Thematic Overview of Corruption in Infrastructure Procurement Process

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Introduction

Many public and private enterprises globally regard corruption in Infrastructure Procurement (IP) as an inescapable fact of life. This is not uncommon in the developing countries as corruption adversely influences the day-to-day modus operandi of the procurement of infrastructure projects, goods, and services. Corruption in this context refers to the abuse of position, regulatory, legal or political leverage to extract extra costs allocated to the procurement of infrastructure projects (Le et al., 2014). In this event, the project financier or developer may never recoup the loss incurred, and the perpetrators mostly deny their involvement thereof (Wang et al. 1999; Shan et al., 2016). According to the World Bank, corruption has been one of the utmost barriers to socioeconomic development which does not only result in misappropriation of resources but also, loss of lives and properties (Lewis 2003). Corruption destabilizes development by weakening the economic foundations of institutions and distorting the rule of law (Tabish and Jha 2011). In infrastructure projects, some of the widely identified adverse effects of corruption include the execution of sub-standard construction works and the distortion of the entire procurement process. This is often due to the criticality, fragility, and vulnerability of the entire procurement process to corrupt behaviours (Le et al. 2014). Bower (2003) also indicated that a construction project is an intricate process organized through different links and integrates the interests
of many stakeholders with the aim of achieving a built facility, possibly at the best price, highest quality and within the best specified time frame. The procurement process of every construction or infrastructure project is identified to be a very vital process of project’s realization. Simply put, a transparent and successful procurement process is a key determinant of completing a project promptly and within the estimated budget.

According to Clough et al. (2000) and Martins (2009), procurement includes purchasing, sourcing and every other activity connected to providing supplies, materials, equipment, workforce, knowledge, management services, and supervision to accomplish stipulated objectives of an infrastructure project. Procurement usually connects a highly fragmented supply side, typically professionals in the construction industry which include contractors, architects, engineers, suppliers, surveyors, labourers, and builders to a less fragmented demand side which includes clients, project representatives, owners and financiers. Bower (2003) highlighted that since every construction project goes through a procurement phase, there is a high potential for procurement as a practice to influence project management in the positive direction. Likewise, a possible flaw in procurement can create an adverse effect on project management. The susceptibility of any procurement phase to corruption exposes an entire project to the risk and awful impacts of corruption. There is, therefore the need to critically and empirically access the vulnerabilities and other associated risks the procurement process faces regarding corruption.

Over the past two decades, there has been a growing interest in IP, contributing immensely to the increase in the body of knowledge in the subject area. However, there is an absence of unified view and a systematic review of research studies dedicated to IP over the years which is essential for further studies. This study, therefore, aims to conduct a systematic and a holistic review of corrupt practices in IP processes. While carrying out the stipulated aim, the following specific objectives will be addressed in this study: 1. Identify the degree of thematic or topical coverage of the subject matter in construction and engineering management research; and 2. Determine and propose future research directions on corruption research in IP. This study explores these two objectives in the subsequent sections. This
study would serve as a valuable reference for industrial practitioners and researchers interested in corruption and how to deal with it in IP.

Understanding IP Systems, Policies, and Procedures

Procurement is simply as an act of purchasing or obtaining goods, works or services at the best ‘value-for-money’ rate (Love et al., 1998). Procurement systems, on the other hand, are best described as the organizational systems that delegates responsibilities and powers to individuals and firms and explicitly outline all the possible elements in the construction of an infrastructure or a project (Love et al., 1998; Liu and Wilkinson, 2011). According to Ogunlana (1999), the procurement systems regulate labour division among the experts or parties involved and also controls the modus operandi of all the processes along with associated rules and the contractual relations. The primary considerations for any procurement system include the condition of contract, project delivery method and the price formation method (Eriksson and Westerberg, 2011; Sutt, 2011). To ensure the success of a building project, one of the primary factors to put right is the construction delivery method or system to be adopted (Bennett and Grice 1990; Chan 2000). The selection of an apropos procurement system is therefore regarded as a very vital step in the process of any construction project. Construction managers or project owners are however duty-bound to determine a suitable procurement system right after the objectives and goals of the project are determined. Moreover, the person responsible for the determination of the listed criteria should do so as per the specific needs of the project and also the project’s participants abilities to tolerate risks (Sutt 2011).

An independent advisor can be called upon to help a client or a project’s financier identify any potential risks or vulnerabilities associated with the procurement process. For example a trusted project risk manager (Akintoye et al. 2008). Also, in drawing up measures to check or control any possible procurement risk, there is a need for the procurement entity to develop suitable and comprehensive risk-mitigating plans that encapsulate measures to deal with any possible occurrence of corruption at any stage of the IP process (Tabish and Jha, 2011). If a client makes a wrong choice, the penalty incurred may be time and cost overruns, project’s quality may be compromised and a possibility of general
dissatisfaction to the client (Lædre et al. 2006). Even though studies have shown that the wrong choice
a procurement system for a project may cause a serious adverse effect on the project, another adverse
situation that hinders the success of efficient delivery of a project is corruption at any stage of the
procurement process. The procurement method selected for a specific project will, therefore, have a
direct influence on the stipulated project objectives and also the level of integration that will exist among
the project team members. Other influencing variables include the nature of the project, client’s
resources, the ability to make changes and other external factors such as potential changes in interest
rates, changes in legislation and so on. The systems of procurement that are frequently mentioned and
adopted include fixed price contracting (lump sum contracting), design and construct, construction
management, on-call contracting, guaranteed maximum price, full-cost reimbursable, total package
options, partnering, public-private partnerships (PPP), performance-based contracting, and force
account (Ruparathna and Hewage 2013).

Whereas procurement systems outline the possible organizational structures for carrying out
procurement, procurement procedures and policies provide the premises for selecting a suitable
contractor to support or carry out the ideal and chosen procurement system. The policies are usually
shaped by client organization values (ISO 2008). Procurement policies can be categorized into three
main constructs, according to Touran et al. (2008). They are value-based procurement, qualification-
based procurement and low bid procurement. While the primary causes of procurement issues are
attributed to low-bid procurement, procurement units are consequently pursuing value-based and
qualification-based procurement policies. Governments, usually aim to achieve the best value or value
for money (Langdon and Everest, 2004; European Commission, 2011). However, due to corruption,
this objective is normally difficult to achieve, although this argument cannot be generalized. Value for
money in IP refers to the realization of the best and ideal amalgamation quality and full life cost to
achieve demands or needs of the customer. The different types of procurement procedures with their
respective descriptions are illustrated in figure 1. Detailed notes on most of the procedures captured in
Figure 1 can be found in the references provided (i.e., ISO 2008; Ruparathna and Hewage, 2013).
Figure 1: Procurement Procedures. (Adapted from ISO 2008; Ruparatha and Hewage, 2013)
**Research Methodology**

This study employed the methodological processes employed by Chan and Owusu (2017), Le et al. (2014), and Osei-Kyei and Chan (2015) to guide the selection of relevant papers for the review. A two-stage method, which includes targeted journal search and a desktop search, was used to identify and select the relevant reviewed documents. This method was also used in previous similar review studies (Chan and Owusu, 2017). This two-stage method is described below.

**Stage 1-Target Journal Search**

The first stage consisted of papers retrieval from targeted journals. This study followed a similar trend of other construction management (CM) review studies where consultations are mostly made to Chau’s (1997) rankings of CM journals. Although some scholars regard Chau’s (1997) ranking system to be very old due to the emergence of new journals, other scholars still see it to be very useful and continue to refer to this list regarding CM journal selection and choice of papers for consultations. However, to clear all arguments concerning the publications selection process for this review, a desktop search with the help of Scopus was also conducted at the second stage which is detailed out in section titles ‘stage 2’. Most CM review studies normally refer to the top six journals in Chau’s (1997) ranking list, however, to increase the anticipated number of research papers, this study consulted the 12 leading journals in Chau’s list. That is the journals with average scores of 60 percent and above, per the scores used in ranking the journals. The 12 identified journals are Journal of construction engineering and management(JCEM), Engineering Construction and Architectural Management(ECAM), International Journal of Project Management(IJPM), Construction Management and Economics(CME), Journal of Management in Engineering (JME), Building Research and Information(BRI), Automation in Construction(AIC), Journal of Construction Procurement(JCP), International Journal of Construction Information Technology(CIT), Cost Engineering(CEN), Transactions of American Association of Cost Engineers(AAC) and the Proceedings of the Institution of Civil Engineers-Civil Engineering (PICE-CE). The respective virtual libraries(VL) of these journals were identified, to begin with, the search. The VLs of the identified journals included the American Society of Civil Engineers(ASCE) Library,
Stage 2 – Secondary Desktop Search

After retrieving the valid papers in stage one using Chau’s (1997) rankings, the authors noticed that other recent potential journals had not been captured in Chau’s (1997) list. This propelled the commencement of a desktop search using Scopus database. In this case, relevant papers explicating the subject matter could be identified and selected. This approach has been adopted by Darko and Chan (2016) and Hong et al. (2014). Analogous to the search approach used in stage one, the following keywords “corruption, procurement, infrastructure, construction, and engineering” were searched in the Title/Abstract and Keyword field. A total of 53 papers were retrieved initial after the first search from various journals. However, the journals that were already identified in stage one were discarded. Again, another deep visual examination of the retrieved papers was conducted to discard any paper that did not cover the topic for the review. At the end of the desktops search 21 new and relevant papers including six from LME, four from Journal of Professional Issues in Engineering Education and Practice (JPIEEP) were retrieved and 11 from other potential journals were added to the final papers from stage 1. In all 48 Papers were regarded valid for the review.
Results and Discussions

After the identification of the 48 relevant publications, content analysis was employed to explicate the findings of this study. Thus, thorough readings were conducted on all the papers to establish the most discussed themes on the subject matter. Four main themes that had dominated the papers selected for this review were identified. They include causes of corruption, variants or forms of corruption, anti-corruption measures and their associated barriers.

Causal Mappings with Corruption

To create or develop strategic and effective anti-corruption measures, there is the need to determine the causal factors or instigators behind the identified corrupt act (Chan and Owusu, 2017). As indicated earlier, corruption does not just happen in a vacuum, it transpires as a result of certain causal factors. Causes of corruption simply refer to the factors that give rise or triggers the incidence of corruption. Categorically, the factors may include organisational causes, psychosocial factors, regulatory factors, statutory factors and project-specific factors which encapsulates complex contractual stipulations guiding a specific project in a given context (Zhang et al. 2016; Shan et al. 2016; Brown and Loosemore 2015; Le et al. 2014; Stansbury 2009). Under these identified, categorical or thematic constructs lie most of the causal factors or individual variables that give rise to corruption in the process of realizing any infrastructural project. Aidt (2003) and Locatelli et al. (2017) reported three conditions that serve as the breeding grounds for corruption to flourish. They include discretionary powers; economic rents and weak institutions. Also, other events such as humanitarian emergencies which may include putting up infrastructural projects for deprived or underdeveloped communities or countries also creates room for corruption to thrive (Saharan 2015). For example, in an emergency, the provision of services and amenities such as electricity, public transport, water, gas, restoration of infrastructure and others are often provided or done in haste which may lead to syphoning of funds (Saharan 2015).

Other causes include: excessive greed, low salaries, lack of supervisory skills, the belief among supervisory staff that the payment to the contractors is insufficient for them to make a profit (Danert et al. 2003); establishing improper or unnecessary prequalification requirements and then allowing only
selected firms to bid (Deng et al. 2003); lack of veracity by public servants entrusted with IP, weak accountability, bad governance, manifested by lack of transparency (Osei-Tutu et al. 2010); lack of auditing procedures (Bowen et al. 2012); political instability, low level of professionalism of the bureaucracy, lack of transparency and accountability, (Del Monte and Papagni, 2007; Neupane et al. 2014; Kolstad & Wiig, 2009); monopoly power over a good or service (Klitgaard 1988).

According to Boyd and Padilla (2009), this issue of corruption is deeply rooted in the very core of public enterprises and in sectors where employees are not satisfied with their remuneration, they tend to supplement it with proceeds of corruption. These kinds of causal factors are regarded as systemic corruption and would be difficult to wipe out without palpable and major alterations in government practice. Analogous to IP, due to the intricate process, systems and procedures involved, corruption may be very difficult to identify unless proper auditing and mitigating measures are put in place. Therefore, to deal with the menace of corruption, it is expedient to deal with it from the causes as listed above, although taking other factors into consideration such as the forms of corruption to be dealt with and others. This notion has underpinned the need for researching corruption purely to identify the causes behind the act.

**Corruption Variants in IP**

The evolution of corruption over the years has resulted in many different and unique forms of corrupt practices and can be termed as the different faces or manifestation of corruption (Chan and Owusu 2017). Transparency International (2005) broadly categorize the CFs into two main constructs, namely petty and grand corruption, this review identified 16 forms of corruption. They include collusive tendering, bribery, patronage, nepotism, collusion, kick-backs, bid rigging, cartels, fraud, ghosting, front companies, embezzlement, conflict of interest, favoritism (Deng et al. 2003; Danert et al. 2003; Boyd and Padilla 2009; Neupane et al. 2014; Bowen et al. 2012; Ameh and Odusami 2010; Saharan 2015). Whereas petty corruption is concerned with smaller contracts, for instance, minor infrastructural or developmental projects for local governments, grand corruption involves large contracts usually executed by state or central governments through self-funding or help from donors irrespective of the
form in which the corrupt act manifests (TI, 2005). Each one of these forms may have their relative
causative instigators or common causes, and their nature and characteristics may also vary widely from
one another although some of the forms share some common traits. For instance, Chan and Owusu
(2017) identified a number of forms pertaining to the construction industry in general and categorized
under five main factors. The variables under these components shared either common meanings or
terms that were used interchangeably. The five main categories of CF in the construction industry
include bribery acts, fraudulent acts, collusive acts, extortionary acts and discriminatory acts.

Whereas some researchers are of the view that the tendering stage of most IP processes records
the highest incidents and forms of corrupt practices, Deng et al., (2003) is of the view that the most
critical and highest forms of corruption normally takes place at the project performance stage, that is,
after the contract is awarded. The authors emphatically pointed out that it is at this stage that the
purchaser or the contractor fails to enforce suitable and stipulated standards of the contract objectives.
For example, the failure to enforce quality and performance standards; the ability of the contractor to
sidetrack delivered goods meant for a project; resell or divert the project’s resources for personal use;
request for other private rewards or benefits such as trips, gifts, and many others. The authors also
reported that if a bidding procedure is less transparent, there is a higher risk for the bid to be rigged.
Sahara (2015) indicated that in the process of providing infrastructural projects for humanitarian
assistance in less privileged environments, the common forms of corrupt practices exemplified include
embezzlement or diversion of aid resources, misuse, and abuse of support agency assets, fraud, and
bribery. Ameh and Odusami (2010) also highlighted that bribery at the contract award stage is the most
evident or noticeable CF in IP. On the stance of favouritism, Kaufman (2003) indicated that it is one of
the most noted forms of corruption at the evaluation stage of every bidding process and remains the
number one corrupt practice in the OECD member countries as compare to the other corrupt public
governance sources.

Anti-Corruption Measures (ACMs) and associated Barriers in IP

After identifying the forms and causal factors of corruption in IP, the third theme that was captured in
most of the papers was ACM. An ACM simply refers to any effective strategy or framework aimed at
suppressing or annulling corruption (any form with associated causative factors). Previous studies conducted on ACMs classified the variables that emerged under this construct into three different categories. They are proactive or preventive measures, promotional measures and punitive or reactive measures (Tabish and Jha 2011; Narasimhan 1997).

In simple terms, proactive measures are set to prevent the incidence of corruption, promotional measures are made to raise awareness and educate the entire public and the public servants on corruption, and reactive measures are also set to render punitive actions to culprit or offenders. Punitive measures are often established and enforced by legal principles, rules and approaches for conducting effective and pragmatic investigations, disciplinary actions, and other deliberate means to daunt corrupt practices. They consist of measures such as dismissing employers (project parties) from employment coupled with other disciplinary actions such as confiscating properties obtained by means of corruption, offering harsh punishment such as long-term or life imprisonment to offenders, barring identified culprits from taking part in future projects among others (Stansbury 2009; Shan et al. 2015; Sohail and Cavil 2008; Boyd and Padilla 2009). However, the problem identified in adopting and applying the ACMs in different contexts does not lie in dispensing any of the measures but rather, how to strategically and efficiently integrate and coordinate the three to treat different kinds of corruption cases in different contexts (Narasimhan, 1997). Confronting corruption in a sustained manner during the procurement of infrastructure works would require comprehensive and integrative approaches that combine preventive, public education and punitive elements. Over the past two decades, different measures and frameworks have been developed by researchers, anti-corruption institutions and policymakers in both public and private sectors, with the aim of thwarting the incidence of corruption in IP. Most consulting organizations and governments give their maximum output to develop and define anti-corruption policies. However, a number of them lack the consistency of daily execution of such stipulated policies. Others also are unsuccessful to acquire regular and systematic responses which may tend to enhance their transparency management systems. This has resulted in the ineffectiveness of some of the measures (Meagher 2004; Tangri and Mwenda 2006; Owusu et al. 2017). Not because the measures are impotent to check corruption, but rather, there is no one to enforce that the stipulated anti-
corruption measures must be observed. This in itself forms a barrier to ACMs that is discussed in the
next paragraph. According to Osei-Tutu et al., (2010) remedying the problem of corruption begins from
the awareness and recognition of its prevalence. Raising the awareness of corruption does not only
inform the audience about the practices of corruption but also the reactive measures that a culprit may
receive. Also, there is some evidence from construction and other sectors that improved transparency,
especially when combined with thorough oversight, can improve development outcomes through its
impact on the quality of governance (Kenny 2012). Deng et al. (2003) also indicated that a well-
designed surety system reinforces transparency and restricts the opportunities for corrupt behaviour,
while a poorly designed surety system can foster corruption. All these and more have been identified
either empirically or theoretically by various researchers with how they can be implemented or adopted
and applied to mitigate corrupt practices.

On the contrary, whiles great efforts are constantly devoted to the development of new and
innovative ACMs and frameworks to help mitigate corrupt practices in IP, there are other factors
different from the causal measure, that hinder the full effectiveness of ACMs. These factors attack
ACMs either by hampering the adoption of the measures of the effective applicative thereof. As an
emerging thematic area that has not been deeply explored yet, one of the early works on this construct
was reported by Bowen et al. (2012). The authors highlighted the barriers that affect the effective
reporting of corrupt practices in the South African construction industry. These identified barriers make
it difficult to achieve the full potencies of ACMs. Some of the identified barriers include the fear of
being marginalized, fear of being caught reporting, social or occupational stigma and rejection,
bureaucratic process of reporting corrupt cases, lack of independence, fear of victimization,
inappropriate internal institutional coordination / interagency relations, the perception of no better end
result, distrust in system, inadequate staffing, lack of understanding and knowledge of rights within a
contractual environment, difficulty in providing concrete evidence among others were reported in the
study of Bowen et al., (2012) in the South African context. This area may need more research
exploration to constructively deal with corruption in IP.
Limitations and Future Research

First, it must be emphasized that the topic of corruption in infrastructure procurement is a very broad and comprehensive subject matter. Dealing with the topic of corruption is itself a complicated issue due to its nature. Moreover, conducting corruption research in procurement, therefore, increases the magnitude of complexity due to the complex nature of procurement and especially in different contexts (for example, countries in Europe and others). This is because the subject does not only deal with the constructs of corruption but also the contextual scopes involved. This, therefore, raises the number of concerns to be addressed. However, this forum cannot explore all the thematic constructs of corruption as well as the contextual disparities reported on the subject matter into detail due to the specificity of the nature of corruption in different contexts. Moreover, the word and space allowance allotted limits detailed explorations to be conducted especially in the case of forum manuscripts. The authors, therefore, acknowledge that this forum is limited in addressing all the constructs involving the dynamic physiognomies of corruption regarding specific contexts. On the other, this forum explores the overview of the thematic constructs of corruption captured in IP on a generic scale.

Considerable efforts have been made to identify the several variables under the thematic constructs identified in this study which include, causes and forms of corruption and anti-corruption measures suitable for curbing corrupt practices. Other reviews have also gone a long way to identify risk composing variables, or what other studies term as vulnerability to corruption (Le et. 2014) or corruption indicators (Shan 2016), which are more context-specific. This review revealed a significant theme which was briefly discussed by Bowen et al. (2012) but was hardly identified or noted in other publications known as the barriers to the effective application of anti-corruption measures. Just as the three constructs above (forms, causes, and ACMs) have been deeply explored, there is the need to look into the measures that serve as hindrances to the effective application of anti-corruption measures in different contexts since these barriers may be context-specific. This direction is deemed important because, in some instances, apropos measures can be put in place to check corrupt practices, however,
due to some internal or external constraints, the measures set may be ineffective. However, the
ineffectiveness may not be attributed to the actual measures per se but rather the constraint forces that
have not been explored. It is therefore very keen and vital that a direction is taken to explore and address
these constraint forces.

Moreover, exploring the relationships between the major constructs of both corruption and IP
is very vital for the future of procurement practice. For instance, there is a need for research to be
conducted to draw the relationship on how the major constructs under corruption namely causes, forms,
risk indicators, anti-corruption measures (ACMs) and barriers to effective adoption and application of
ACMs influence or affect the systems, policies, procedures and the processes involved in IP.
Investigating the causal correlations empirically will help reveal the pressing variables of the various
constructs of corruption and their causal effects on the various categories of IP and how strategic
measures or frameworks can be drawn to deal with this menace in IP. This will also help influence and
inform clients, project financiers or managers on the best system and procedure to adopt for a specific
project. For example, a research study can be conducted to investigate the most insistent causes and
forms of corruption in any of the procurement system, say guaranteed maximum price or public-private
partnership taking into consideration effective measures to check any impending or forecasted barriers
to the effective application of ACM. The findings will help develop the best strategic and
comprehensive measures or framework to adopt to mitigate or help check corruption in these mentioned
systems. The findings will also go a long way to influence the choice of the best system in terms and
procedures to consider or adopt regarding clean procurement. Other interesting findings may crop up
that will help the future of IP practice.

Lastly, another interesting observation made is attributed to the disparities regarding
projective inefficiencies meaning from administrative or managerial inefficiencies. It must be
emphasized that inasmuch as there might be a fine line between corruption and inefficiencies,
some forms of administrative inefficiencies such as asymmetric information amongst project
parties as well as the absence of efficient and responsible administrative systems have been
captured as indirect organizational-specific causal factors of corrupt practices (Sohail and Cavill 2008; Bowen et al. 2012; Shan et al. 2015). In other instances, Owusu et al. (2017) have identified these as risk indicators that can allow corrupt acts to thrive. In their argument, inasmuch as some organisational inefficiencies may not be direct causes of corruption, they create the room for corruption to flourish. For instance, a number of reports indicate that corruption thrives because of systemic and organisational inefficiencies (Owusu et al. 2017). However, the etymology and contextual underpinnings of these two terms need to be defined in order to explicitly draw the disparities and relationships between these two. This is as well recommended for further discussions.

**Conclusions**

This study sought to explore the various constructs captured under the subject matter of corruption in the context of infrastructure procurement. Following the works on the subject matter conducted in this area in these past years, there has been a significant increase in the body of knowledge on this subject matter. With the achievements of such enormous progress, a gap in the unified view of these constructs and the systematic review of the relevant literature regarding the constructs and their effects on IP practices which are vital for future endeavour remained unexplored. This reason triggered the direction and the aim for conducting this review study. After a systematic and a comprehensive search for publications on the topic was conducted, 48 relevant articles were retrieved and formed the foundation for further analysis. The review revealed the prevalent thematic areas of corruption explored in IP. They included forms, causal mappings, and the risk indicators, the ACMs developed so far and the barriers that impede the effective adoption and application of these measures in IP. Also, the constructs identified under IP included the systems, processes, policies, and procedures. Each of the corruption constructs is composed of individual variables that affect the IP constructs directly or indirectly. Examining the identified constructs was conducted using the content analysis technique, and directions for future research such as the investigation of the causal correlations among the constructs were
proposed. As an introductory review study, this forum is aimed at provoking a detailed discussion and need for more research works to be conducted on the subject matter aimed at extirpating the proliferation of corruption in IP.

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