, and this information can be properly collected from well-organized interview processes. Careful planning and strict methodological adherence led to the accomplishment of the study, and data were collected from participants and archival sources.

Priya (2021) described the nuances that participants add to a research study because of the finite information they can disseminate. Careful planning and precautions that stay within interview protocols yet accommodate the needs of the participants lead to a level of trust and a better willingness to provide vast amounts of information. Data collection related to experiences is the primary establisher of a qualitative study; participant assistance helps drive the data collection.

I acquired all organizational documents, archives, and publications electronically through all legitimate publications, as most are public records. Organizational documents and archives helped exploration of the internal workings to develop a better understanding of protocols and guidelines of how a business problem might be better understood (Priya, 2021). Through multiple sources of data that provide for triangulation, I was able to develop a rich understanding of the bidding process on infrastructure construction projects and how this process is corrupted. The exploration of these documents helped bolster data triangulation to produce anti-corruption strategies in the bidding process to protect infrastructure construction projects in the future.

My last step as a researcher was member checking of information collected from participants, which promoted the rigor of the study's findings. McKim (2023) discussed that member checking is a secondary method of confirming the trustworthiness of data

and promoting the legitimacy of the study. Member checking further enhances the study's findings, giving the participants further access to their statements to confirm the open-ended data upon which the researcher builds the results. I built rapport with the participants to enhance their experience, promoting openness for them to elucidate their ideas and return to fact-check and add their information comfortably.

Data Organization Technique

This qualitative study employed a multiple-case study design; therefore, it was imperative that I dissect the collected data and develop a coding procedure based on the cohesiveness of the characteristics. The deconstructing of qualitative data, organization of the data, and dissemination of the same data to complete a qualitative study must be methodically checked and reviewed (Donner, 2022; Priya, 2021). Looking toward the goal of diminishing corruption led me to follow the research question and the collected data collected to organize the final conclusions. I employed NVivo to explore patterns and incorporated the journal logs and Microsoft Word and Excel, and the entire process was protected with several layers of security.

Using data analysis in this qualitative multiple-case study helped illuminate information about complex governmental processes and possible strategic remedies for bid-rigging on infrastructure construction projects. The nuances of data analysis teach the researcher, who is the research instrument the significance of the data to help explore and construct the data into a study (Brailas et al., 2023). Data collection and analysis are imperative as this revolving process of data collection and analysis simultaneously sets to

build and establish parameters for the future direction of the study. Thematic analysis, as described by Yin (2015), aids as a guide to the process of data analysis.

Yin's (2015) five-phase thematic analysis process is a detail-oriented process for evaluating the data collected for a qualitative study. Thematic analysis is comprised of five phases: (a) compiling, (b) disassembling, (c) reassembling, (d) interpreting, and (e) concluding. Yin's process helped me evaluate and create themes from the data I collected for the study.

The result of the thematic analysis was a compiled database, through the use of NVivo, interviews, and peer-reviewed journal articles to familiarize myself with the problem of infrastructure bidding corruption. From the assembled database, I disassembled the data with coding and themes based on the research question. The data was then reassembled into patterns of behaviors for the detection of corruption. The reassembled data helped create a description for the completeness to further the needs of the purpose of the study. Interpreted data contributed to a rigorous analysis and conclusions related to effective new strategies for the diminishment of corruption in the infrastructure.

Thematic data analysis distinguishes patterns assembled from the collected data and illuminates reoccurring concepts. The five-phase thematic process helped me assemble patterns identified through data dissection and the development of themes. The data described in this study will consist of semistructured interviews, member checking, government publications, and peer-reviewed journal articles. Through thoroughness and

rigor and the use of data triangulation, I will disseminate the needed patterns to be collected for the proof and completion of this study.

Data collection from more than two frames of reference, also known as triangulation, produces a compendious point of view. Bans-Akutey and Tiimub (2021) noted that data triangulation assists with the development and testing of needed evidence based on repetitive facts and information to validate the construction of the study. My use of multiple data collection techniques of collecting data, such as semistructured interviews, member checking, governmental publications, and peer-reviewed journal articles, will help with triangulation for the rigor and validity of my study. Through this process of triangulation and thematic analysis, I intend to distinguish patterns and themes that lead to fraudulent practices in infrastructure bidding corruption and strategies to diminish this long-term problem.

The data I have collected, combined with semistructured interviews, five-phase thematic analysis, dissection, and study building, will generate the parameters and process of this study. Through the compilation of a database, disassembling the data, reassembling the information, creating an interpretation, and forming a conclusion for the development of this qualitative study (Yin, 2015). I employed NVIVO 14 and verbatim transcriptions of my semistructured interviews with my thematic analysis, but I will further explain the phases in detail.

Data were kept in both physical and digital means, using the recording platform called Otter. I kept notes of my interviews through both physical and electronic transcripts, plus original recordings such as on the abovementioned Otter. I also kept a

journal to record my own thoughts and sentiments about the study. Following the expiration of the required 5-year time period, I will destroy the data.

Compiling

Through the compilation of a database constructed with information from semistructured interviews, member checking, governmental publications, and peer-reviewed journal articles, I began the thematic analysis. Yin (2015) described the need for the building of a database for the study, and this database should be comprised of multiple sources such as interviews, journaling, journal articles, and NVIVO to produce a plethora of valid information. Data induction through perusing the collected journal articles and government publications and close dissection of the transcripts of the interviews assisted in the next few phases of the thematic analysis. After I developed a precise understanding of the data, I moved to coding in the second phase, the disassembling of the data.

Disassembling

The disassembling of the compiled data ensured themes for the production of coding developed from the research question. Themes within the data helped develop codes to break down the data established by the research question (Yin, 2015). The important themes developed within the study were further broken down into descriptive codes with words and phrases for the assemblage of the factors for the development of my study. Coding is used to analyze and summarize the results of data. The process of coding the original data produced more manageable sections of study information to be

reassembled to construct this qualitative research on the problem of infrastructure bidding corruption.

Reassembling

The coding from phase two produces groupings of data that allow the researcher to compare groups through patterns and comparisons for reassembling the information, which is the purpose of phase three. Yin (2015) ascertained that coded information in a qualitative study provides the researcher with a process for developing patterns and data comparisons for easier interpretation of the data. Overarching concepts begin to be illuminated by the researcher through the patterns and comparisons of the essential data. The essential data harvested by reassembling the data helps the researcher begin providing interpretations to complete the study.

Interpreting

The interpretation in this fourth phase is critical on the part of the researcher as this is the stage in which delicate interpretation has to be made of the data to produce validity and rigor in the thematic process for the study. Once patterns are identified and themes developed, these two factors must be aligned with the research question to find corresponding data, build case summaries, and transcribe analytic concepts (Yin, 2015). The importance of this process is that I used each phase to produce validity based on the proceeding phase, as each phase also provides a direct chain of evidence for developing themes and interpretations. Through repetitive examination, I reached the fifth phase, which involves developing an understanding of the themes and establishing how these themes provide resolutions to the research question.

Concluding

Yin (2015) proposed that in the last phase of thematic analysis, the theoretical framework with the corresponding findings should be used to produce an explanation based on literature and a theory-based solution. The exploration of information built with validity and rigor can now be constructed into an overarching presentation of the data, coding, themes, and patterns to produce the findings in answer to the original research question.

As a researcher, I endeavored to explore and gain an understanding of gaps in the current research as to the problem of infrastructure bidding corruption to illuminate anti-corruption strategies to diminish the problem and improve the use of tax-payers funds for future infrastructure projects and economic growth. Data analysis from this study was presented in this section. The semistructured interviews, member checking, government publications, and peer-reviewed journal articles have produced the data apportioned into themes to answer the research question. The table presented below highlights the research question and the imperative themes to answer the original question.

Reliability and Validity

Reliability

The establishment of reliability through rigor and uniformity of methodology was strengthened with the ability to replicate the results. Quantitative research is usually established with terms such as validity and reliability, but qualitative studies are more dependent upon rigor (Vu, 2021). The necessary elements of qualitative research are credibility, dependability, confirmability, and transferability, which promote

trustworthiness (Megheirkouni & Moir, 2023; Vu, 2021). My intent was to conduct this qualitative study using verbatim transcriptions of interviews, convert interviews into coding succinctly, and produce cohesion and legitimacy through triangulation to establish trustworthiness. The first of these components to prove reliability is credibility, as the bolstering of credibility is believability.

Validity

The concept of validity in a study is that the measurement matches other research studies in techniques and findings, all of the concepts covered through measurement, and equal findings in comparison to other valid degrees in different studies. The validity of a study is explored and established based on external and internal validity, strictness of the procedures and outcomes, and construct validity and the foundation of the study (Schweinsberg et al., 2023; Vu, 2021). As a researcher, I followed all processes, including the interview protocol, to enhance the validity of this study. Reliability and validity help further develop dependability, credibility, confirmability, and transferability.

Dependability

Dependability is an attribute that is considered reliable or trustworthy, and dependability in a study is the rigor that establishes trust (Ahmed, 2024). Fervent documentation and establishing an audit trail bolster dependability in qualitative research (Ahmed, 2024; Vu, 2021). Emphasizing the data collection process, analysis process, and ability to audit the research design enhances the ability to increase dependability. Sources and methodology produced through triangulation prove the value of the data. With the

development of dependability, confirmability, which is being able to replicate the study, has to be confirmed.

Credibility

Credibility is typically understood as believability based on the participants' perspectives, based on member checking, triangulation, and other qualitative credibility processes (Ahmed, 2024). Data credibility is achieved through verbatim translations, data saturation, triangulation, and member checking. (Singh et al., 2021; Vu, 2021). The process of interviewing participants follows strict interview protocols, with verbatim transcription of the interview followed by member checking, as this ensures the credibility of the information collected. I interviewed participants and transferred the data verbatim for coding to help reach data saturation. Interviews, coding, categorizing, and data saturation elevated the study's rigor, which also established the dependability or trustworthiness of the study.

Confirmability

The importance of confirmability is the ability to replicate the study through transparency, as is the fact that the collected data is free from researcher bias and can be confirmed by other researchers conducting similar studies (Adler, 2022). The researcher needs to demonstrate a nonpartisan and an absence of bias in the delivery of the data collected and presented in a study, and the study aligns with the findings of other studies (Ahmed, 2024; Singh et al., 2021). Employment of analytical tools, following the qualitative process, and strict adherence to ethics will allow other researchers to peruse and replicate my findings. As a researcher, I had the ability to question different

perspectives, and I used triangulation and member checking of interviews to establish confirmability. The ability to replicate because of unbiased accuracy allows solid development of the final stage of transferability.

Transferability

A study is considered transferable when the information can be extended to assist with understanding other problems or conditions (Adler, 2022). Researchers use well-defined illumination of details within a study through focused data collection bolstered by interview protocols that allow researchers and readers to apply the research and findings to other studies or situations (Ahmed, 2024; Vu, 2021). This study's findings can be serviceable because of the analysis techniques using discoveries through interviews, data triangulation, and adherence to theories in building of this project. Transferability is essential; therefore, I used triangulation in data collection and dissemination, with coding for the final analysis of the data in this study.

Section 4: Findings and Conclusions

The purpose of this qualitative multiple case study was to identify and explore the effective bidding process improvement strategies created by the U.S. agency leaders and bid on by the different managers of corporations in the construction industry. The problem addressed in this study was that the bidding process created by some U.S. agencies' leaders and bid on by the different managers of public corporations in the construction industry is flawed and leads to project cost overruns in infrastructure projects, thereby reducing economic growth, wasting taxpayer dollars, and lowering government tax receipts. This study was guided by the following research question: What effective strategies do U.S. agency managers use to mitigate fraud in the government bidding process to increase economic growth, reduce wasted taxpayer dollars, and increase government tax receipts?

The research findings revealed that there are several causes of bidding corruption in the U.S. construction industry. The participants mentioned psychological and cultural factors that contribute to corruption. The psychological factors include greed, self-interest, desire to succeed, ethical fading, fear of failure, self-justification, and thinking of getting away with it. The cultural causes of corruption include an organizational culture that accepts or encourages corrupt practices and disregards ethics. The participants also reported that another cause of bidding corruption in the construction industry is a combination of pressure, project complexity, insufficient oversight, and desire for monetary gain. To mitigate these causes of corruption in the bidding process, the participants identified a number of strategies. The first one involved improved oversight

and the use of technology to increase transparency, efficiency, and security of the bidding process.

The second effective strategy comprised punitive actions, enforcement mechanisms, and whistleblower protections. Providing ethics training and capacity building to government staff, contractors, and shareholders was another strategy. Lastly, the participants mentioned the need for an improved regulatory framework, rotating assessors, and use of independent auditors as other effective strategies. In this section, the findings from the study are presented. These are followed by a discussion of the application of the findings to professional practice and implications for social change. Next, recommendations for action and further research are provided. Reflections are also included in this section. The section ends with a conclusion.

Presentation of the Findings

Research Question

In this study, the research question was the following: What effective strategies do U.S. agency managers use to mitigate fraud in the government bidding process to increase economic growth, reduce wasted taxpayer dollars, and increase government tax receipts? Six main themes and several subthemes emerged from the analyzed data to address this question. The main these were as follows: (a) psychological and cultural factors; (b) combination of pressure, project complexity, insufficient oversight, and desire for monetary gain; (c) improved oversight and use of technology to increase transparency, efficiency, and security of bidding process; (d) punitive actions, enforcement mechanisms, and whistleblower protections; (e) ethics training and capacity

building; and (f) improved regulatory framework, rotating assessors, and using independent auditors. The main themes described general patterns in the data. Subthemes were more specific patterns that appeared within a theme. Each theme in this study has at least two subthemes. Table 2 provides a summary of the research question and corresponding themes.

Table 2*Research Question and Corresponding Themes*

| Research question | Theme | Frequency in the data set ($N = 10$) |
|--|---|--|
| What effective strategies do U.S. agency managers use to mitigate fraud in the government bidding process to increase economic growth, reduce wasted taxpayer dollars, and increase government tax receipts? | Theme 1: Psychological and cultural factors | 10 |
| | Theme 2: Combination of pressure, project complexity, insufficient oversight, and desire for monetary gain | 10 |
| | Theme 3: Improved oversight and use of technology to increase transparency, efficiency, and security of the bidding process | 10 |
| | Theme 4: Punitive actions, enforcement mechanisms, and whistleblower protections | 10 |
| | Theme 5: Ethics training and capacity building | 10 |
| | Theme 6: Improved regulatory framework, rotating assessors, and using independent auditors | 9 |

Note. Six themes addressed the research question.

Theme 1: Psychological and Cultural Factors

The first theme revealed that corruption in the infrastructure construction bidding process is largely caused by psychological and cultural factors. Data from all 10 interview participants, who were U.S. agency managers, supported this theme. This theme had two subthemes: psychological factors and cultural factors.

Subtheme 1.1: Psychological Factors

Several psychological factors contribute to corruption in the infrastructure construction bidding process. P2 stated that some people engage in corrupt practices because they think they will not get caught. They also do it because they believe that other people are also doing the same thing. There are no ethics to prevent the misconduct. P2 mentioned the following:

Psychologically, we can understand why most people would be involved in corruption – they think of getting away with it and why shouldn't they if there is no one to monitor them and the possible gains from the act outweigh the potential threats. This is where rationalization comes in – people engage in self-justification such as “everyone is doing it” or “this is how the system is.” In certain circumstances, behavior that is seen as inappropriate behavior for some, becomes a norm for the reason that no ethics are available to impede the unethical practices and because the business offers stiff competition and contracts that are so rich it cannot ignore the unethical practices.

P7 talked about self-interest as a psychological factor. P7 stated “self-interest is a very effective motivating factor — it should be added. No matter who is a bidder, there are as many as bribes and kickbacks which make this awarding process very hard.” This participant added “this is particularly true where those involved don't believe the probability is high that they will be caught.”

P3 talked about greed. According to P3, “one primary psychological factor is greed – the pursuit for money can push people or organizations to-do unscrupulous

works.” This participant added that “\n\nin construction, where multi-million-dollar contracts are awarded, it is easy for government officials or contractors to play loose with the laws because the money is too tempting.” P3 also mentioned the fear of failure as a psychological factor. According to P3, company officials may resort to corrupt practices to win a contract because they are afraid of failing. They will do whatever it takes to win a contract, and they do not accept failure. P3 said

another psychological aspect is called the fear of failure. Within the same context, even becoming a small contractor and winning a major contract must and should grow business, for some suppliers this may rhyme the wrong end of the stick. This kind of circumstance needs a shove and, most of the time, some of the companies may end up resorting to unscrupulous practices to get a contract such as underbidding or exaggerating their abilities to out win their competitors. In their eyes, the ends justify the means and when survival is the objective, then anything goes as far as the means are concerned.

P6 talked about the desire to succeed because of the intense competition. Massive infrastructural contracts are typically very risky. Company officials may resort to corruption to win the bid, and they justify their corrupt practices, a concept known as ethical fading. According to P6,

the first major psychological determinant is the desire to succeed and secure contracts due to cutthroat competition in the sector. Construction projects, especially the largescale infrastructural contracts are very often with lots of risks, which are sometimes worth millions. In many organizations, this financial

pressure can result in ethically questionable behaviors, such that the organization feels the need to cheat or bend the rules in an effort to get a bid. This is why this sense of urgency often precedes poor judgment because people can justify any dishonest things they do because everybody seems to be doing it. This kind of rationalization known as “ethical fading” is a distributive psychological process through which persons override ethical considerations in the guise of realism.

P7 also mentioned ethical fading as a cause of corruption in the bidding process. Individuals get used to engaging in corruption and corrupt practices are seen as normal. Corruption is not condemned. P7 noted

and something called, “ethical fading” — which is people getting used to certain behaviors and forgetting they’re causing offense with moralizing over it. In this case, when the shoving of bribery around and doing nothing, it wears a little too worn, then a large exchange of bribery must be normality not revulsion.

Subtheme 1.2: Cultural Factors

The second subtheme indicated that various cultural factors play a role in the occurrence of fraud in the infrastructure construction bidding process. According to P3, organizational cultures in some sectors do not view corrupt practices as bad. In fact, such practices are considered necessary. Giving and receiving bribes is seen as a usual form of doing business. P3 noted

there are cultures in regions or in sectors who regard corruption as a necessary norm in business. Some have absolutely no qualms if bribing, giving kickbacks, or colluding to win a contract – it is just part of doing business. Such apparent

“business as usual” practices breed a...uhmm...a culture where the precepts of ethics become optional and are even considered naive. Such norms become very difficult to uhm...to transform, especially in countries or regions where the rule of law is weak or there is massive botanical decay.

Similarly, P6 reported that some corporate cultures permit corruption. People in such organizations do not feel bad about engaging in corruption. Such cultures are not easy to change. P6 noted

in the cultural level, there are probably some industries or even definite organizations that at best indulge in unethical practices. If corruption or shortcuts are permitted—or indeed, encouraged—it creates a climate in which people feel they must cut corners if they are to be able to compete. For instance, there are some instances where firms will have a mutual understanding that they will cover or fix each other’s bids or pay “expedite fees.” Gradually what emerges are strong cultural practices that become hard to change even with legal intervention against unethical practices.

P9 spoke about the culture of collusion. Such a culture can develop gradually in an organization or industry. Collusion may be viewed as a norm in doing business. P9 stated

another factor is what I’d call a culture of uhm... collusion that can develop over time. In areas and industries where networks are densely populated, one may feel the heat of competition to engage in corrupt activities. For example, if contractors are told that bid rigging is the norm, they are likely to believe that there is no

choice but to go along with it. This practice might strengthen the mindset that collusion in corruption is part of business; hence the ethical vices become ingrained in the society and the organizations in the long run.

Theme 1 in Relation to the Conceptual Framework

The finding that corruption in the infrastructure construction bidding process is a result of psychological and cultural factors is consistent with the conceptual framework, FTT. This theory focuses on three key components: motivation/pressure, opportunity, and rationalization (Mangala & Soni, 2023). Motivation or pressure is the incentive to engage in misconduct (G. M. Y. Owusu et al., 2022). The current study found that the incentive to commit fraud comprised self-interest, greed, desire to succeed, and fear of failure, which were psychological factors. The findings of this study are in line with the theoretical framework.

The second component of the FTT, opportunity, suggests that an individual is willing to commit fraud if they feel that they can do it without getting caught. This is because they believe that the internal controls will not detect any fraud or discrepancies (Monteiro et al., 2022). A lack of properly documented processes, a lack of supervision, and poor accounting policies make it easier for people to commit fraud (Monteiro et al., 2022). The corporate culture of an organization is especially significant. If the culture and values of a company do not encourage or promote honesty, integrity, and ethics, members of staff will be more likely to engage in dishonest acts and commit fraud (Tjahjani et al., 2022). In the current study, I found that a culture that accepts corruption was one of the

causes of corruption; therefore, the findings are consistent with the theoretical framework.

Rationalization, which is the third component of the conceptual framework, is how people justify their motivation and misconduct (Soneji, 2022). In the current study, I found that people justified committing fraud because of the perception that corruption was the inevitable norm. P4 stated “as all others have bent the rules in order to gain a majority of competitiveness in a bid market, it is the inevitable norm.” People also rationalize their corruption because they believe that others are doing the same thing. As P6 stated, “people can justify any dishonest things they do because everybody seems to be doing it. This kind of rationalization known as ‘ethical fading’ is a distributive psychological process through which persons override ethical considerations in the guise of realism.”

Theme 1 in Relation to the Literature

Researchers have reported that social-cultural factors help rationalize fraudulent behaviors, resulting in bid-rigging, bribery, collusion, embezzlement and other misconducts (Monteiro et al., 2022; Yun et al., 2015). Fraudulent behaviors like collusion, bid-rigging, and bribery are considered acceptable behaviors in some cultures, and bribes are even promoted to make sure the construction project is completed (Machado et al., 2021; Monteiro et al., 2022). The findings, as demonstrated by the first theme, confirm what has been reported in previous studies, that is, that organizational cultures that permit or encourage corruption were some of the causes of corruption in infrastructural contracts.

In summary, the first theme demonstrated that corruption in the infrastructure construction bidding process is primarily caused by psychological and cultural factors. Some of the psychological factors include fear of failure, desire to succeed, greed, self-interest, and thinking that they will not get caught. Conversely, the cultural factors include having a corporate culture that permits corruption, and organizational leaders encouraging corrupt practices. The theme was supported by data from all 10 interview participants. This theme is consistent with the theoretical framework, namely the FTT, as well as with the existing literature.

Theme 2: Combination of Pressure, Project Complexity, Insufficient Oversight, and Desire for Monetary Gain

The second theme indicated that corruption in the infrastructure construction bidding process is also brought about by a combination of project complexity; inadequate oversight and internal controls; desire for financial gain; and pressure, including political pressure, competitive pressure, and pressure from shareholders and upper management. The theme was supported by data from all 10 participants. The second theme has four subthemes. These are discussed below.

Subtheme 2.1: Pressure

According to the participants, financial pressure, political pressure, competitive pressure, and pressure from the upper management and shareholders contributed to the occurrence of corruption. P6 spoke about financial pressures as a cause for corrupt practices. P6 stated, "In many organizations, financial pressure can result in ethically

questionable behaviors, such that the organization feels the need to cheat or bend the rules in an effort to get a bid.”

P2 talked about pressures to engage in corrupt practices. There might be political pressures. Managers may also face financial pressures and time limits. P2 stated,

I think the only thing I'd add is that sometimes the pressures to cut corners are exerted from more than one angle. Such loading as political pressure, financial benefit and even time limits tend to create situations where unsatisfactory conduct appears to be more probable.

This participant also talked about pressure from upper management. Shareholders may also exert pressure that causes company leaders to engage in corruption. This is particularly common in the construction sector, which is very competitive. P2 stated,

Other contractors may tactfully be managed by upper management or shareholders to win contracts at any costs. Such pressure can also tend to lead one towards unethical conduct which they may explain that they are simply doing what is required in order to remain relevant, especially in a very competitive industry like construction.

P3 remarked that bidders often face competition pressure. There is stiff competition in the construction industry. To win a contract, many companies resort to corruption. P3 noted,

The second driver is competition pressure. As in any industry, the construction industry is full of challenges, but competition challenges appear to be fiercer. For a small company, clinching a major deal or a contract can be a blessing or a curse.

Efforts to win contracts have led some contractors to cut corners, collude in unethical practices, and lie about their capability simply to win contracts. There is no doubt, there is such a pull: without such actions, it's likely that they will not be able to deliver their services as they intend to.

P4 commented about pressure from the competition. When bidders are numerous, some of them may want to engage in corrupt practices in order to get the contract. Officials in such companies hold the belief that without participating in bribing or collusion, they are unlikely to win. P4 stated,

Competitive pressure is another factor. In an environment in which there are many contractors chasing too few contracts, there is likelihood that contractors will want to bribe, collude or manipulate the bids. Companies may believe that unless they actively and willingly corrupt themselves, they will be out-competed for the jobs by other companies that are willing to be corrupt. This brings a predictable situation where those practices of corruption become common as a strategy of coping.

P10 mentioned intense competition as one of the pressures that can motivate firms to engage in corruption. A bidder may believe that giving bribes may give them an edge over other bidders. Competition from other bidders often creates a lot of pressure. P2 noted,

The main source of corruption in bidding is usually financial considerations accompanied by stiff competition in the provision of the contract. This level of pressure creates a high incentive for companies to engage in unethical business

practice if they are in a belief that this will provide them the competitive advantage they desire. For instance, bid-rigging which contracted bidders engage in for instance where tenders collaborate with an intention of prejudicing bidding and ensuing contract lets, are informed by the belief that prevailing unpredictability in bidding needs be tamed.

P8 spoke about market pressure. For some companies, losing a contract may negatively affect their survivability. Officials of such firms believe that engaging in fraud to win a contract is the only way to guarantee the future existence of the organization. P8 stated,

An additional motivation factor is the market pressure. It is very common that a construction company is built in an environment where there is a cutthroat competition whereby winning or losing a few contracts determines the market position of the company. For companies with low margins of profit on contracts, it is a question of existence to get or win government contracts. The stress may have some justificatory effects for some firms who wish to cut ethical corners as they think it is what all their rivals do.

Subtheme 2.2: Project Complexity

The participants mentioned complexity of the project as another cause of corruption in the infrastructure construction bidding process. Corruption tended to be more prevalent in large, complex, multibillion-dollar infrastructure projects than in smaller projects. According to P1, the technicalities or complexities of large projects may create room for fraud and malpractices. P1 remarked, “Moreover, given the technical

character of certain tenders, the thorough understanding of the particulars by the auditors or the respective supervising authorities can also be compromised, enhancing the existing ability of the perpetrators of the scheme to leave loopholes.”

P8 mentioned that contracts for large infrastructure projects are often complex. This makes them susceptible to corrupt practices. The risk of fraud is particularly prevalent in the subcontracting provisions. P8 commented,

The processes of bidding on infrastructural projects is indeed multifaceted and quite difficult and most importantly, it is vulnerable to fraud and corruption. Frustrations are caused by the level of complexity and the value of such projects... In such an environment, there is usually intense competition to win these contracts, heightening the risk of ordinary fraud. Another setback also is the fact that these projects are usually tedious people have many stages and are also time consuming because they have several people or even businesses involved which are the subcontractors’ vendors and even agencies. The interdependence of all these components creates room for abuse, particularly in the subcontracting provisions. It is not the least surprising that the main contractor is able to be awarded the contract but proceeds to use inappropriate methods in the selection and negotiation of subcontractors. For example, there might be a tacit understanding between the main contractor and a certain subcontractor to raise the charges so that the qualifier subcontractors can be employed in return for a commission.

Similar views were shared by P9 who reported that largescale contracts are more prone to fraud and corruption. Misconduct is less frequent in smaller contracts. According to P9, “Corruption is more likely for large scale infrastructure projects because of their complexity.”

Subtheme 2.3: Insufficient Oversight and Internal Controls

The lack of adequate oversight including supervision, internal controls, and checks and balances was also mentioned as a major cause of corruption in the infrastructure construction bidding process. P2 mentioned the lack of sufficient internal controls as a factor that contributes to corruption. Sufficient controls should be put in place. Adequate checks also need to be developed. P2 noted,

It is not always as a result of some bad motives – it is at times simply because the system is weak and does not have adequate controls or checks. That is the reason why there should be constant evolution of the process.

According to P1, “The root causes of corruption during the bidding process can be multiple, [including] a lack of sufficient supervision.” P2 added that if oversight is not adequate, unscrupulous companies or individuals may attempt to engage in fraud. People may also attempt to engage in corruption if they realize that the potential ramifications are not very severe. Thus, corrupt practices should not go undetected. This participant said,

One of the first explanations is insufficient oversight or weak implementation.

Firms or persons will tempt the chances [if] the system is not vigilant enough to check on their actions or sufficiently severe the consequences of corrupt practices.

Everyone understands that corrupt practices can be unnoticed and uncensored, and they [create an] environment where unprofessional practices can be accepted.

P3 mentioned “institutional weaknesses” as causes for corruption in the infrastructure construction bidding process. When bidders realize that rules are usually not properly enforced, they are likely to engage in corrupt practices. Such bidders are not afraid of getting caught. P3 said,

This brings us to the third reason constituting institutional weakness. The situation in which rules are poorly defined and poorly enforced leads to broadened scope for corruption. Umm...the logic behind this is that contractors feel invincible thinking that uhm...that they can commit any malpractices without a fear of being held accountable, and even if like they are apprehended, they will suffer minimal consequences, you know? In certain instances, some companies might have the perception that bribery is their only option in areas or assets perceived to be corrupt.

Subtheme 2.4: Desire for Monetary Gain

Financial gain or reward was identified by all 10 participants in this study as one of the main causes of corruption in the infrastructure construction bidding process. P1 talked about the desire for financial gain as a reason for engaging in corrupt practices. Contracts for infrastructure projects typically involve large amounts of money. Many companies may be willing to cut corners to win such contracts. P1 reported,

The root causes of corruption during the bidding process can be multiple, but the most general include the desire for a financial reward. One reason why a company

would violate ethical standards in the award of contracts is because of the pursuit of money. Large contracts characteristically exist in the infrastructure sector, and there are high margins for contractors. If a firm can gain a major contract by illegal means, the returns will be way higher than the risks even if the chances of being caught appear slim and this is experienced more with firms which are financially distressed or those which are competing for contracts in a highly contested industry.

Likewise, P2 mentioned financial gain as a major cause of corruption in the infrastructure construction bidding process. Some organizations might be experiencing losses and winning a lucrative contract might bring them back to profitability. The leaders of such firms may therefore be tempted to engage in misconduct and cut corners. According to this participant:

There are a number of causes or motivations that may encourage people to exhibit corrupt practices in the bidding process. One of the most common is financial gain. In many cases, people or organizations look within themselves and know that if afforded an opportunity to win a large contract there are many opportunities available for dishonest practices like bribing officials, receiving kickbacks, or more. The temptation of winning a contract which is worth millions of dollars is appealing in cases where an organization is experiencing losses or attempts to diversify its portfolio at a fast pace.

Similar views were shared by P3. According to P3, “A few major pushes influencing the bribery in the bidding process can generally be highlighted. First is the

cover for financial benefits.” P3 added, “Financial benefit [is] a reason for greater corruption in the bidding processes.”

Theme 2 in Relation to the Conceptual Framework

The findings that corruption in the infrastructure construction bidding process is caused by a combination of pressure, project complexity, insufficient oversight, and desire for monetary gain is consistent with the FTT. The first component of this theory, motivation or pressure, denotes the incentive to engage in misconduct. In this study, it was found that the incentive to commit fraud included pressure from the competition, shareholders, and upper management. The desire for financial gain was also an incentive. Therefore, the findings of this study are in line with FTT.

The second component of the FTT, opportunity, suggests that an individual is willing to commit fraud if they feel that they can do that without getting caught. This is because they believe that the internal controls will not detect any fraud or discrepancies (Mangala & Soni, 2023). The researcher in this study found out that insufficient oversight and controls were some of the causes of corruption. The findings showed that a lack of properly documented processes, a lack of supervision, and poor accounting policies make it easier for people to commit fraud; hence the findings are consistent with the FTT conceptual framework.

Theme 2 in Relation to the Literature

The second theme confirms what has been reported in previous studies. Researchers have reported that infrastructure projects that are largescale and very complex are more prone to fraud and misconduct (Baer, 2023; Rashidi et al., 2023).

According to Monteiro et al. (2022), construction corporations consistently engage in bid rigging on infrastructure projects owing to the lack of detection and the weak enforcement of penalties. Similarly, Abdou et al. (2022) reported that without effective oversight in government agencies, the bidding process is very susceptible to corrupt practices such as bribery and bid-rigging.

In summary, the second theme showed that corruption in the infrastructure construction bidding process is due to a combination of factors. These include the complexity of the project since more complex and multifaceted projects are more vulnerable to corruption, inadequate oversight, and supervision, desire for monetary gain, as well as political pressure and competitive pressure. There is also pressure from shareholders and the upper management to win a contract by any means necessary. Data supporting the theme were derived from all 10 participants. The theme is in line with the FTT framework and extant literature.

Theme 3: Improved Oversight and Use of Technology to Increase Transparency, Efficiency, and Security of Bidding Process

As per the third theme, the participants reported that the mitigation strategies for corruption in the infrastructure construction bidding process entail improved oversight as well as the use of technologies such as data analytics, predictive analytics, artificial intelligence, e-bidding platforms, and e-procurement systems to increase transparency, effectiveness, efficiency, and security of the bidding process. All the 10 respondents contributed to this theme. The theme has two subthemes: improved oversight and controls, and use of technology. The subthemes are discussed below.

Subtheme 3.1: Improved Oversight and Controls

A notable strategy for mitigating corruption in the infrastructure construction bidding process is through the use of improved oversight and internal controls. P6 talked about the need to increase supervision. Bidders should be required to disclose all information. Doing so will help to improve transparency. P6 said,

To tackle these root causes it entails other strategies. First, enhancing supervision and disclosing the information during all the bid stages can influence the eradication of the lack of transparency that creates an environment in which corrupt activities may remain invisible. For instance, real-time monitoring tools and open-bidding website and other similar structures can facilitate who is bidding, what is being offered, and how the contract is formed and awarded.

Similar views were shared by P1. This participant noted, “Improving supervision and audit review gives a chance to ascertain the existence of corruption in order to discourage such activities.”

According to P4, internal controls are needed to help curb corruption in the infrastructure construction bidding process. There should be internal controls not just in government agencies, but in private companies as well. Doing so will help to detect corruption early and stop it. P4 said,

These types of issues can also be resolved by governing better the internal borders of control within governments as well as addressing the private ones. Introducing early signs of corruption by not letting them be active through reporting, auditing, and compliance can also be a good step forward.

P4 also talked about the need for putting in place necessary checks and balances. P4 stated, “Putting more checks and balances for public officers can limit the amount of resources that people can misuse according to their discretion.”

P7 spoke about internal controls and audits as effective measures for mitigating corruption. P7 said, “Controls and audit systems may be effective. Agencies have incorporated costs forensic accounting during the bidding and contracting processes in order to catch particular aspects of risk.” P7 added, “Through audits, improvements are made in the way financial claims are scrutinized, and due diligence is exercised at the beginning, thus reducing the chances of such fraudulent acts occurring in the first place.”

Subtheme 3.2: Use of Technology

The other equally important strategy for mitigating corruption in infrastructure construction bidding process is to adopt the use of technology. P2 mentioned that technology can be utilized to manage the entire bidding process. Through the use of technologies, transparency in the bidding process can be enhanced. Efficiency is also improved. P2 said,

Certainly, we have been more adaptive to technology and its application in managing and monitoring the bidding process. In the last ten years, there has been a clear trend towards adopting more electronic means that improve transparency and efficiency. For instance, e-procurement systems support such processes in various federal and state institutions today. Such systems automate the entire bidding procedure from the advertisement of tender notice to the receipt of tenders to ensure that this process is traceable, time-bound as well as auditable.

P10 commented that modern technology can be used to detect fraud in the bidding process. Specifically, advanced analytics and artificial intelligence can help to detect signs of collusion or bid rigging. This is because substantial quantities of data can be analyzed speedily and with high accuracy. P10 said,

Current AI and advanced analytics technology [can aid] the bidding process when it comes to fraud detection and risk assessment. This is one of the biggest benefits of AI – the capacity to process large amounts of data significantly faster and with higher precision compared to auditors. During the bidding process, the algorithms can scan bids and review bid history, analyzing contracts already awarded, and recognize certain patterns that point at collusion or bid-rigging schemes. For instance, if two or more contractors have a sequence of winning several projects in turns, that can be noticed and marked by AI as rather suspicious.

Likewise, P4 mentioned that AI technology is vital in fraud detection. P4 reported, “AI technology could scan millions of bidding activities and find out if there are colluding bidders, such as identifying bids which are the same submitted by different companies, and certain companies claiming contracts at odd frequencies.”

P6 spoke about the use of blockchain technology in reducing corruption. According to her, this technology is capable of enhancing transparency in the bidding process. It also improves the security of the bidding process. P6 said,

Blockchain had the possibility of improving transparency as all the procurement activity would be recorded in a transparent and secured manner. In this case, entries in the bidding process ranging from the submission stage, through the

award stage would be recorded in the blockchain ledger and any subsequent changes would be easily identifiable.

P3 reported that the shift to electronic procurement (e-procurement) systems has proved to be effective in mitigating corruption. Such systems secure the bidding process. The bidding process becomes tamper-proof. According to P3:

One of the notable measures that has been effective is the shift to uhm...to the electronic procurement systems also known as e-bidding. Such systems automatically capture a digital log of all the events within the bid process and therefore it is difficult for anyone to tamper with any and all submissions after they have already been made.

Theme 3 in Relation to the Conceptual Framework

The theme is consistent with the FTT framework. The three components of the FTT, namely pressure, opportunity, and rationalization, assist in identifying and exploring strategies that government agencies can use to improve internal bidding processes, protocols, and regulations to mitigate fraud in the U.S. agency bidding and awarding process. Since insufficient oversight and controls was identified as one of the causes of corruption in the bidding process in the construction sector, as it provided an opportunity to commit fraud in line with the FTT framework, one of the strategies for enhancing the bidding process is to improve oversight/supervision and internal controls. The use of e-procurement systems, artificial intelligence, data analytics, and other technologies can be used to enhance oversight of the bidding process (Soneji, 2022).

Theme 3 in Relation to the Literature

The third theme also confirms what has been reported in previous studies. The use of specific processes, protocols, and internal controls during the process of bidding for infrastructure construction projects may decrease the risk of corruption and increase the economic growth of the country (U.S. Securities and Exchange Commission, 2023). Innovation in improving internal controls in the bidding process and increasing regulatory oversight is integral to decreasing the issue of bid rigging (The White House, 2021). Similarly, Bhagat and Jha (2023) reported that having clear policies for selecting vendors helps government agencies to prevent corruption in the procurement process. Strengthening oversight and accountability of the contractors, consultants and subcontractors is also integral in the protection of public integrity and prevention of corruption (Bhagat & Jha, 2023). Busu and Busu (2021) stated that digitalizing the procurement process helps to strengthen internal anti-corruption controls and detection of integrity violations.

Overall, the third theme revealed that corruption in the bidding process in the construction sector can be mitigated through improved oversight. There is a need for increased supervision, audits, and more checks and balances. The corruption can also be mitigated by using technologies such as data analytics, predictive analytics, AI, e-bidding platforms, and e-procurement systems. The use of technology will increase transparency, effectiveness, efficiency, and security of the bidding process. Data from all the 10 respondents supported this theme. The findings are also in line with the FTT framework. The use of technology and improving internal controls and oversight helps to decrease

opportunities for committing fraud. The theme also confirms what has been reported in previous studies.

Theme 4: Punitive Actions, Enforcement Mechanisms, and Whistleblower Protections

The participants reported that punitive actions and enforcement mechanisms such as monetary fines, penalties, jail terms, debarment, and suspension were effective strategies in mitigating corruption in the infrastructure construction bidding process. They also talked about promoting whistleblowing and protecting whistleblowers. Data from all 10 participants contributed to this theme. The theme had two subthemes: punitive actions and enforcement mechanisms, and whistleblower protections. These are discussed below.

Subtheme 4.1: Punitive Actions and Enforcement Mechanisms

According to the participants, several punitive actions and enforcement mechanisms are effective in mitigating corruption in the infrastructure construction bidding process. These include monetary fines, penalties, jail terms, suspension, debarment, return of improperly gained money, and civil sanctions.

P1 commented about huge financial fines and incarceration for those found guilty of corruption. Perpetrators can also be suspended. Debarring is another effective strategy. This participant said,

A combination of punitive actions and enforcement mechanisms have been put by the Government to deter and punish corruption in the bidding processes. These mechanisms operate at the federal agency level and vary with the commission of

the offense in terms of gravity. Where the most severe level that exists is where individuals and companies are found guilty of corruption. This leads to uhm...to hefty fines as well as imprisonment...Some of the criminal activities are not only punished through jail terms but other measures can be employed such as administrative type of penalties like suspension and even debarring.

P2 mentioned also financial penalties and imprisonment as mitigation strategies.

This participant identified seizing of property as well. Such strategies are effective in mitigating fraud. P2 said:

There are a number of punitive measures and enforcement mechanisms to deter and punish fraudulent activities. To begin with, let's assume a contractor is found engaging in any of the corrupt activities such as wining a bidding contest, getting out hand, or engaging in fraudulent activities – then they are likely to suffer both criminal and civil litigation. This includes monetary penalties, incarceration, and in some extreme situations where assets may be seized.

P3 talked about disqualifying the companies found guilty of engaging in corrupt practices. Such companies are also blacklisted from bidding in future contracts. This strategy has been proven effective in preventing fraud. P3 stated:

Corruption is a serious problem for the government and there are measures and enforcement actions that are undertaken to deal with the same. One of the most immediate actions taken is the disqualification of a bidder. Contractors that indulge in corruption practices such as bid rigging, submission of fake documents and offer of bribes lose the bid for the projects they intend to build. This is usually

followed by blacklisting where the company is banned from participating in bidding for any other government contract for a specified duration and sometimes indefinitely.

P4 talked about debarment. When a company is debarred, its reputation is tarnished significantly. The company will be unable to bid on future infrastructural contracts for a number of years. P4 stated:

Debarment is also of primary importance because it can affect a company's image or even its credibility in the long run, if the company decides to do business again. A contractor, for example, who has been found to collusively bid will never be able to bid for specific projects over a period of time which simply takes the contractor out of the market.

Likewise, P5 spoke about debarment and suspension. Once debarred, a company's reputation is damaged. The organization will also be impeded in its ability to generate revenue. P5 said:

A second powerful enforcement mechanism: suspension or debarment from future government contracts. A firm will be barred from entering its subsidiaries or for some more period of a given time or life of the firm if a contractual firm is found out or convicted of any form of corruption. Not only does debarment prevent a firm from generating revenue in its current period, but it also reduces future potential earnings and business prospects...if a construction firm suffers from a corruption scandal pertaining to federal projects, it will most likely be close to the corner because of reputational concerns in bid to private contracts. The result of

debarment is often very effective in preventing contract violation because any firm that does violate contracts suffers the loss of possibility of winning contracts on the Federal level.

Likewise, P6 talked about suspension and debarment. P6 said, “One such enforcement mechanism is suspension and debarment of contractors and grantee organizations. This includes the act of suspending or debarring contractors from carrying out business with the government.” P6 added, “The suspension and debarment process works since it is able to eliminate future violations and also inspire corporations to abstain from misconducts in order not to have complete bans on any work concerning the government.”

P10 spoke about fines and criminal charges. Perpetrators can be prosecuted and charged in court. The fines are usually severe. This participant mentioned,

Multiple effective sanctions to prevent corrupt practices and negative actions from those involved in the bidding process have been established. For instance, the federal government has severe repercussions in laws such as the Financial Conduct Authority (FCA) and Foreign Corrupt Practices Act (FCPA), which focuses on fraudulent claims and international bribery, individually. Originally, under these laws, when a contractor is convicted of the false claims or bribery, he/she is subjected to fines and lawsuits. The FCA for instance does permit provisions that enable people to report others, the violation of specific ethical standards which can result in investigations and punitive measures.

P1 mentioned civil sanctions. The perpetrator is required to return the money it gained improperly. This strategy has been demonstrated to be an effective strategy in mitigating corruption. P1 said,

There are also civil sanctions, although this is not something that is applied in many instances by the government. There are also times when, instead of making you criminal allegations, the civil route is taken to obtain back embezzled or fraudulently obtained funds. For example: a plaintiff might sue a contractor for breach of contract after discovering that the contractor incorporated excessively high indirect costs or inflated costs in the course of executing the contract and the government may intervene to sue.

Subtheme 4.2: Whistleblower Protections

The participants spoke about promoting whistleblowing and protecting those who blow the whistle on corrupt practices. P1 mentioned that an environment that promotes whistleblowers should be created. A whistleblower also needs to be protected when they reports about corrupt activities. Doing so will help to mitigate corruption in the infrastructural bidding process. P1 stated,

Finally, what is required is a change in the values of individuals both in the civil service and private sector, once this is achieved corruption will tend to decline. This entails fostering an environment where ethics are upheld and whistle-blowers are promoted, protected for coming forward to report misconduct.

P3 spoke about the importance of whistleblower protections. According to her, staff members should be able to report any corrupt practices via web portals and hotlines. Whistleblowers should be protected from revealing a scandal. P3 stated,

Equally important is the Whistleblower Protection program in the context of being an initiative. Employees are advised to report any unethical issues and fraudulent activities noticed through hotlines and web portals in confidence. In order to reinforce this, we organize training sessions, which provide information to the internal audience as well as contractors about the protection of the whistleblower and the danger of getting hurt for inciting a scandal.

P10 also talked about the significance of promoting whistleblowers. The participant noted that whistleblowers can be rewarded through financial payment. Doing so will encourage others to also report any forms of corruption that they identify. P10 reported,

Finally, promotion of whistleblowing is one of the most effective approaches by which corruption could be addressed. Every organization should recognize employees' rights to address unethical practices within the workplace with a shield against any form of reprisal. As it will be seen in the FCA, reward omega administers specific programs that pay whistleblowers financially and such motives can compel people to report corruption and unethical practices.

Theme 4 in Relation to the Conceptual Framework

These findings are in line with the conceptual framework. In the FTT framework, opportunity, which is one of the framework's components, denotes circumstances that

allow fraud to take place (Mangala & Soni, 2023). Opportunities to engage in corrupt activities are high when such activities go undetected. Thus, consistent with the FTT framework, detecting fraud and punishing construction companies that engage in the fraud can reduce corruption in the government bidding process since opportunities are minimized. Punitive actions and enforcement mechanisms such as hefty fines, debarment, incarceration, civil sanctions, and suspensions are effective strategies for improving the bidding process and mitigating fraud in the U.S agency contract bidding and awarding process. These punitive actions and enforcement mechanisms can serve as a deterrent to kickbacks, bid-rigging, collusion, and other forms of corruption (G. M. Y. Owusu et al., 2022). Contractors will be compelled to adopt ethical corporate cultures and end cultures that do not embrace honesty, integrity, and ethics, which are cultures that provide the opportunity for committing fraud, as shown by the FTT framework.

Theme 4 in Relation to the Literature

The fourth theme confirms what has been reported in previous studies. Zhu, Chang, et al. (2022) reported that penalties including hefty fines and criminal charges are useful in deterring corruption due to the considerable financial penalties and potential jail time. Similarly, Patanakul et al. (2016) reported that strict enforcement of hefty fines and incarceration has a higher likelihood of decreasing corrupt activities in infrastructure construction projects.

In summary, the fourth theme revealed that another mitigation strategy is the use of punitive actions and enforcement mechanisms. These punitive actions and enforcement mechanisms range from hefty financial fines, penalties, and incarceration to

debarment, suspension, and seizing of assets. These strategies have been shown to be effective in mitigating corruption in the infrastructure construction bidding process.

Promoting whistleblowing and protecting whistleblowers is also effective. Data from all 10 participants contributed to this theme. The theme confirms what has been reported in existing literature and is also in line with the conceptual framework.

Theme 5: Ethics Training and Capacity Building

Participants mentioned education and training on ethics and corruption as important steps to mitigating financial fraud. These participants also emphasized the importance of capacity building, which is a process that an organization uses to provide their staff members with the knowledge and tools to enhance their productivity, performance, as well as professional growth. Capacity building is part of organizational development and helps an organization succeed. Each of the 10 respondents in this study contributed to the fifth theme. P4 emphasized the importance of training. The education should be provided not only to contractors but to government officials as well. The education should cover the negative impacts of corruption. P4 stated,

Last but not least education and training are critical as well. If contractors and uhm...and state officials start to see the effects of uhm...of corruption in the view of law, economy or society as a whole; there is a higher likelihood that they will refrain from such activities.

P10 emphasized the importance of training on ethics and compliance. Such training enables staff members in government agencies to be able to identify fraud and stop it. Agencies such as the DOT offer such training to their personnel. P10 stated:

The programs play an important role in this field as the nature and scale of the infrastructural projects plus bidding procedures continuously increases. Some government agencies need constant, at least once a year, training on ethics and compliance for employees engaged in procurement and bidding. For instance, large agencies like the DOT have agency specific training on qualifying bid specifications to key indicators used to identify potential fraud. Such are usually recurrent ones with refreshers and competency checks for all to have affirmations of their conformity to the legal provisions. Some agencies have also commenced the use of the e-learning modules in fraud prevention and ethics training due to new challenges.

P2 remarked about ethics training and capacity building for agency staff.

Contractors are also trained on matters pertaining to ethics. The training and capacity building helps with fraud prevention. P2 noted,

Training and capacity building initiatives in fraud aims also remind the ethical participants in the bidding processes. At the Department of Transportation, we take training very seriously and have multiple layers as to how everyone involved whether it's the government, contractors or other stakeholders comprehend the ethical standards, the compliance requirements and the fraud avoidance tactics. To begin with, all staff who are engaged in either procurement or even contract administration must undertake certain approved courses on ethics compliance. This covers such areas as federal acquisition process, conflict of interest and particular measures aimed at averting fraud. We touch on issues such as what

constitutes a red flag in bids, collusion between contractors and what to do if suspicious behavior is observed. This training is always up to date to accommodate the changes in regulations, technology, and any new risks which arise.

Likewise, P3 talked about training and capacity-building initiatives provided by the DOT. The training allows people to understand corruption and the importance of avoiding it. Training and capacity-building programs help mitigate fraud. P3 said:

The Department of Transportation, like all other government departments, has had trainings and capacity building programs employed in such a way that it is ensured that the stakeholders comprehend the importance of ethical conduct and that they possess the capabilities to establish and mitigate any fraudulent activities.

Theme 5 in Relation to the Conceptual Framework

The finding is in line with the conceptual framework. An organizational culture that encourages or permits dishonest practices provides an opportunity for people to commit fraud, as indicated by the FTT framework. Ethics training and capacity-building initiatives can help eliminate this opportunity for fraud by educating contractors on ethical standards, compliance requirements, and fraud avoidance tactics. The training is vital to enhancing ethics, minimizing corruption, and cultivating integrity on the different levels of the bidding. Encouraging contractors and bidding companies to provide their employees with ethical training is crucial to promoting ethical behavior and openness, which ultimately helps to decrease opportunities for rationalization (Tjahjani et al., 2022).

Theme 5 in Relation to the Literature

The fifth theme confirms what has been reported in previous studies. Erfani et al. (2021) reported that training contractors, subcontractors and other involved parties on ethics and compliance has a high propensity of lowering cases of corruption in the bidding of government infrastructure contracts. Employees of government agencies should also be trained on how to detect fraud and catch perpetrators (Baer, 2023).

In summary, training and capacity-building programs are crucial in mitigating fraudulent activities in the infrastructural bidding process. The training needs to be offered to all staff of government agencies. Education and training are also provided to contractors and other involved parties. The focus is typically on ethical issues in the bidding process and how fraud can be avoided. The theme was supported by data from all 10 participants. The findings confirm what has been reported in previous studies and are consistent with the conceptual framework.

Theme 6: Improved Regulatory Framework, Rotating Assessors, and Using Independent Auditors

The sixth theme demonstrated that according to the participants, the other equally important mitigation strategy is to improve the regulatory framework surrounding infrastructure construction bidding, rotating the assessors and auditors, and outsourcing auditors so that independent ones are used. The theme was supported by data from nine participants. This theme had two subthemes: improved regulatory framework, and rotation of assessors and using independent auditors. These are discussed below.

Subtheme 6.1: Improved Regulatory Framework

The participants spoke about the need to improve regulations, rules, and policies concerning infrastructure construction bidding. P4 commented about improving the rules of fair competition. Doing so, according to him, will help address the root causes of corruption. It will get rid of the incentives that facilitate corrupt practices. P4 said,

Furthermore, there are also ways to address the fundamental causes of corruption by simply removing the incentives that allow corruption to flourish in the first instance. This may be done through improving the rules of fair competition such that a guarantee exists in awarding a contract as a result of several business merits not political patronage.

P3 talked about the need for appropriate policies. P3 mentioned that policies should be put in place that require contractors to disclose proof of their financial capacity. The information is then made available to members of the public. P3 said,

Also, there is a need for policies that establish mechanisms to ensure contractors submit reasonable evidence that demonstrates their financial capacity, past experience and clientele. This kind of information which is made available to the public ensures that the contractors do not enjoy the monopoly of such unscrupulous practices because of public exposure.

Subtheme 6.2: Rotating Assessors and Using Independent Auditors

Rotation of evaluators and the use of independent auditors was also identified as another important corruption mitigation strategy. P9 talked about rotating evaluators. The

assessors can also be outsourced from external organizations. Doing so reduces the risks of fraud. P9 noted,

In addition, there is the strategy of the “random rotation.” In this case, project assignments to evaluation groups are rotated to avoid predictable patterns and exploit ability to randomize one back again. For instance, in many states the reviewing committees rotate and are randomly assigned to different projects to avoid the risk that one group becomes accustomed to one bidder and might become biased or favoritism for that...Some agencies have incorporated systems of rotating evaluators, or outsourcing evaluators to minimize all possibilities of collusion. For instance, in Canada, OSOM through IO manages the bidding of the overseer on larger infrastructure projects which has increased accountability and decreased bias during contract processes.

P7 also spoke about the rotation of evaluators. P7 said, “The next, noteworthy, initiative is the rotation of the project oversight officers. The government can minimize the risk posed by collusion, or relationships which could become corrupt, by periodically changing personnel who review and approve bids.”

P3 remarked on the use of independent auditors. P3 said, “We have seen the emergence of independent auditors which will have the responsibility to oversee the process of how the contracts are awarded and ensure that the procedures were all properly followed.” P8 also mentioned the use of external evaluators. According to P3, “Some agencies have engaged evaluators from other agencies to establish the credibility of the bid, vis-a-vis the realistic costs incurred in undertaking similar past projects.”

Theme 6 in Relation to the Conceptual Framework

The finding is consistent with the FTT. By improving the regulatory framework, rotating assessors, and using independent evaluators, government agencies will be able to reduce the opportunities for fraud. Having stringent rules in place and using external evaluators will decrease the risk of collusion, bid-rigging, bribery, and other forms of corruption (Mangala & Soni, 2023).

Theme 6 in Relation to the Literature

The final theme confirms what has been reported in previous studies. Stricter regulations can help deter corrupt actions due to the higher chances of being caught (David-Barrett et al., 2020). Implementing regulations effectively helps improve the procurement process and reduce corruption in public sector procurement (David-Barrett et al., 2020). According to Fazekas et al. (2022), using independent external consultants and auditors who are selected by means of a transparent process helps to prevent corruption. Similarly, Decarolis and Giorgiantonio (2022) posited that external audits decrease corrupt conduct in public procurement.

In summary, the sixth theme revealed that another vital strategy for mitigating corruption in government infrastructural contracts entails improving the regulatory framework pertaining to infrastructure construction bidding, rotating the assessors and auditors, and using independent evaluators. Data from nine out of 10 participants contributed to this theme. The theme confirms what has been reported in existing literature. This theme is also consistent with the FTT conceptual framework.

Business Contributions

The findings of this research may provide valuable insights into the field of business by highlighting the problem of corruption in the bidding process of the government infrastructure. Corruption and unlawful activities, including bid rigging, bribery, and collusion, not only negatively impact the operation of the economy but also result in wastage of taxpayers' money and loss of confidence in the system. The findings of this study offer practical recommendations regarding the mitigative measures against fraud to enhance bidding processes' transparency, accountability, and efficiency for government agencies and corporate executives.

This research is based on the FTT, where the aspects of pressure, opportunity, and rationalization explain corruption in bidding processes. These insights allow policymakers and business leaders to put into practice specific actions, including increased monitoring and oversight, rotating the evaluators, and cultivating a solid ethical culture. Preventing misconduct and enabling fair competition can be achieved by addressing the organizational issues that make the systems risky, for instance, by establishing weak monitoring and supervision.

The findings also emphasized that taking measures to incorporate technology in businesses and providing ethics training are also crucial to prevent fraud. Measures like the incorporation of modern auditing tools and the provision of ethics workshops for employees are actionable strategies organizations can employ to minimize cases of fraud. At the same time, these measures protect organizational resources and promote a strong

ethical foundation, which is critical for sustainability and competitiveness in the long term.

From a broader perspective, this research helps businesses and government entities save money and achieve better project performance. According to the recommendations proffered in the study, organizations stand to reduce instances of corruption, cost overruns, delays, and inefficiencies typically witnessed in infrastructural projects. Reducing corruption can also increase public confidence not only in government institutions but also in other private organizations that take part in the implementation of the projects.

Lastly, the emphasis placed in the study on practical measures being taken towards combating corruption is beneficial to CSR and sustainable business practices. Combating fraud and corruption gives businesses a significant opportunity to become pioneers of ethical conduct, protect taxpayers' money, and catalyze society's change for the better. These contributions can contribute to the overall objective of establishing a more economically developed and transparent business culture.

Recommendations for Professional Practice

At the moment, the bidding process created by some U.S. agencies' leaders and bid on by the different managers of public corporations in the construction industry is flawed and leads to lower economic growth and project cost overruns in infrastructure projects. This ultimately reduces economic growth, results in the wastage of taxpayer dollars, and lowers government tax receipts (Baer, 2023). Corrupt activities are rationalized owing to the lack of long-term reinforcement, which is beginning to appear

as a norm in business practice (Rashidi et al., 2023). This study has described the effective strategies that U.S. agency managers use to mitigate fraud in the government bidding process so as to increase economic growth, reduce wasted taxpayer dollars, and increase government tax receipts. The strategies included improved oversight and use of technology to increase transparency, efficiency, and security of the bidding process; punitive actions, enforcement mechanisms, and whistleblower protections; ethics training and capacity-building; as well as improved regulatory framework, rotating assessors, and using independent auditors.

Thus, the findings of this study can be applied to government agencies to improve professional practice by creating an organizational culture that promotes honesty, integrity, and ethics; providing government representatives with training on ethics and compliance; enhancing oversight, supervision, and internal controls; enforcing severe penalties to perpetrators; are very importantly, using external evaluators and auditors to routinely audit accounting practices routinely; and putting in place stricter rules for preventing corruption. By applying these findings to professional practice, other U.S. agency leaders will be able to decrease corruption and enhance the process of infrastructure bidding to improve the growth of the economy. When U.S. government agencies use these approaches, they will be able to have a more transparent bidding process that is less vulnerable to the misconduct of some of the parties involved in the process, including bidders/contractors and government representatives.

Implications for Social Change

The findings of this study have significant implications for social change as they may provide tangible improvements and ethical guidelines to individuals and employees in U.S. government agencies, government organizations and institutions, corporate cultures, and societies in general. By applying the findings of this study, personnel of U.S. government agencies will receive education and training on ethics and compliance, thus enhancing their behavior. Government agencies will also develop an ethical culture and improve their bidding processes and protocols to decrease corrupt practices by private contractors bidding on government contracts. Improved infrastructure facilitates the economic growth of the country and enhances the U.S. government's revenue stream through the taxation of business revenue. Increased revenue can be utilized by the government to assist in future infrastructure construction projects, which will consequently improve the quality of life of American citizens and increase employment and the tax base. In this way, the findings will have tangible improvements to American society.

Recommendations for Action

The FTT conceptual framework was pivotal to this study. Its three major components are opportunity, pressure/incentive, and rationalization. Based on the findings of this study and taking the FTT framework into account, several recommendations for action are made. First, I recommend that contractors, subcontractors, and other involved organizations should decrease pressure and know their staff members. The upper management and shareholders of such organizations should

ensure that they have attainable and realistic targets to decrease the risk of corruption in the bidding process in the construction sector. They should not push their contractors to win government infrastructural contracts at any cost because such pressure can lead a contractor toward unethical conduct. Perceived pressure to win an infrastructural contract can put a company official at risk.

Second, I recommend that government agencies and construction companies that bid for government infrastructural contracts should decrease the opportunity for corruption through the use of robust internal controls and advanced technology. Companies bidding for government infrastructural contracts should put in place robust processes aimed at preventing individuals with access to company funds from acting unilaterally. Government agencies need to implement or reinforce their internal control measures, including strict background check procedures. Evaluators should be rotated and independent external assessors be outsourced so that possibilities of collusion are minimized. The use of advanced technology can help government agencies keep abreast of the evolving corruption techniques and be able to detect evolving tactics for engaging in fraud (Chadee et al., 2024). Using the right technologies such as advanced analytics, artificial intelligence, e-bidding, e-procurement, and predictive analytics will help to enhance risk assessment in the bidding process, secure the process, improve transparency, and detect suspicious trends and patterns during the bidding process. The technologies will also enhance decision-making processes, improve efficiency, enhance the detection of fraud, decrease the risk of fraud, and reduce the possibility of bidder collusion.

Third, I recommend that government agencies should decrease the opportunities for rationalization. The organizations should create an organizational culture that fosters ethical behavior and openness. A plan for detecting fraud needs to be put in place. Processes for deterring and detecting corruption should also be put in place. Companies need to regularly train their members of staff on how to avoid and detect fraud and other corrupt practices. Employees should also be encouraged to report any cases of corruption.

Leaders of several entities need to pay attention to the results of this study. These include government representatives or staff members of government agencies involved in infrastructure projects, contractors/construction companies, shareholders of contractors/construction companies, and employees of construction companies. Even the general public needs to pay attention to these results because they are likely to be affected in one way or another if corrupt acts are not stopped in the bidding of government infrastructural contracts.

The results of this study might be disseminated through multiple ways. One of them is publication in renowned peer-reviewed journals such as the Journal of Construction Engineering and Management, the American Journal of Construction and Building Materials, and the American Journal of Civil Engineering and Architecture. The findings might also be disseminated through conferences and seminars where the study and the results will be discussed with those in attendance. A website may be created wherein the study and its findings will be published. Relevant stakeholders and members of the general public will be able to access the findings by visiting the website. Besides,

dissemination might involve the publication of the study and the results in brochures and leaflets, which will then be handed out to relevant stakeholders.

Recommendations for Further Research

This study shed light on effective bidding process improvement strategies created by the U.S. agency leaders and bid on by the different managers of corporations in the construction industry. Nonetheless, little is known regarding how the senior managers of companies in America's construction sector describe the reasons for engaging in corruption and the strategies they use to avoid corrupt conduct. A recommendation for further research is that future researchers on the subject of this study should aim to understand how contractors describe their motivations for engaging in corruption and what they are doing to curb it. The purposeful sampling approach was utilized in this study. Future researchers on the subject might also utilize different sampling strategies, for instance, quota sampling.

Another recommendation is that future researchers should aim to utilize different research designs or a different research methodology. In this study, the qualitative multiple case study design was employed, and data were gathered using individual, semistructured interviews. In future studies on the subject of this study, researchers may employ a different qualitative design, such as a descriptive study design. Besides, future researchers may also adopt the quantitative methodology, which is objective and more accurate as numerical data would be gathered. A mixed-methods approach might also be utilized to overcome the limitations of the quantitative methodology and offset the weaknesses inherent to the qualitative methodology.

A major limitation identified in Section 1 is recall bias. This comes about when participants are unable to correctly recall and report past events during an interview (Ajayi, 2023). Participants in this study might have experienced recall bias and were unable to accurately remember the exact facts of corruption issues in infrastructure bidding corruption. In future studies on the subject of this study, researchers can reduce this limitation by using objective measures whenever possible or minimizing time lapses between events and the collection of data.

Reflections

A notable preconceived idea that I had prior to starting this project was that the use of technologies, particularly artificial intelligence, data analytics, and predictive analytics, was not prevalent in the government infrastructure bidding process. This is because such technologies are rather recent and are not applied in many sectors. The effect of this preconceived idea is that I did not put a lot of focus on how new technologies can be used to aid fraud and corrupt actions. After completing this study, my thinking has changed in that I have now realized that unscrupulous people are increasingly trying to use innovative ways and newer technologies to commit fraud and engage in misconduct during the bidding process.

Conclusions

The problem addressed in this study was that the bidding process created by some U.S. agencies' leaders and bid on by the different managers of public corporations in the construction industry is flawed and often leads to lower economic growth, and project cost overruns in infrastructure projects, thus, reducing economic growth, wasting

taxpayer dollars, and lowering government tax receipts. The purpose of this qualitative multiple case study was to identify and explore the effective bidding process improvement strategies created by the U.S. agency leaders and bid on by the different managers of corporations in the construction industry. Data from 10 participants, including representatives from the Department of Justice who had investigated bidding fraud, government representatives who were in the process of bidding, and construction managers who approached the bidding process were collected through semistructured interviews. Thematic analysis was then performed on the data, with the aid of the NVivo 12 software program.

This study was guided by one research question: What effective strategies do U.S. agency managers use to mitigate fraud in the government bidding process to increase economic growth, reduce wasted taxpayer dollars, and increase government tax receipts? As per the findings, corruption in the government bidding process is caused by psychological and cultural factors, which was the first theme. Corrupt practices are also caused by a combination of pressure, project complexity, insufficient oversight, and desire for monetary gain, which was the second theme. The mitigation strategies included improved oversight and the use of technology to increase transparency, efficiency, and security of the bidding process, which was the third theme; and punitive actions, enforcement mechanisms, and whistleblower protections, which was the fourth theme. Other mitigation strategies included ethics training and capacity building, which was the fifth theme; and improved regulatory framework, rotating assessors, and using independent auditors, which was the sixth theme. The findings of this study can be

applied to government agencies to improve professional practice by creating an organizational culture that promotes honesty, integrity, and ethics; providing government representatives with training on ethics and compliance; enhancing oversight, supervision, and internal controls; enforcing severe penalties to perpetrators; using external evaluators; and putting in place stricter rules. The implications for social change are that these findings can help minimize corruption in government infrastructural contract bidding and result in better infrastructure. Improved infrastructure facilitates economic growth and enhances the U.S government's revenue stream through the taxation of business revenue. Increased revenue can be utilized to assist in future infrastructure construction projects, which will in turn improve the quality of life of Americans and increase employment and the tax base. It is recommended that government agencies decrease opportunity for corruption through the use of internal controls and technology, education and training, and create an ethical culture.

References

- Abdou, A., Basdevant, O., David-Barrett, E., & Fazekas, M. (2022). *Assessing vulnerabilities to corruption in public procurement and their price impact*. International Monetary Fund. https://www.govtransparency.eu/wp-content/uploads/2020/10/IMF_wpiea2022094-print-pdf.pdf
- Adams, C. R., Barrio Minton, C. A., Hightower, J., & Blount, A. J. (2022). A systematic approach to multiple case study design in professional counseling and counselor education. *Journal of Counselor Preparation and Supervision*, 15(2), Article 24. <https://www.proquest.com/scholarly-journals/systematic-approach-multiple-case-study-design/docview/2703394571/se-2>
- Adeoye-Olatunde, O. A., & Olenik, N. L. (2021). Research and scholarly methods: Semi-structured interviews. *Journal of the American College of Clinical Pharmacy*, 4(10), 1358–1367. <https://doi.org/10.1002/jac5.1441>
- Adler, R. H. (2022). Trustworthiness in qualitative research. *Journal of Human Lactation*, 38(4), 598–602. <https://doi.org/10.1177/08903344221116620>
- Ahmed, S. K. (2024). The pillars of trustworthiness in qualitative research. *Journal of Medicine, Surgery, and Public Health*, 2(1), 1–12. <https://doi.org/10.1016/j.glmedi.2024.100051>
- Ajayi, V. O. (2023). A review on primary sources of data and secondary sources of data. *European Journal of Education and Pedagogy*, 2(3), 1–7. <https://doi.org/19810/ejedu.2023.VOL2ISSUE.3>
- Alsamarraie, M. M., & Ghazali, F. (2022). Evaluation of organizational procurement

performance for public construction projects: Systematic review. *International Journal of Construction Management*, 23(14), 2499–2508.

<https://doi.org/10.1080/15623599.2022.2070447>

Alt, D., Raichel, N., & Naamati-Schneider, L. (2021). Higher education students' reflective journal writing and lifelong learning skills: Insights from an exploratory sequential study. *Frontiers in Psychology*, 12, Article 707168.

<https://doi.org/10.3389/fpsyg.2021.707168>

Amoah, C., & Steyn, D. (2022). Barriers to unethical and corrupt practices avoidance in the construction industry. *International Journal of Building Pathology and Adaptation*, 41(6), 85–101. <https://doi.org/10.1108/IJBPA-01-2022-0021>

Baer, M. H. (2023). *Myths and misunderstandings in white collar crime*. Cambridge University Press.

Bans-Akutey, A., & Tiimub, B. M. (2021). Triangulation in research. *ResearchGate*, 1(4), 1–6. <https://doi.org/10.20935/AL3392>

Barroga, E., & Matanguihan, G. J. (2022). A practical guide to writing quantitative and qualitative research questions and hypothesis in scholarly articles. *Journal of Korean Medical Science*, 37(16), Article e121.

<https://doi.org/10.3346/jkms.2022.37.e121>

Bekele, W. B., & Ago, F. Y. (2022). Sample size for interviews in qualitative research in social sciences: A guide to novice researchers. *Research in Educational Policy and Management*, 4(1), 42–50. <https://doi.org/10.46303/repam.2022.3>

Bernatt, M., & Jones, A. (2023). Populism and public procurement: An EU response to

- increased corruption and collusion risks in Hungary and Poland. *Yearbook of European Law*, 41(2022), 11–47. <https://doi.org/10.1093/yel/yeac009>
- Bertelli, A. M., Mele, V., & Woodhouse, E. F. (2021). Corruption, democracy, and privately financed infrastructure. *Administration & Society*, 53(3), 327–352. <https://doi.org/10.1177/0095399720944548>
- Bezzano, L. A., Durant, J., & Rhode Brantley, P. (2021). A modern history of informed consent and the role of key information. *Ochsner Journal*, 21(1), 81–85. <https://doi.org/10.31486/toj.19.0105>
- Bhagat, G., & Jha, K. N. (2023). Corruption risks in public construction. *Journal of Legal Affairs and Dispute Resolution in Engineering and Construction*, 15(2), Article 04522062. <https://doi.org/10.1061/JLADAH.LADR-936>
- Black, G. B., Van Os, S., Machen, S., & Fulop, N. J. (2021). Ethnographic research as an evolving method for supporting healthcare improvement skills: A scoping review. *BMC Medical Research Methodology*, 21(274), 1–15. <https://doi.org/10.1186/s12874-022-01587-9>
- Boly, A., & Gillanders, R. (2023). Corruption, institutional trust and legitimacy: A vicious circle. In *The political economy of corruption* (pp. 15–30). Routledge. <https://www.taylorfrancis.com/chapters/edit/10.4324/9781003142300-3/corruption-institutional-trust-legitimacy-amadou-boly-robert-gillanders>
- Bonisteel, I., Shulman, R., Newhook, L. A., Guttman, A., Smith, S., & Chafe, R. (2021). Reconceptualization recruitment in qualitative research. *International Journal of Qualitative Research*, 20(1), 1-9. <https://doi.org/10.1177/16094069211042493>

- Brailas, A., Tragou, E., & Papachristopoulos, K. (2023). Introduction to qualitative data analysis and coding with QualCoder. *American Journal of Qualitative Research*, 7(3), 19-31. <https://doi.org/10.29333/ajqr/13230>
- Busu, M., & Busu, C. (2021). Detecting bid-rigging in public procurement. A cluster analysis approach. *MDPI*, 11(1), 1-13. <https://doi.org/10.3390/admsci11010013>
- Campos, N., Engel, E., Fisher, R. D., & Galetovic, A. (2021). The ways of corruption in infrastructure: Lessons from the Odebrecht case. *Journal of Economic Perspectives*, 35(2), 171–190. <https://doi.org/10.1257/jep.35.2.171>
- Cao, F., & Wang, C. (2023). Corruption, accountability, and discretion of procurement officials: An analysis of selection preferences for performance-based evaluation criteria (PBEC) in PPP procurement. *PLoS ONE*, 38(3), 1–18. <https://doi.org/10.1371/journal.pone.0282542>
- Capili, B. (2021). Selecting the study participants. *American Journal of Nursing*, 121(1), 64-67. <https://doi.org/10.1097/01.NAJ.0000731688.58731.05>
- Carbone, C., Calderoni, F., & Jofre, M. (2024). Bid-rigging in public procurement: Cartel strategies and bidding patterns. *Crime, Law and Social Change*, 82, 249–281. <https://doi.org/10.1007/s10611-024-10142-0>
- Chadee, A., Ramsubhag, C., & Mohammed, A. (2024). Implications of bid rigging practices in small island developing states: A case study. *Asian American Research Letters Journal*, 1(4). <https://aarlj.com/index.php/AARLJ/article/view/62>

- Chen, C., Liu, C., & Lee, J. (2022). Corruption and the quality of transportation infrastructure: evidence from the US states. *International Review of Administrative Sciences*, 88(2), 552–569.
<https://doi.org/10.1177/0020852320953184>
- Clair, C. A., Melvin, T. J., Taylor, J. L., & Abshire-Saylor, M. (2022). “Researcher” bias: How our assumptions on technology affect research of older adults. *Frontiers in Public Health*, 10(1), 1–4. <https://doi.org/10.3389/fpubh.2022.1034497>
- Closa, C. (2021). Planning, implementing and reporting: Increasing transparency, replicability and credibility in qualitative political science research. *European Political Science*, 20(2), 270–280. <https://doi.org/10.1057/s41304-020-00299-2>
- Coker, D. C. (2022). A thematic analysis of the structure of delimitations in the dissertation. *International Journal of Doctoral Studies*, 17(1), 141–159.
<https://doi.org/10.28945/4939>
- Coleman, P. (2022). Validity and reliability within qualitative research for the caring sciences. *International Journal of Caring Sciences*, 14(3), 2041–2045.
<https://oro.open.ac.uk/81588/>
- Cressey, D. R. (1953). Other people’s money; a study of the social psychology of embezzlement. *Patterson Smith*. <https://psycnet.apa.org/record/1954-06293-000>
- Cui, L. (2023). Collusion governance strategies under the construction supervision system in China. *Construction Management and Economics*, 41(9), 724–738.
<https://doi.org/10.1080/01446193.2023.2196431>
- Damayanti, R. W., Hartono, B., & Wijaya, A. R. (2021). Clarifying megaprojects

complexity in developing countries: A literature review and conceptual study.

International Journal of Engineering Business Management, 13, 1–25.

<https://doi.org/10.1177/18479790211027414>

David-Barrett, E., Fazekas, M., Hellmann, O., Mark, L., & McCorley, C. (2020).

Controlling corruption in development aid: New evidence from contract level data. *Studies in Comparative International*, 55(4), 481–515.

<https://doi.org/10.1007/s12116-020-09315-4>

Decarolis, F., & Giorgiantonio, C. (2022). Corruption red flags in public procurement:

new evidence from Italian calls for tenders. *EPJ Data Science*, 11(16), 1–38.

<https://doi.org/10.1140/epjds/s13688-022-00325-x>

De Houwer, J., Richetin, J., Hughes, S., & Perugini, M. (2019). On the assumptions that

we make about the world around us: A conceptual framework for feature transformation effects. *Society for the Improvement of Psychological Science*,

5(1), 41–43. <https://doi.org/10.1525/collabra.229>

De Jong, M., Henry, W. P., & Stansbury, N. (2009). Eliminating corruption in our

engineering/construction industry. *Leadership and Management in Engineering*,

9(3), 105–111. [https://doi.org/10.1061/\(ASCE\)1532-6748\(2009\)9:\(105\)](https://doi.org/10.1061/(ASCE)1532-6748(2009)9:(105))

Donner, E. K. (2022). Research data management systems and the organization of

universities and research institutes: A systematic literature review. *Journal of Librarianship and Information Science*, 55(17), 1–21.

<https://doi.org/10.1177/0961000621107082>

Erfani, A., Zhang, K., & Cui, Q. (2021). TAB Bid irregularity: Data-driven model and its

application. *ASCE Library*, 37(5), 882–889.

[https://doi.org/10.1061/\(ASCE\)ME.1941-5479.0000958](https://doi.org/10.1061/(ASCE)ME.1941-5479.0000958)

Fan, Y., Heydari, M., Keung Lai, K., Jiahui, Y., Cai, X., & Chen, Y. (2023). Corruption and infrastructure development based on stochastic analysis. *ResearchGate*,

I(28), 11–28. <https://doi.org/10.59456/afts.2023.1528.011Y>

Fazekas, M., Sberna, S., & Vannucci, A. (2022). The extra-legal governance of corruption: Tracing the organization of corruption in public procurement.

Governance, 35(4), 1139–1161. <https://doi.org/10.1111/gove.12648>

Federal Trade Commission. (2024). Bid rigging. <https://www.ftc.gov/advice->

[guidance/competition-guidance/guide-antitrust-laws/dealings-competitors/bid-rigging](https://www.ftc.gov/advice-guidance/competition-guidance/guide-antitrust-laws/dealings-competitors/bid-rigging)

Festinger, L. (1957). *A theory of cognitive dissonance*. Stanford University Press.

Fierro, P., Varriale, L., & Ferrara, M. (2024). Corrupt behavior in public organizations: ethics, rationalization, and socialization for an integrated reading. *IntechOpen*.

<https://doi.org/10.5772/intechopen.1004251>

Flemming, K., & Noyes, J. (2021). Qualitative evidence synthesis: Where are we at?

International Journal of Qualitative Methods, 20, 1609406921993276.

<https://doi.org/10.1177/1609406921993276>

Ghahari, S., Queiroz, C., Labi, S., & McNeil, S. (2023). Corruption propensity and mitigation at different phases of infrastructure development. *Public Works*

Management & Policy, 29(1), 5–44. <https://doi.org/10.1177/1087724X231162544>

Ghanad, A. (2023). An overview of quantitative research methods. *International Journal*

of Multidisciplinary and Analysis, 06(08), 3794–3803.

<https://doi.org/10.47191/ijmra/v6-i8-52>

Gheorghiu, A. V., Roman, V., & Petruca, I. (2021). Influence, persuasion, influence peddling, lobby and decision transparency in public institutions. *International Journal of Communication Research*, 11(3), 209–222.

https://www.ijcr.eu/articole/570_006%20Alexandra_Violeta%20Gheorghiu.pdf

Grant, S. C. (2021). Informed consent - We can and should do better. *JAMA Network Open*, 4(4), Article 2110848.

<https://doi.org/10.1001/janetworkopen.2021.10848>

Graycar, A. (2022). Corrupt procurement: rethinking the roles of principals and agents. *Taylor & Francis Online*, 5(3), 276–293.

<https://doi.org/10.1080/25741292.2022.2113461>

Harnois, Y., & Gagnon, S. (2022). Corruption and international development: A review of project management challenges. *Journal of Financial Crime*, 29(3), Article 864877. <https://doi.org/10.1108/JFC-06-2021-0128>

He, Q., Wang, T., Chan, A. P., & Xu, J. (2021). Developing a list of key performance indicators for benchmarking the success of construction megaprojects. *Journal of Construction Engineering and Management*, 147(2), 04020164.

[https://doi.org/10.1061/\(ASCE\)CO.1943-7862.0001957](https://doi.org/10.1061/(ASCE)CO.1943-7862.0001957)

Heider, F. (1958). *The psychology of interpersonal relations*. Wiley.

Imhof, D., & Wallimann, H. (2021). Detecting bid-rigging coalitions in different countries and auction formats. *International Review of Law and Economics*,

68(3), 106-116. <https://doi.org/10.1016/j.irle.2021.106016>

Isibor, A. (2022). Impact of bank verification number policy on fraud detection and prevention in the Nigerian banking industry. *Journal of Internet Banking and Commerce*, 27(1), 1–3.

<https://www.proquest.com/openview/e4403f535c4c5faa2a7e6315f3328997/1?pq-origsite=gscholar&cbl=39255>

Ivanyna, M., Mourmouras, A., & Rangazas, P. (2021). Macroeconomics of corruption. *Springer International Publishing*. <https://doi.org/10.1007/978-3-030-67557-8>

Jeong, H. W. (2021). Political Economy of Development. *Transition to Peace: Between Norms and Practice*, 135.

Jones, A. (2021). Combatting corruption and collusion in UK public procurement: Proposals for Post-Brexit reform. *Modern Law Review*, 84(4), 667–707.

<https://doi.org/10.1111/1468-2230.12626>

Jones, A., & Pereira Neto, C. M. D. S. (2021). Combatting corruption and collusion in public procurement: Lessons from Operation Car Wash. *University of Toronto Law Journal*, 71(supplement 1), 103–150. <https://doi.org/10.3138/utlj-2021-0023>

Kagias, P., Cheliatsidou, A., Garefalakis, A., Azibi, J., & Sariannidis, N. (2022). The fraud triangle—an alternative approach. *Journal of Financial Crime*, 29(3), 908–924. <https://doi.org/10.1108/JFC-07-2021-0159>

Kawai, K., & Nakabayashi, J. (2024). A field experiment on antitrust compliance. *National Bureau of Economic Research*. Article w32347.

https://www.nber.org/system/files/working_papers/w32347/w32347.pdf

- Kelley, H. H. (1967). Attribution theory in social psychology. In D. Levine (Ed.), *Nebraska Symposium on Motivation* (Vol. 15, pp. 192–238). University of Nebraska Press. <https://api.semanticscholar.org/CorpusID:143295918>
- Kervalishvili, I. (2022). Negative effects of corruption on the global level. In *World Politics and the Challenges for International Security* (pp. 145–164). IGI Global. <https://doi.org/10.4018/978-1-7998-9586-2.ch006>
- Khadim, N., Jaffar, S. T. A., Musarat, M. A., & Ilyas, U. (2021). Effects of corruption on public infrastructure projects in developing countries. *International Journal on Emerging Technology*, 12(1), 284–295. https://www.researchgate.net/profile/Syed-Jaffar-7/publication/355058268_Effects_of_Corruption_on_Public_Infrastructure_Projects_in_Developing_Countries_The_Case_of_Pakistan/links/615bedcf622f185224500129/Effects-of-Corruption-on-Public-Infrastructure-Projects-in-Developing-Countries-The-Case-of-Pakistan.pdf
- Kinter, E. K., & Haase, J. E. (2022). Triangulation approach to developing, evaluating, and applying the evolving theory of adolescent acceptance of asthma. *Nursing Forum*, 57(1), 201–210. <https://doi.org/10.1111/nuf.12643>
- Korotkiy, P. V. (2022). Problematic aspects of criminalization of exceptions on freedom of economic relations in the sphere of public procurement. *Yugra State University Bulletin*, 18(1), 189–195. <https://doi.org/10.18822/byusu202201189-195>

- Kuhn, T., & Pardos-Prado, S. E. R. G. I. (2021). Corruption and support for decentralisation. *European Journal of Political Research*, 60(3), 625–647.
<https://doi.org/10.1111/1475-6765.12420>
- Lee, J. S. (2022). Simulating competitive bidding in construction collusion bidding cases. *Journal of Management in Engineering*, 38(5), 1–9.
[https://doi.org/10.1061/\(ASCE\)ME.1943-5479.0001081](https://doi.org/10.1061/(ASCE)ME.1943-5479.0001081)
- Lee, J. S., Kim, W. R., & Jeong, K. (2021). Estimating damages from bid-rigging in the construction industry. *Journal of Legal Affairs and Dispute Resolution in Engineering and Construction*, 13(3), 05021003.
[https://doi.org/10.1061/\(ASCE\)LA.1943-4170.0000476](https://doi.org/10.1061/(ASCE)LA.1943-4170.0000476)
- Lehtinen, J., Locatelli, G., Sainati, T., Arto, K., & Evans, B. (2022). The grand challenge: Effective anti-corruption measures in projects. *International Journal of Project Management*, 40(4), 347–361.
<https://doi.org/10.1016/j.ijproman.2022.04.003>
- Li, J., Shen, Q., & Gao, W. (2022). Characterization of group behavior of corruption in construction projects based on contagion mechanism. *Computational Intelligence and Neuroscience*, 1–16. <https://doi.org/10.1155/2022/8456197>
- Lyra, M. S., Damasio, B., Pinheiro, F. L., & Bacao, F. (2022). Fraud, corruption, and collusion in public procurement activities, a systematic literature review on data-driven methods. *Applied Network Science*, 7(83), 1–30.
<https://doi.org/10.1007/s41109-022-00523-6>
- Machado, F., Duarte, N., Amaral, A., & Barros, T. (2021). Project management maturity

- models for construction firms. *Journal of Risk and Financial Management*, 14(12), 1–13. <https://doi.org/10.3390/jrfm14120571>
- Makwana, H., Vaghia, K. K., Solanki, V., Desai, V., & Maheshwari, R. (2023). Impact of parenting styles and socioeconomic status on mental health of children. *Cureus*, 15(8), Article e43988. <https://doi.org/10.7759/cureus.43988>
- Mangala, D., & Soni, L. (2023). A systematic literature review on frauds in banking sector. *Journal of Financial Crime*, 30(1), 285–301. <https://doi.org/10.1108/JFC-12-2021-0263>
- Marks, J. T. (2012, June). *The mind behind the fraudster's crime: Key behavioral and environmental elements* [Conference session]. 23rd Annual ACFE Fraud Conference, Orlando, FL, United States.
https://www.fraudconference.com/uploadedFiles/Fraud_Conference/Content/Course-Materials/presentations
- Martin, H., Miller, A., Milling, A., & Martin, M. (2023). Examining corruption prominence in SIDS—the curse and the cure for construction tender practices. *Journal of Facilities Management*, 21(3), 387–411. <https://doi.org/10.1108/JFM-07-2021-0071>
- Matorera, D. (2022). Corruption: Drivers, modes and consequences. *In Corruption-New Insights*. IntechOpen. <https://doi.org/10.5772/intechopen.106862>
- Maxwell, J. A. (2021). Why qualitative methods are necessary for generalization. *Qualitative Psychology*, 8(1), 111–118.
<https://psycnet.apa.org/doi/10.1037/qup0000173>

McKim, C. (2023). Meaningful member-checking: A structured approach to member-checking. *American Journal of Qualitative Research*, 7(2), 41–52.

<https://doi.org/10.29333/ajqr/12973>

Megheirkouni, M., & Moir, J. (2023). Simple but effective criteria: Rethinking excellent qualitative research. *The Qualitative Report*, 28(3), 848–864.

<https://doi.org/10.46743/2160-3715/2023.5845>

Mishra, S., & Dey, A. K. (2022). Understanding and identifying ‘themes’ in qualitative case study research. *South Asian Journal of Business and Management Cases*,

11(3), 187–192. <https://doi.org/10.1177/22779779221134659>

Mohseni, M., Ameri, H., & Arab-Zozani, M. (2022). Potential limitations in systematic review studies assessing the effects of the main intervention for treatment/therapy of COVID-19 patients: An overview. *Frontiers in Medicine*, 22(9), 1–16.

<https://doi.org/10.3389/fmed.2022.966632>

Monteiro, B. K., Masiero, G., & Souza, F. D. (2022). Corruption in the construction industry: A review of recent literature. *International Journal of Construction Management*, 22(14), 2744–2752.

<https://doi.org/10.1080/15623599.2020.1823588>

Moriyani, M. A., Asaye, L., Le, C., & Le, T. (2023). Network theory-based approach to data-driven assessment of bidding competition in highway construction. *Journal of Management in Engineering*, 40(1), 18–24.

<https://doi.org/10.1061/JMENEA.MEENG-5506>

Morofuji, H., & Kurahashi, S. (2023). Carrot or stick? A study on “bid-rigging norms” by

simulation: Inducing factors and deterring measures. *Frontiers*, 9(1), 1-25.

<https://doi.org/10.3389/fams.2023>

Mugellini, G., Della Bella, S., Colagrossi, M., Isenring, G. L., & Killias, M. (2021).

Public sector reforms and their impact on the level of corruption: A systematic review. *Campbell Systematic Reviews*, 17(2), Article e1173.

<https://doi.org/10.1002/cl2.1173>

Muller-Mahn, D., Mkutu, K., & Kioko, E. (2021). Megaprojects-mega failures? The

politics of aspiration and the transformation of rural Kenya. *The European Journal of Development Research*, 33(1), 1069–1090.

<https://doi.org/10.1057/s41287-021-00397-x>

Mwita, K. (2022a). Factors influencing data saturation in qualitative studies.

International Journal of Research in Business and Social Science (2147-4478), 11(4), 414–420. <https://doi.org/10.20525/ijrbs.v11i4.1776>

Mwita, K. (2022b). Strengths and weaknesses of qualitative research in social science

studies. *International Journal of Research in Business and Social Science*, 11(6), 617–625. <https://doi.org/10.20525/ijrbs.v11i6.1920>

Oluseye, O. (2024). Exploring potential political corruption in large-scale infrastructure projects in Nigeria. *Project Leadership and Society*, 5, Article 100108.

<https://doi.org/10.1016/j.plas.2023.100108>

Opoku, A., Poshyanand, M., Elmualim, A., Kavishe, N., Mushtaha, E. S. N., & Abdalla, S. B. (2022). Corruption in the construction industry: an insight from the thai construction sector. In *Proceedings of the 38th Annual ARCOM Conference* (pp.

307–316).

<https://www.arcom.ac.uk/docs/proceedings/66cf6ac3841ddf97c7bb22dd878df4b9>

Owusu, E. K., Chan, A. P., Ameyaw, E. E., & Robert, O. K. (2020). Evaluating the effectiveness of strategies for extirpating corrupt practices in infrastructure project procurement. *Journal of Infrastructure Systems*, 26(2), 1–12.

[https://doi.org/10.1061/\(ASCE\)IS.1943-555X.0000531](https://doi.org/10.1061/(ASCE)IS.1943-555X.0000531)

Owusu, E. K., Chan, A. P. C., & Ameyaw, E. (2019). Toward a cleaner project procurement: Evaluation of construction projects' vulnerability to corruption in developing countries. *Journal of Cleaner Production*, 216(3), 394–407.

<https://doi.org/10.1016/j.jclepro.2019.01.124>

Owusu, E. K., Chan, A. P. C., & Shan, M. (2021). Casual factors of corruption in construction project management: An overview. *Science and Engineering Ethics*, 25(1), 1–31. <https://doi.org/10.1007/s11948-017-0002-4>

Owusu, E. K., Chan, A. P. C., & Wong, T. (2021). Tackling corruption in urban infrastructure procurement: Dynamic evaluation of the critical constructs and the anti-corruption measures. *ScienceDirect*, 119(1), 1–12

<https://doi.org/10.1016/j.cities.2021.103379>

Owusu, G. M. Y., Koomson, T. A. A., Alipoe, S. A., & Kani, Y. A. (2022). Examining the predictors of fraud in state-owned enterprises: An application of the fraud triangle theory. *Journal of Money Laundering Control*, 25(2), 427–444.

<https://doi.org/10.1108/JMLC-05-2021-0053>

Patanakul, P., Kwak, Y. H., Zwikael, O., & Liu, M. (2016). What impacts the

- performance of large-scale projects? *International Journal of Project Management*, 34(3), 452–466. <https://doi.org/10.1016/j.ijproman.2015.12.001>
- Priya, A. (2021). Case study methodology of qualitative research: Key attributes and navigating the conundrums in its application. *Sociological Bulletin*, 70(1), 94–110. <https://doi.org/10.1177/0038022920970318>
- Rashidi, A., Tamosaitiene, J., Ravanshadnia, M., & Sarvari, H. (2023). A scientometric analysis of construction bidding research activities. *Costs and Cost Analysis in Construction Project Management*, 13(1), 1–17. <https://doi.org/10.3390/buildings13010220>
- Ross, P. T., & Bibler Zaidi, N. L. (2019). Limited by our limitations. *Perspectives on Medical Education*, 8, 261-264. <https://doi.org/10.1007/s40037-019-00530-x>
- Saim, N. A. I. M., Rahman, I. A., & Ismail, M. F. (2018). Factors contributing to fraudulent practices in construction project life cycle. *International Journal of Engineering & Technology*, 7(3.20), 647–651. <https://doi.org/10.14419/ijet.v7i3.20.22965>
- Sanchez-Aguayo, M., Urquiza-Aguiar, L., & Estrada-Jimenez, J. (2021). Fraud detection using the fraud triangle theory and data mining techniques: A literature review. *Computers*, 10(10), 121. <https://doi.org/10.3390/computers10100121>
- Sandhu, N., & Saluja, S. (2023). Fraud Triangle as an audit tool. *Management and Labour Studies*, 48(3), 418-443. <https://doi.org/10.1177/0258042X231160970>
- Schweinsberg, M., Thau, S., & Pillutla, M. (2023). Research-problem validity in primary research: Precision and transparency in characterizing past knowledge.

Perspective on Psychology Science, 18(5), 1230–1243.

<https://doi.org/10.1177/17456916221144990>

Seth, H., Chadha, S., & Sharma, S. (2021). Benchmarking the efficiency model for working capital management: data envelopment analysis approach. *International Journal of Productivity and Performance Management*, 70(7), 1528–1560.

<https://doi.org/10.1108/IJPPM-10-2019-0484>

Shaheen, N., Shaheen, A., Ramadan, A., Hefnawy, M. T., Ramadan, A., Ibrahim, I. A., Hassanein, M. E., Ashour, M. E., & Flouty, O. (2023). Appraising systematic reviews: A comprehensive guide to ensuring validity and reliability. *Frontiers in Research Metrics and Analytics*, 8(1), 1–9.

<https://doi.org/10.3389/frma.2023.1268045>

Sharma, K., & Kalra, S. (2024). Cognitive dissonance and mobile application continued use intentions: A thematic analysis. *DECISION*, 51, 213–231.

<https://doi.org/10.1007/s40622-024-00389-w>

Shoozan, A., & Mohamad, M. (2024). Application of interview protocol refinement framework in systematically developing and refining a semi-structured interview protocol. *ResearchGate*, 182(1), 1–12.

<https://doi.org/10.1051/shsconf/202418204006>

Signor, R., Ballesteros-Pérez, P., & Love, P. E. (2021). Collusion detection in infrastructure procurement: A modified order statistic method for uncapped auctions. *IEEE transactions on engineering management*, 70(2), 464–477.

<https://doi.org/10.1109/TEM.2021.3049129>

- Signor, R., Love, P. E., & Ballesteros-Perez, P. (2023). Detecting bid rigging in public auctions for procuring infrastructure projects: Formulating the reference scenario for decision-making. *Taylor & Francis Online*, 0(0), 1–19.
<https://doi.org/10.1080/01446193.2023.2287475>
- Singh, N., Benmamoun, M., Meyr, E., & Arikan, R. H. (2021). Verifying rigor: Analyzing qualitative research in international marketing. *International Marketing Review*, 38(6), 1289–1307. <https://doi.org/10.1108/IMR-03-2020-0040>
- Small, M. L. (2021). What is “qualitative” in qualitative research? Why the answer does not matter but the question is important. *Qualitative Sociology*, 1–8.
<https://doi.org/10.1007/s11133-021-09501-3>
- Soneji, P. T. (2022). The fraud theories: Triangle, diamond, pentagon. *International Journal of Accounting, Auditing and Performance Evaluation*, 18(1), 49–60.
<https://doi.org/10.1504/IJAPE.2022.123301>
- Subedi, K. R. (2021). Determining the sample in qualitative research. *Online Submission*, 4, 1–13. <https://www.nepjol.info/index.php/scholars>
- Sun, X., & Chen, Y. (2022). Why do people with similar levels of internal control differ in their likelihood of committing fraud? Analysis of the moderating effect of perceived opportunity to commit fraud. *Frontiers in Psychology*, 13(1), 1–13.
<https://doi.org/10.3389/fpsyg.2022.999469>
- Sun, Y. (2021). Research on bidding game and its application based on competition scenario. *Mathematical Problems in Engineering*, 21(1), Article 9999292, 1–12.
<https://doi.org/10.1155/2021/9999292>

Suryandari, N. N., Yadnyana, I. K., Ariyanto, D., & Erawati, N. M. (2023).

Implementation of fraud triangle theory: A systematic literature review. *Journal of Governance and Regulation*, 12(3), 90–102.

<https://doi.org/10.22495/jgrv12i3art10>

Suryani, E., & Fajri, R. R. (2022). Fraud triangle perspective: Artificial neural network used in fraud analysis. *Calitatea*, 23(188), 154–162.

<https://doi.org/10.47750/QAS/23.188.22>

Taherdoost, H. (2022). What are different research approaches? Comprehensive review of qualitative, quantitative, and mixed method research, their applications, types, and limitations. *Journal of Management Science & Engineering Research*, 5(1), 53–63. <https://doi.org/10.30564/jmser.v5i1.4538>

Tahmasbi, S., Karrimnia, S., & Rahimi, A. (2022). A combination of action research and reflective journal writing in an English as a foreign language class: Learners' psychological point of views and their grammar use in writing. *Frontiers in Psychology*, 13, Article 810775. <https://doi.org/10.3389/fpsyg.2022.810775>

Tenny, S., Brannan, J. M., & Brannan, G. D. (2022). *Qualitative study*. In *StatPearls*. StatPearls Publishing. <https://www.ncbi.nlm.nih.gov/books/NBK470395/>

Thomas, F. B. (2022). The role of purposive sampling technique as a tool for informal choices in a social Sciences in research methods. *Just Agriculture*, 2(5), 1–8. <https://justagriculture.in/files/newsletter/2022/january/47.%20The%20Role%20of%20Purposive%20Sampling%20Technique%20as%20a%20Tool%20for%20Info>

[rma/Choices%20in%20a%20Social%20Sciences%20in%20Research%20Methods.pdf](#)

Tjahjani, F., Rizky, B. M., Pudjiastuti, W., & Kalbuana, N. (2022). Fraud pentagon theory: Indication toward fraudulent financial reporting on non-banking sector. *International Journal of Economics, Business and Accounting Research*, 6(3), 1–12. <https://jurnal.stie-aas.ac.id/index.php/IJEBAR>

United Nations Office on Drugs and Crime. (2015). *Safeguarding against corruption in major public events*. https://www.unodc.org/documents/corruption/Publications/Major_Public_Events_Training_Materials/Facilitators_Guide_Safeguarding_against_Corruption_in_MP_E.pdf

U.S. Department of Commerce. (2024). *Gross domestic product, fourth quarter and year 2023 (advanced estimate)*. *Bea 24-02*. <https://www.bea.gov/news/2024/gross-domestic-product-fourth-quarter-and-year-2024>

U.S. Department of Health and Human Services National Institutes of Health. (n.d.). *The Belmont Report*. HHS.gov. <https://www.hhs.gov/ohrp/regulations-and-policy/belmont-report/index.html>

U.S. Department of Justice. (2022a). *Construction company owner pleads guilty to bid rigging and bribery*. Office of Public Affairs. <https://www.justice.gov/opa/pr/construction-company-owner-pleads-guilty-bid-rigging-and-bribery>

U.S. Department of Justice. (2022b). *Former Caltrans contract manager pleads guilty to*

bid rigging and bribery. Office of Public Affairs.

<https://www.justice.gov/opa/pr/construction-company-owner-pleads-guilty-bid-rigging-and-bribery>

U.S. Department of Justice. (2022c). *Former contractor pleads guilty to bid rigging and bribery*. Office of Public Affairs. <https://www.justice.gov/opa/pr/former-contractor-pleads-guilty-bid-rigging-and-bribery>

U.S. Department of Justice. (2022d). *Preventing and detecting bid rigging, price fixing, and market allocation in post-disaster rebuilding projects*. Antitrust Division. <https://www.justice.gov/atr/preventing-and-detecting-bid-rigging-price-fixing-and-market-allocation-post-disaster-rebuilding>

U.S. Department of Justice. (2024). *Transactional Records Clearing House: Official Corruption Convictions in 2023*. <https://abc7chicago.com/illinois-corruption-convictions-most-corrupt-states-transactional-records-access-clearinghouse/14397098/>

U.S. Securities and Exchange Commission. (2020). *A resource guide to the U.S. Foreign Corrupt Act (2nd ed.)*. U.S. Government. <https://www.justice.gov/criminal/criminal-fraud/fcpa-resource-guide>

U.S. Securities and Exchange Commission. (2023). *SEC enforcement actions: FCPA cases*. <https://www.sec.gov/newsroom/press-releases/2023-234>

Vu, T. T. N. (2021). Understanding validity and reliability from qualitative and quantitative research traditions. *VNU Journal of Foreign Studies*, 37(3). <https://doi.org/10.25073/2525-2445/vnufs.4672>

- Wachs, J., Fazekas, M., & Kertesz, J. (2021). Corruption risk in contracting markets: A network science perspective. *International Journal of Data Science Analyzation*, 12(1), 45–60. <https://doi.org/10.1007/s41060-019-00204-1>
- Walden University. (n.d.). *Understanding the role of an Institutional Review Board*. <https://www.waldenu.edu/programs/resource/understanding-the-role-of-an-institutional-review-board>
- Walden University. (2024). *Doctoral study rubric and research handbook*. Walden University. <https://academicguides.waldenu.edu/formandstyle/wcwc/dba>
- Wallimann, H., Imhof, D., & Huber, M. (2022). A machine learning approach for flagging incomplete bid-rigging cartels. *Computational Economics*, 62(1), 1669–1720. <https://doi.org/10.1007/s10614-022-10315-w>
- Wang, X., Owusu, E. K., & Ye, K. (2023). Impacts of external environmental factors on the collusive team scale in bidding: The case of China. *Journal of Management in Engineering*, 39(4), 1–15. <https://doi.org/10.1061/JMENEA-MEENG-5270>
- Wang, Z., Liu, J., & Guan, X. (2022). Investigating the causal complexity of corruption in project-based organizations: A scenario analysis of bidding activity in the Chinese construction sector. *Engineering, Construction and Architectural Management*, 29(10), 3893-3916. <https://doi.org/10.1108/ECAM-10-2020-0841>
- Wang, Z., Zhang, Y., Zheng, K., Zeng, R., Yuan, H., & Liu, J. (2023). A review of mega-project management research from an organization science perspective: Current status and future directions. *ScienceDirect*, 16(1), Article 100254. <https://doi.org/10.1016/j.dibe.2023.100254>

- Wawrosz, P. (2022). How corruption is and should be investigated by economic theory. *Economies*, 10(12), 326. <https://doi.org/10.3390/economies10120326>
- Weingartner, T., Batista, D., Kochli, S., & Voutat, G. (2021). Prototyping a smart contract-based public procurement to fight corruption. *MDPI Computers*, 10(7), 85–89. <https://doi.org/10.3390/computers10070085>
- The White House. (2021). *United States strategy on countering corruption*. <https://www.whitehouse.gov/wp-content/uploads/2021/12/United-States-Strategy-on-Countering-Corruption.pdf>
- Wolfe, D. T., & Hermanson, D. R. (2004). The fraud diamond: Considering the four elements of fraud. *The CPA Journal*, 74(12), 38. <https://gfoasc.org/wp-content/uploads/2014/01/Fraud-Diamond-Four-Elements.CPAJ2004>
- Worrall, J. L., & Cohn, E. G. (2023). Citation data and analysis: Limitations and shortcomings. *Journal of Contemporary Criminal Justice*, 39(3), 1–17. <https://doi.org/10.1177/10439862231170972>
- Wu, X., Zhang, L. J., & Liu, Q. (2021). Using assessment for learning: Multi-case studies of three Chinese University English as a foreign language (EFL) teachers engaging students in learning and assessment. *Frontiers of Psychology*, 12(1). <https://doi.org/10.3389/fpsyg.2021.725132>
- Yang, L., Qi, L., & Zhang, B. (2022). Concepts and evaluation of saturation in qualitative research. *Advances in Psychological Science*, 30(3), 511–521. <https://journal.psych.ac.cn/xlkxjz/EN/Y2022/V30/I3/511>

- Yap, J. B. H., Lee, K. Y., Rose, T., & Skitmore, M. (2022). Corruption in the Malaysian construction industry: Investigating effects, causes, and preventive measures. *International Journal of Construction Management*, 22(8), 1525–1536. <https://doi.org/10.1080/15623599.2020.1728609>
- Yarborough, M. (2021). Moving towards less biased research. *BMJ Open Science*, 5(1), 1–7. <https://doi.org/10.1136/bmjos-2020-100116>
- Yin, R. K. (2015). *Qualitative research from start to finish*. Guilford Press.
- Yin, R. K. (2018). *Case study research and applications: Design and methods* (6th ed.). SAGE Publications.
- Yun, S., Choi, J., de Oliveira, D. P., & Mulva, S. P. (2015). Development of performance metrics for phase-based capital project benchmarking. *International Journal of Project Management*, 34(3), 389–402. <https://doi.org/j.ijproman.2015.12.004>
- Zakari, M. B., & Button, M. (2022). Confronting the monolith: Insider accounts of the nature and techniques of corruption in Nigeria. *Journal of White Collar and Corporate Crime*, 3(2), 100–108. <https://doi.org/10.1177/2631309X211004567>
- Zhai, Z., Shan, M., Darko, A., & Chan, A. P. C. (2021). Corruption in construction projects: Bibliometric analysis of global research. *Sustainability*, 13(8), Article 4400. <https://doi.org/10.3390/su13084400>
- Zhang, B., & Li, Y. (2022). A user profile of tendering and bidding corruption in the construction industry based on SOM clustering: A case study of China. *School of Building Science and Engineering*, 12(12), 1–19. <https://doi.org/10.3390/buildings12122103>

Zhao, N., Ying, F. J., & Tookey, J. (2022). Construction procurement selection criteria: A review and research agenda. *Sustainability*, *14*(22), 1–16.

<https://doi.org/10.3390/su142215242>

Zhu, W., Cheng, K., Guo, Y., & Chen, Y. (2022). Comprehensive evaluation of the tendency of vertical collusion in construction bidding based on deep neural network. *Computational Intelligence and Neuroscience*, *2022*(1), 1–13.

<https://doi.org/10.1155/2022/2897672>

Zhu, W., Zheng, Y., Ye, K., Zhang, Q., & Zhang, M. (2021). Deterrence of punitive measures on collusion bidding in the construction sector. *Hindawi*, *2021*, 1–12.

<https://doi.org/10.1155/2021/9913413>

Appendix A: Interview Protocol

The research question for my study is: What effective strategies do U.S. agency managers use to mitigate fraud in the government bidding process to increase economic growth, reduce wasted taxpayer dollars, and increase government tax receipts?

This qualitative multiple-case study will consist of ten open-ended questions to collect insight from construction corporation managers, DOT managers, and Department of Justice investigators about the problem of bid-rigging on infrastructure construction projects.

| Interview Protocol | |
|--|--|
| Protocol Steps Protocol Actions | |
| <p>Participants selected</p> <p>The primary criteria are: This study seeks participants who have an understanding and experience in the infrastructure construction bidding process.</p> <ul style="list-style-type: none"> • Minimum of a bachelor's degree • five years' experience in the bidding process • Understanding how the bidding process can be corrupted | <p>I will contact the participants via email, followed by phone contact with the established participants who meet the needed criteria.</p> |
| <p>Set up a time and place for the interview.</p> | <p>Interviews will be conducted through Zoom, Teams, Zoom, on the phone, or in person.</p> |
| <p>Introduce the purpose of the interview, and set the climate of the interview</p> | <p>I will comfort and reassure the participants and thank them for their assistance in the study. I will then familiarize the participants with the nature of the study. The written consent form will be presented to the participants before the interview. I will ask the</p> |

| | |
|--|---|
| | participants if they are ready to begin the interview. |
| Record the interview | <p>I will announce the time and the date of the recording.</p> <p>I will then ask the participant to announce:</p> <ol style="list-style-type: none"> a. Name and title b. Level of education c. Years of experience in the bidding process. d. Ask the participants their level of understanding of the possibility of corruption in the bidding process. |
| <p>Ask open-ended questions.</p> <p>Ask additional questions as needed to elicit any clarifications and further information as needed.</p> | <ol style="list-style-type: none"> 1. Who is responsible for establishing and implementing anti-corruption measures in the government bidding process, and what specific strategies or initiatives have been put in place to mitigate fraud and ensure fair competition? 2. How frequently is the government bidding process evaluated or audited to identify potential vulnerabilities or instances of fraud, and what mechanisms are in place for continuous improvement and oversight? 3. What technologies or digital solutions are utilized to enhance transparency, streamline the bidding process, and detect fraudulent activities or irregularities? 4. What do psychological and cultural factors influence the prevalence of corruption in the infrastructure bidding process, and what measures are taken to address these underlying issues and promote ethical conduct? 5. What punitive actions or enforcement mechanisms does the government employ to deter and |

| | |
|--|--|
| | <p>punish instances of corruption or fraudulent behavior in the bidding process?</p> <ol style="list-style-type: none"> 6. What are the primary motivations or incentives driving corruption in the bidding process, and how can these root causes be effectively addressed or mitigated? 7. How rapidly do corrupt tactics evolve and adapt to circumvent existing safeguards or detection mechanisms in the bidding process, and how can agencies stay ahead of these evolving threats? 8. What training programs or capacity-building initiatives are implemented to educate stakeholders and government personnel about ethical standards, compliance requirements, and fraud prevention strategies in the bidding process? 9. What are your perspectives on the challenges and complexities associated with bidding in infrastructure construction projects, particularly regarding the risks of fraud and corruption? 10. In what ways could artificial intelligence (AI) and advanced analytics technologies be leveraged to enhance fraud detection, risk assessment, and decision-making in the bidding process, and what potential limitations or considerations should be addressed when deploying AI solutions in this context? |
| <p>Bring the interview to a conclusion. Thank the participants for their assistance with</p> | <p>Thank the participants for their assistance and time.</p> |

| | |
|---|--|
| the study and reassure them that they will have full confidentiality and will be contacted to member check the accuracy of the collected information. | Discuss the rights of the participants again, in order for the participants to fully understand their rights and reduce concerns. |
| Transcribe the interview information collected. | I will transcribe all interviews verbatim. Then, I will analyze and code all of the participants' responses to establish themes or patterns, illuminate information gaps, and establish data saturation. |

Appendix B: Interview Questions

1. Can you describe the internal controls and protocols implemented by your agency to prevent and detect fraudulent activities in the bidding and awarding process?
2. How do you promote an ethical culture within your agency to discourage corrupt behavior and foster transparency and accountability in the bidding process?
3. In your experience, what are the key factors that create opportunities for corruption in government bidding and contracting, and how does your agency address these vulnerabilities?
4. How does your agency track and monitor contractor performance throughout the bidding and project implementation phases to ensure compliance with regulations and standards?
5. Can you provide examples of strategies or initiatives implemented by your agency to mitigate fraud and corruption in the bidding process and improve the integrity of government contracts?
6. What initiatives or motivations do you believe contribute to corrupt behavior in the bidding process, and how does your agency address these underlying factors?
7. How do you assess the effectiveness of your agency's anti-corruption measures and initiatives in preventing fraudulent activities and protecting taxpayer funds?
8. Can you discuss any challenges or obstacles your agency has faced in implementing anti-corruption strategies and improving the integrity of the bidding process?

9. How do you handle instances of suspected fraud or misconduct in the bidding and contracting process, and what measures are taken to investigate and address these issues?
10. From your perspective, how does rationalization play a role in corrupt behavior in government bidding, and what steps does your agency take to challenge or counteract rationalizations used to justify unethical conduct?

Appendix C: Right to Withdraw From Study and Destroy Data With Documents

I, Mr. / Mrs. / Ms., _____ am a participant in a study conducted by Alan E. Kulevich. I hereby request the right to withdraw from the study and revoke the consent I gave earlier. I also request that any data or information relating to my participation be destroyed. I declare my wish to refuse and withdraw my prior consent to:

- Store or retain any of my leftover material.
- Store or retain and use my data for up to 5 years.
- Use my data for research purposes.

I request that you destroy the documents, electronic files, and all non-anonymized data associated with my participation in this study that has been collected up to this point.

Best regards

Printed name:

Signature:

Date: