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Corruption in the Malaysian construction industry: investigating effects, causes, and preventive measures

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Analysing the Causes of Corruption in the Malaysian Construction Industry

Abstract

Purpose – Corruption continues to be a pervasive stain on the construction industry in developing countries worldwide, jeopardising project performance and with wide-ranging negative implications for all facets of society. As such, this study aims to identify and analyse the causes of corruption in the construction sector of an emerging economy such as Malaysia, as it is crucial to uncover the specific facilitating factors involved in order to devise effective counter strategies.

Design/methodology/approach – Following a detailed literature review, 18 causes of corruption are identified. The results of an opinion survey within the Malaysian construction industry are further reported to rank and analyse the causes. The factor analysis technique is then applied to uncover the principal factors involved.

Findings – The results indicate that all the considered causes are perceived to be significant, with the most critical causes being avarice, relationships between parties, lack of ethical standards, an intense competitive nature, and the involvement of a large amount of money. A factor analysis reveals four major causal dimensions of these causes, comprising: (1) the unique nature of the construction industry and the extensive competition involved; (2) unscrupulous leadership, culture, and corruption perception; (3) a flawed legal system and lack of accountability; and (4) ineffective enforcement and an inefficient official bureaucracy.

Research limitations/implications – The study presents the Malaysian construction industry's view of the causes of corruption. Therefore, the arguments made in the study are influenced by the social, economic, and cultural settings of Malaysia, which may limit generalisation of the findings.

Practical implications – This paper helps stakeholders understand the root causes and underlying dimensions of corruption in the construction industry, especially in Malaysia. Recommendations for changing cultures that may be conducive to corrupt practices, and anti-corruption measures are suggested based on the findings of the research.

Originality/value – These findings can guide practitioners and researchers in addressing the impediments that give rise to the vulnerability of the construction industry to corrupt practices and understanding the ‘red flags’ in project delivery.

Keywords: Causes; Construction industry; Corruption; Factor analysis; Malaysia; Unethical practices

Introduction

Most developing countries are making little or no progress against the corruption pandemic (Transparency International 2019a); the construction industry is no exception. Corruption, fraud, and scandals are a common feature of construction business. Bearing in mind that large-scale investment funds are channelled annually into building and infrastructure megaprojects, there are abundant opportunities for corrupt actions and profiteering (Bowen et al. 2012; Zou 2006). International reports and studies depict the industry as the most corrupt sector globally (e.g., De Jong et al. 2009; Owusu et al. 2019b; Sohail and Cavill 2008a; Transparency International 2011). Corruption worsens overall project performance (not limited to time, cost, quality, safety, and satisfaction) and the benefits delivered (Damoah et al. 2018; Locatelli et al. 2017; Nguyen and Chileshe 2015). When construction quality and safety standards are impaired, human lives may also be at stake (Transparency International 2011).

According to Transparency International (2019b), corruption can be interpreted as the misuse of entrusted power to acquire personal interest or benefit, consisting of a series of dishonest,

improper or unlawful behaviours and the violation of established rules. The link between money and corruption is more insidious. Collins et al. (2009, p.103) understand that “like other illegal activities, engagement in corruption proceeds from the beliefs, social relationships and incentives facing individuals”. Table 1 presents the most reported forms of corruption in the literature.

<Insert Table 1 here>

The 2018 Corruption Perceptions Index, which ranks 180 countries worldwide based on the ratings provided by experts and business executives relating to the perceived levels of public sector corruption, places Denmark, New Zealand, and Finland at the top of the list while emerging economies are perceived to have high levels of corruption. Malaysia, in particular, is ranked 61, which is in the top 35% (Transparency International 2019a). As for the likelihood of companies paying bribes abroad, the Transparency International’s Bribe Payers Index 2011 places Malaysia in 12th place (China and Russia, for example, are ranked the lowest at 27th and 28th respectively). Other lowly ranked emerging fast economies include Mexico, Argentina, Indonesia, India, and South Africa (Transparency International 2011). For the developing world, construction continues to play a central role in facilitating national socio-economic development and employment. However, the costs of corruption in this sector are distinctly damaging, with social, political, economic, and environmental implications (Stansbury 2005; Transparency International 2011). The consequences are far-reaching and always at someone’s expense, including weaker establishments, losses to national wealth, resources diverted from the intended purposes, and increased engineering and environmental disasters (Krishnan 2009; Transparency International 2019b). Large sums of money are being extracted while local communities are either being deprived of needed developments or provided with inferior facilities (Bowen et al. 2007; Gabriel 2018; Sohail and Cavill 2008b). Accordingly, Hakimi and Hamdi's (2017) analysis of the effects of

corruption on investment and growth in 15 Middle East and North African (MENA) countries during the period 1985 to 2013 revealed that corruption is a major impediment to sustainable development and economic growth.

The current mainstream studies devoted to corruption are mostly directed toward investigating the relationship between corruption and variables relating to economic, social, and political aspects (Damoah et al. 2018). However, there is little mention of this in the construction and engineering management literature due to the sensitive nature of the subject matter (Le et al. 2014a; Locatelli et al. 2017). Andrews et al. (2019, p. 600) explain corruption as “notoriously elusive, problematic, even risky topic of research endeavour”. As such, empirical knowledge about the causes of corruption in the sector is still limited (Kenny 2009). The pervasiveness and persistence of the problem demands a sustained effort to add incrementally to the accumulated base of knowledge of this phenomenon so that effective preventive measures can be devised. In seeking to avoid the effects of corruption further undermining the reputation of the construction industry, particularly in the developing world, an obvious first step is to identify the root causes involved. The objectives of this study are therefore to:

identify and analyse the causes of corruption in the construction sector of an emerging economy such as Malaysia; and

uncover the underlying dimensions that facilitate corruption in project-based construction settings.

To achieve these objectives, a detailed literature review of previous studies relating to corruption around the world is made, from which a list of 18 major causes is identified. A questionnaire survey of 112 experienced Malaysian construction professionals is then analysed to prioritise the causes. Thereafter, the data set is subjected to a factor analysis to uncover the underlying dimensions involved, which are shown to comprise the unique nature

of construction industry and its extensive competitive environment, unscrupulous leadership, culture and corruption perception, flawed legal system and lack of accountability, ineffective enforcement, and an inefficient official bureaucracy. The research findings presented in this paper are value-bound and significant for policymakers, government officials, enforcement agencies, researchers, project management practitioners, and the public to grasp a deeper understanding of the prevailing factors inducing corrupt practices in the construction industry, which are vital precursor for containing construction corruption in the future.

Causes of Corruption in the Construction Industry

Given the important role of the construction sector in expanding economic prosperity, the pervasive nature of corruption has become a major social and political issue in many developing countries. For this reason, research into corrupt practices in the industry has become an important field of study in its own right (Ameyaw et al. 2017; Le et al. 2014a; Osei-Tutu et al. 2010), although as yet still incomplete in the project management literature (Damoah et al. 2018; Locatelli et al. 2017). Table 2 presents a list of the most frequently cited reasons for construction corruption identified from the literature to date.

<Insert Table 2 here>

According to Sohail and Cavill (2008b), corrupt practices can occur at every phase of project delivery. Their research in Pakistan revealed the common practices of corruption to be associated with illicit means of land acquisition, excavation using unauthorised equipment, dumping of unapproved material, illegal utility connection, and illegal storage of materials on the site. Other types of internal fraud cases are inflated invoices, claims for work completed using fictitious materials/services, and reimbursement of non-existent or fictitious business expenses (Gunduz and Önder 2013). According to Bowen et al. (2007), unethical behaviour in the South African construction industry is linked to biased tendering practices, over-claiming, and unwarranted withholding of work payments. Using a thematic analysis, Bowen

et al. (2012) established that the primary reasons for corruption comprise the shortage of skills and ineffective processes, negative role models of public officials, non-existent or inadequate sanctions, and poor standards of ethics. Their modified fraud triangle theory is built upon elements of pressures, opportunities, and rationales.

Owusu et al.'s (2019a) recent systematic literature review of 37 publications relating to the causal factors of corruption from 10 selected journals identified 44 causes of corruption, of which the most common are overly close relationships, poor professional ethical standards, negative working conditions, negative role models, and inadequate sanctions. They then grouped the causes into psychosocial, organisational, regulatory, project and statutory-specific factors. The scarcity of research examining the effect of corruption on project failure in developing countries motivated Damoah et al. (2018) to explore this area, using Ghana as a case study. Their criteria for failure include time-cost overruns, deviation from intended purpose, stakeholder dissatisfaction, and sector and national underdevelopment. They also observed that corruption practices occur at the individual, institutional, and relationship levels. Another Ghanaian study by Owusu-Manu et al. (2018) found out moral hazard and adverse selection of construction projects resulted in funds being siphoned off, with subsequent consequences on profitability.

In considering the Chinese public construction sector, Le et al. (2014a) examined the relationships between the causes of, and susceptibilities to, corruption using a partial least squares structural equation modelling (PLS-SEM). Here, the causative factors of corruption were grouped into two categories: flawed regulation systems and lack of a positive industrial climate. Their statistical model affirmed the positive association between the causative factors of corruption and corruption susceptibilities, which were measured using reflective variables relating to immorality, unfairness, opacity, and procedural and contractual violation. In another Chinese study, Zhang et al. (2017) specifically examined the deficiencies of the

business-to-government (B2G) tendering process, their findings revealing that Chinese construction companies are known to indulge in corrupt activities with government officials to win construction projects, with a factor analysis identifying six underlying factors relating to flawed regulation systems, negative encouragement, lack of professional ethics and codes of conduct, illegitimate gains, lack of competitive and inequitable bidding practices, and the *guanxi* mechanism. Likewise, Tabish and Jha (2011) observed that the major indiscretions in public procurement in India are issues concerning transparency, professional standards, fairness, contract monitoring, and regulatory and procedural loopholes.

From a behavioural perspective, Nordin et al. (2013) have appraised corrupt actions based on the Model of Corrupt Action whereby the four significant factors comprise the desire for personal gain by means of corrupt deeds, subjective norms, and perceived behavioural control and attitude.

Research Methodology

Recognising the sensitivity of corruption, several warranted techniques for carrying out research into sensitive and distressing topics were deliberated in concordance with Brown and Loosemore's (2015) investigation into corruption in the Australian construction industry. First, ethical clearance to involve human subjects in research was obtained from the administering institution. Second, anonymity and confidentiality of respondents is maintained – they were also not required to reveal any involvement in corrupt activities in practice in any response. Another notable consideration is that response bias for such a sensitive topic may be lower when a self-completion survey is employed instead of one conducted face-to-face (Bowling 2005).

Questionnaire Survey

A structured questionnaire is adopted here as a robust tool for detailed academic enquiry involving a large population of construction professionals. A comprehensive synthesis of the existing literature and discussions with key stakeholders were first carried out. This resulted in the identification of 18 causes of corruption in the industry. The questionnaire was subsequently drafted in clear and simple language to provide clarity and an easy basis for the respondents' responses (Ye et al. 2014).

The questionnaire contains two parts. Part A consists of 18 causes of corruption. For each cause, the respondents were asked to indicate their level of agreement or disagreement according to their knowledge, on a given five-point Likert scale: ranging from 1 (strongly disagree) to 5 (strongly agree). The five-point Likert scale was adopted to facilitate the ranking exercise where numerical values can be assigned to the respondents' ratings and enable further statistical analyses. Part B garners such general demographic information as the respondents' type of organisation, working experience, position, academic qualification, household income level, and nature of project involved. The length of the questionnaire is limited to 15 minutes to avoid respondent fatigue and encourage a higher quality of responses.

Data Collection

A pilot survey was initially distributed to 30 experienced Malaysian practitioners to ascertain that the questionnaire was comprehensible and appropriate (Yap and Lock 2017). After making some necessary resulting modifications, the convenience and snowball sampling approach was adopted, as this is widely used for survey research in the construction engineering and management field (e.g. Fan et al. 2002; Hu et al. 2016; Ling and Tran 2012). This was used in the main survey to distribute 250 e-survey through emails and LinkedIn platform to targeted experienced construction professionals and ensure the questionnaire

reached a large number of organisations. The sampling frame encompasses the Klang Valley region (also known as Greater Kuala Lumpur) which is the epicentre of growth and where such major cities as Kuala Lumpur, Petaling Jaya, and Shah Alam are located. As such, this region has the most construction activities in Malaysia (Department of Statistics Malaysia 2018). It is also worth mentioning that this region has the highest cost of living in Malaysia (Yap and Ng 2018). Follow-reminders for non-respondents were also issued to improve the response rate. Over a period of two months, 112 (42.9%) valid questionnaires were returned, comprising 32 (28.6%) from developers, 41 (36.6%) from contractors, and 39 (34.8%) from consultants, providing a reasonable cross section of construction professionals for a balanced view of responses. The response rate attained is typical for research of this kind, being generally considered as acceptable and adequate for a reliable analysis (Deng et al. 2018; Yap et al. 2018a). In addition, with a free parameter ratio exceeding five, the sample size is considered as adequate for factor analysis (Yap et al. 2019; Ye et al. 2014).

Profile of Respondents

Table 3 provides detailed information concerning the respondents' demographics, comprising representatives from developers, contractors, and consultant organisations. The majority (91) (81.3%) had more than six years working experience within the construction sector, with more than half holding managerial positions or above. Additionally, 95% hold a Bachelor or higher degree. Most obtain a monthly salary above RM 3,000 and have experience in handling both private and public projects. In this respect, the respondents are deemed qualified to provide a sound judgment on the studied variables (Ye et al. 2014; Zhang et al. 2017).

<Insert Table 3 here>

Questionnaire Reliability

The reliability of the five-point Likert scale adopted in the questionnaires is measured using Cronbach's α coefficient parameter. With a value of 0.93, this denotes good overall reliability and that the scale provides a good measure of the variables (Deng et al. 2018; Doloi 2009).

Statistical Analysis Approach

The quantitative data analysis is performed with the aid of Statistical Package for Social Sciences (SPSS) software. The mean score method used has been extensively employed to rank relevant variables in previous construction management studies (e.g., Ameyaw et al. 2017; Deng et al. 2018; Yap et al. 2019). Basing on the five-point Likert scale, a mean score exceeding 3.00 indicates that the variable is regarded as important. Nevertheless, a one-sample t-test (value = 3) is also conducted to statistically determine the level of significance of each variable. Finally, an exploratory factor analysis is applied to uncover the underlying dimensions involved.

Results

Ranking of Causes

Table 4 presents the mean, standard deviation, and *t*-test of the importance ratings for each variable as arranged in descending order. All the causes of corrupt practices have a mean value above 3.000 and are statistically significant at the confidence level of 95%. All the variables are therefore relevant and perceived as significant. Two of the leading causes (C13 and C7) have a mean score beyond 4.000. The following discussion deliberates on the five most critical causes of corruption.

<Insert Table 4 here>

“Personal greed towards money” or avarice is ranked the highest (mean = 4.161), which is therefore regarded as a remarkably influential causal variable of corruption in the industry.

Greed is defined as lusting for something beyond one's need that leads to an unfettered desire for money. Thus, money and greed are powerful forces that become corrupting influences on people and their environment, especially when the cost of living is high. In the case of Malaysia, the Central Bank of Malaysia's provisional estimates of a living wage for those living in Kuala Lumpur range between RM 2,700 and RM 6,500 per month. However, around 80% of the population earns less than RM 6,000 per month (Yap and Ng 2018), with up to 27% earning below the living wage in Kuala Lumpur in 2016 (Central Bank of Malaysia 2018). That being so, personal greed lures corruption and is much attributed to the personal behaviour and attitudes of the individual (Melgar et al. 2010; Nordin et al. 2011). Although greed or personal desire for gain is indeed a strong motivator of human behaviour, one's inability to withstand temptations will result in wrongdoing on the part of weak or insufficiently ethical individuals (Nas et al. 1986). In this regard, Zhang et al. (2017) relate greed to personal values and moral vies. According to Othman et al. (2015), temptation, self-interest, poor integrity, as well as lack of principles, are parameters linked to moral impurity. Olusegun et al.'s (2011) field survey involving construction practitioners with more than 10 years working experience in the South Western States of Nigeria observed that excessive love for money (avarice) is one of the leading determinants of corruption in the Nigerian construction industry. Such pressures encourage low integrity individuals to participate in corruption (Bowen et al. 2012) especially in situations of poverty (Olusegun et al. 2011). "Relationships between the parties" is in second place (mean = 4.000). It is clearly easier to participate in corruption when there are accomplices. A comparable finding is reported by Le et al. (2014a) concerning vulnerability to corruption in public projects in China arising from overly close relationships between the contracting parties. Unique to doing business in China, a close relationship is associated with the *guanxi* influence on building personalised social networks with officials to gain a competitive advantage (Zhang et al. 2017). Likewise in

India, top management teams engaging in social ties with government officials is perceived as a common and acceptable means of competition (Collins et al. 2009). Although high-quality business relationships between project stakeholders are crucial to the success of public construction projects (Ning and Ling 2013), inextricably linked political-industry connections may trigger nepotism, favouritism, collusive tendering (bid-rigging), conflicts of interest, and confidentiality breaches, all of which are forms of corruption (Owusu et al. 2019c; Vee and Skitmore 2003). Corruption is more frequent when there are nefarious ‘grabbing or helping hands’ either internally or externally to obtain ‘favours’ and ‘opportunities’. In this regard, “who you know” may matter more than “what you know”, and the old adage is true in winning projects. Depending on the quality of the social relationships involved, not all parties will have a ‘level playing field’ due to lack of honesty and special considerations in project approval or tender award.

“Lack of ethical standards” is rated the third most critical cause contributing to corrupt practices (mean = 3.946). Owusu et al.'s (2019a) review of 37 construction management publications revealed poor professional ethical standards as the most common causative driver of corruption in the construction industry, citing 12 papers. The establishment of an ethical standard is needed to ensure that the practitioners act in an appropriate professional manner (Tabish and Jha 2011). Corruption levels in the construction industry are often affected by the ethical behaviours of the professionals involved (Olusegun et al. 2011; Ray et al. 1999; Zarkada-Fraser and Skitmore 2000). For instance, contractors are said to tend to divert their behaviours and actions away from ethical standards, as they are often more concerned with making a profit (Abdul-Rahman et al. 2010). However, each profession is bound by its own interest and code of ethics which can be divergent in nature and result in conflicting ethical standards and practices, affecting the professionals’ quality of performance (Abdul-Rahman et al. 2010). The lack of ethical codes of practice and the absence of

enforcement of the codes are seen to significantly encourage corrupt actions in the Ghanaian construction industry for instance (Ameyaw et al. 2017). According to Oladinrin and Ho (2015), ethical codes are hard to put into practice in construction due to managerial and organisational-, planning and monitoring- and value and interest- hindrances. They further underscore that major predicaments are due to an excessive focus on profitability, underdeveloped and inadequate ethical education, and a lacklustre commitment to written codes.

“Intense competitive nature” and “large amount of money involved” are tied with a mean value of 3.893. When two or more variables share the same mean score, the variable with lower standard deviation is considered as more important (Ye et al. 2014), resulting in “intense competitive nature” being ranked in the fourth place among all the causes measured. Competitive nature in the construction industry, especially during the tendering process, increases the tendency for corruption (Gunduz and Önder 2013). Such construction activity as the tender process is highly competitive (Sohail and Cavill 2008a) whereby the tenderers need to propose their most competitive price in order to obtain work. Thus, in order to defeat other tenderers, some contractors may choose to adopt some forms of corrupt practices to obtain the tender reward on relatively tight profit margins (Sohail and Cavill 2008a). Although anti-competitive behaviour is considered unethical and collusive in nature (Hartley 2009; Signor et al. 2017), it is a ‘taken-for-granted’ business practice to reduce uncertainty in securing projects (Collins et al. 2009) - increasing the firm’s chances of survival. In turn, the project procurement system is put in a negative light when a contract is awarded to a contractor who has not submitted the most competitive bid (Bowen et al. 2007; Shen and Song 1998). According to Ameyaw et al. (2017), the lack of transparency in the bid evaluation and awarding of contracts can often lead to inflated prices and yield poor project performance.

“Large amount of money involved” is ranked fifth. High levels of corruption in the industry are closely linked to the construction business model and operations involving the significant size and volume of contracts, and complexity in supply chains, as well as considerable dealings with the public sector. The high cost of assets and large volume of funds flowing between public and private organisations make it easier conceal bribes and inflate prices (Sohail and Cavill 2008a) - giving rise to corruption, as unscrupulous parties can take advantage by increasing the total contract value by bribes and kickbacks, which may not be easily discernible by others apparent. Despite these shortcomings, Zou (2006) opines that the construction industry is not yet ready to embark on modern-day management methods to adequately monitor payment processes across the complex transaction chains involved, but rather rely heavily on the traditional approach. It is worth noting that many of the current checks and balances in the legal system are ineffective for managing the construction market (Zou 2006).

Exploratory Factor Analysis of Corruption Causes

Exploratory factor analysis (EFA) is a multivariate statistical approach for determining the patterns of correlations of a collection of observed variables in a dataset. The method has been commonly used to provide a factor structure (a manageable set of variables based on strong correlations) in many previous construction project management studies (e.g. Deng et al. 2018; Yap et al. 2019; Zhang et al. 2017). The Kaiser–Meyer–Olkin (KMO) index ($KMO \geq 0.50$) and Bartlett’s test ($p\text{-value} < 0.05$) are used to ascertain the factor reliability while the latent root criterion (Eigenvalues > 1.0) is applied to determine the optimal number of groupings (Field 2013; Hair et al. 2010). The KMO value of 0.888 and Bartlett’s test result ($p\text{-value} = 0.000$) indicates the suitability of the data set for factor analysis (see Table 5).

<Insert Table 5 here>

<Insert Figure 1 here>

Figure 1 contains the scree plot for the 18 items. The conventional varimax orthogonal rotation is employed (Yap et al. 2018b). Four components are extracted with a cumulative variance of 67.519% as indicated in Table 6, which exceeds the recommended value of 60% for establishing construct validity (Field 2013; Hair et al. 2010). In addition, the communality values for the variables extracted within the four factors are all well above the 0.50 level (Deng et al. 2018). Figure 2 depicts the four underlying factors with the variance explained and factor loadings for each item. The label of the underlying factor is assigned according to the variables with higher factor loadings or a whole set of variables (Hair et al. 2010; Yap et al. 2018b).

<Insert Table 6 here>

<Insert Figure 2 here>

Discussion of Factor Analysis Results

Based on an examination of the inherent relationships between the variables in each of the factors, the four extracted factors and associated variables can be interpreted and termed as the unique nature of the construction industry and extensive competition, unscrupulous leadership, culture and corruption perceptions, flawed legal system and lack of accountability, ineffective enforcement, and inefficient official bureaucracy, respectively.

Factor 1: Unique Nature of Construction Industry and Extensive Competition

Factor 1 accounts for 24.06% of the total variance explained. This factor consists of ‘intense competitive nature’, ‘large amount of money involved’, fragmentation of the construction process’, concealment of works’, ‘relationships between the parties’, ‘lack of transparency’, and ‘complex nature’. The inherent characteristics and the intrinsic complexity of the construction industry mainly determines its distinctiveness with other industries, which make the supply chains particularly susceptible to corruption (Bowen et al. 2012). Past studies have

highlighted construction projects as being unique (e.g. context, team, site, owner requirements) whereby no two projects are similar in terms of the products and processes involved (Cheah 2007; Locatelli et al. 2017). Given its project-based and engineer-to-order delivery approach, such resource requirements as costs and duration are most often difficult to compare due to the associated diverse uncertainties and distinct deliverables across different projects. Additionally, the large size, complex contract structure involving a multiplicity of professionals, trades and specialist contractors, concealment of parts of the works by other components, and poor culture of transparency, all tend to facilitate construction corruption (Bowen et al. 2012; Le et al. 2014a; Nordin et al. 2011; Sohail and Cavill 2008a) and make the tracing of payments more complex (Transparency International 2011). This being the case, it is potentially easier to inflate costs and hide bribes, particularly with large complex projects. For instance, Locatelli et al. (2017) revealed an average of 179% over budget for 27 Italian infrastructure projects due to a ‘corrupt project context’ to hide large bribes through inflated contract costs during the selection, planning, and delivery of megaprojects. In Ghana, Damoah et al. (2018) observed the customary practice of paying at least 10% of the contract sum to ‘unofficial middlemen’ who are government officials, which is then added onto the contract sum awarded – inflating project costs. In this respect, projects are highly vulnerable to corrupt practices during the pre-construct stage (Owusu et al. 2019a). The extensive competition involved in the tendering process tends to escalate the corruption rate. Despite the competitive tendering improving the effectiveness of construction investment (Shen and Song 1998), the process can result in bid-rigging, where the tenderers decide and organise the bid among themselves (Mukumbwa and Muya 2013; Sohail and Cavill 2008a). For instance, 16 construction contractors (known as ‘The League of 16’) in Brazil are being investigated (also known as ‘Operation Car Wash’) for fraudulent practices of collusive bidding, where overpricing may have taken place with some infrastructure

contracts (Signor et al. 2017). In a separate study in South Africa, Bowen et al. (2012) accentuate that suppliers intentionally engaged in collusive tendering among ‘approved’ members to confer a competitive advantage. Other common procurement fraud schemes include co-mingling of contracts, conflict of interest, exclusion of qualified tenderers, leakage of confidential tender information, manipulation of the tendering process and the use of phantom vendors. To safeguard the owners’ benefit in obtaining a competitive price for development projects, the implementation of sound procurement measurements is crucial to improve the integrity of procurement practices and create a transparent supply chain (De Jong et al. 2009; Osei-Tutu et al. 2010).

Factor 2: Unscrupulous Leadership, Culture, and Corruption Perception

‘Negative leader role’, ‘culture of wrong perceptions’, lack of ethical standards’, ‘personal greed towards money’, ‘low-income level’, and ‘shortage of skills’ constitute this factor, which contains the two most critical causes of construction corruption. This is a people-concerned factor, which accounts for 19.48% of the total variance explained.

Leadership directly influences how a country, industry, agency, or business enterprise operates, and leaders (role models) can shape people’s culture through their behaviours, while poor leadership can reinforce inappropriate values, behaviours, and attitudes (Holliday 2017; Tabish and Jha 2012). As such, people’s values and beliefs influence ethical decisions in managerial roles (Mumford et al. 2003; Windsor 2019), and more so when public officials at all levels do not set a good example (Bowen et al. 2012). From this perspective, Seleim and Bontis (2009), for instance, observed a linkage between national cultural values and corruption practices. In another study, Abah and Nwoba (2016) consider the association between leadership and political corruption in revealing that some leaders are working for money and power and not for integrity. The abuse of power and criminal breaches of trust involving public funds are associated with political leadership (Akech 2011; Olusegun et al.

2011) in a kleptocracy that consistently circumvents the rule of law (Gabriel 2018). Walker et al. (2018, p.23) describe kleptocracy as “a system in which public institutions are used for the opposite purpose: to enable a network of ruling elites to steal public funds for their own private gain.” In this vein, Awofeso and Odeyemi (2014, p. 241) label corrupt acts as “exploiting one’s public position, the commonwealth and power for personal benefits”.

From an organisational perspective, the institutionalisation of corruption occurs when senior executives opt to ignore, condone, or even reward corrupt behaviours (Tabish and Jha 2012). Rationalisation is a culture where a certain level of corruption is regarded as a tolerable norm (Osei-Tutu et al. 2010). According to Collins et al. (2009), top managers’ personal relationships, membership of political parties, and support for political activities are important factors explaining corrupt behaviour. One of Collins et al.'s (2009) intriguing findings suggests that managers’ cognition and social ties significantly influence them to ignore the illegality of corruption and refuse to acknowledge that corrupts acts are harmful to society. It is also worth noting that organisational culture starts at the top and employees tend to emulate the nature of top-management decision making (Holliday 2017), such corruption perception leading to the spread of negative practices of organisations and wider society as a whole.

Specific to construction, the Gallup (2018) public opinion survey of honesty/ethics among a diverse list of professions in the U.S. revealed building contractors obtained an honest score of merely 29%, in contrast with such leading professions as nurses and medical doctors with a score of 84% and 67% respectively, with Members of Congress and car salespersons, both at 8%, notably held in the lowest esteem (Brenan 2018). Accordingly, the lack of a positive industry climate and public morality further exacerbates the vulnerability of construction to corruption (Le et al. 2014b). The construction sector is beleaguered with the social stigma of being ‘dirty, difficult, and demeaning’ (3D) which discourages young people from pursuing

careers in the construction, further contributing to the shortage of skills in this labour-intensive industry (Yap et al. 2019). Pressures arising from financial problems, the need for status, and a desire for a higher standard of living are underlying barriers to ethical reasoning (Osei-Tutu et al. 2010; Othman et al. 2015). Bowen et al.'s (2012) interviewees also highlighted that poor competency in government departments and within the construction industry yield poor financial management, which, coupled with lack of auditing procedures, then creates a fertile environment for corruption.

Factor 3: Flawed Legal System and Lack of Accountability

‘Defective legal systems’ and ‘lack of research’ comprise this third factor. This is related to the lack of good governance and social accountability in the current regulatory environment. The rule of law imposes suitable guidelines and orders upon behaviours in order to retain equity, and create and maintain a fair and honest environment in society. As such, rules and regulations are therefore one of the most important pillars of a sound anti-corruption policy (Tabish and Jha 2012). In contrast, dilatory public and corporate governance inhibits transparency, encourages manipulation of the system and thus spreads such unlawful activities as corruption (Othman et al. 2015; Zhang et al. 2017). Underdeveloped and flawed regulations are the primary reasons for business-to-government (B2G) corruption in the tendering process in China (Zhang et al. 2017). Le et al. (2014a) conceive flawed regulatory systems as comprising multifarious licenses or permits, deficiencies in rules and laws, lack of rigorous supervision, inadequate sanctions, and negative leader roles. In turn, Ameyaw et al. (2017) opine that corruption can happen when the regulatory systems that guide the execution of activities and projects in both the private and public sectors are flawed. Moreover, effective rules and regulations are considered as one of the most significant anti-corruption strategies (Tabish and Jha 2012). In the case of construction business corporations, the senior management is duty-bound to establish clear and well-enforced corporate policies and

guidelines to limit corruption, instead of trusting the moral principles that guide ethical decisions in the workplace (Rose-Ackerman 2002; Tabish and Jha 2012).

Corruption is widely viewed as highly costly to society (Collins et al. 2009), while accountability is concerned with making people think and act in a manner that demonstrates ownership and doing the right thing for the business and society at large; protecting the organisation and wider society against liability risks. In this regard, Sohail and Cavill (2008) suggest cultivating an awareness of good business practices in the construction industry by ensuring that all stakeholders accept their responsibilities in promoting ethics and addressing mismanagement. However, in some corrupt regimes, internal checks on power are neutralised or suppressed (Walker et al. 2018). In response, social accountability mechanisms can advance the agenda of good governance (Schatz 2013) by providing effective checks and balances on the leadership and processes in the delivery of public investments.

Factor 4: Ineffective Enforcement and Inefficient Official Bureaucracy

This factor is constituted by ‘lack of rigorous supervision’, ‘inadequate sanction’ and ‘multifarious licenses or permits’. As Le et al. (2014a) point out, instigating stringent supervision requirements and imposing significant sanctions are effective anti-corruption measures. Although laws governing supervision, construction, and tendering already exist, the checks and balances do not appear to be fully effective (Zhang et al. 2017; Zou 2006). For instance, Gunduz and Önder (2013) demonstrate that a greater distance of the construction site from headquarters makes management supervision and control over operations difficult and unavailing. As highlighted by Thim and Zonggui's (2004) Chinese study, the governing framework for construction activities may not be completely satisfactory and enforceable laws and regulations can be lacking. In a recent study, Damoah et al. (2018) reveal that corruption has a negative effect on Ghanaian public projects, when ‘unofficial middlemen’ take at least 10% of the contract sums for personal gain and to support their political party. In

turn, the works can deviate from agreed-upon specifications due to shoddy workmanship and use of substandard materials because of lack of supervision by government consultants and regulatory agencies. However, the interviewees in their study pointed out the supervisory personnel cannot be replaced, as they are political appointees or influential people in government bodies.

According to Tabish and Jha (2012), the fear of punishment for corruption is diminishing as sanctions are hardly ever enforced. Likewise as highlighted by Bowen et al. (2012), ineffective processes, and absence of deterrents, and few sanctions are major factors facilitating corruption, with perceptions among their interviewees that members who have breached ethical codes of practice (transgressors) can easily escape punishment, while, at the same time, law-abiding persons have lost government jobs or contracts. To operate legally, general contractors and construction businesses are required to have certain licenses and permits (Le et al. 2014b). However, the overcomplicated, vague and slow-paced processes involved can trigger unethical practitioners into making overt bribes or 'grease' payments to public officials in order to accelerate the procedures involved in obtaining the necessary approvals (Ameyaw et al. 2017; Collins et al. 2009). In this regard, Bowen et al.'s (2012) interviewees disclosed that some building inspectors might choose to deny approvals for tasks under their responsibilities without justification unless bribes are paid. This is consistent with Kenny's (2009) observation where some global construction businesses, particularly in developing countries, are predisposed to gaining licenses, permits, and labour inspections by means of bribery payments.

Comparison with Some Selected Countries

The literature review draws attention to the limited studies investigating the root causes and underlying dimensions of corruption in the construction industry. Table 7 consolidates

previous findings from selected countries including China, Ghana, Italy, Nigeria, and South Africa as well as corruption in general business in India, Asia Pacific, and globally. All the selected studies were carried out within the last ten years with the exception of Tanzi's (1998) work, which discusses corruption at a global level. Although these studies may differ in their approaches, they do provide a useful window to understanding the principal factors promoting corruption in both the construction and other sectors of the economy.

<Insert Table 7 here>

A close examination of Table 7 reveals that the four underlying factors uncovered can explain why the construction industry in Malaysia and the developing world is vulnerable to corruption. Specific to construction, the most common factor is "unique nature of construction industry and extensive competition" which is found in all the countries studied. This is consistent with the factor analysis results discussed above, where this factor has the highest variance explained (24.06%) and the largest group with seven associated causes. As such, the traditional practices of construction project management are critical loopholes that allow corruption to flourish. Notably, the other two factors, namely 'unscrupulous leadership, culture, and corruption perception' and 'flawed legal system and lack of accountability' are common factors that are also prevalent in other sectors. Another interesting insight offered by this research is that 'ineffective enforcement and inefficient official bureaucracy' is the least influential factor.

Limitations and Practical Implications

The limitations of this study are that, firstly, the causes identified may change over time, as corruption advances in complexity, and therefore continuous research is needed to extend knowledge and awareness in this domain (Andrews et al. 2019). Secondly, the findings are based on the respondents' perceptions of corruption as a proxy to investigate corruption in construction projects. Given the care undertaken to address social desirability biases arising

from the sensitivity of corruption, this study provides some useful insights into the causative factors of corruption. The use of a structured survey instrument also does not allow the respondents to be probed to glean further details into their rich experiences, and further investigation using such a storytelling approach as critical incidence analysis is needed to provide an increased understanding of the reflexivity of corrupt practices. Thirdly, given that cultural relativity may influence construction corruption in a specific country; generalising these results needs to be undertaken with some caution, although construction industries worldwide share some common characteristics.

Nonetheless, the study contributes to a deepened understanding of the causes and underlying influences of construction corruption in the context of a developing country. While corruption is unlikely ever to be fully eliminated from the industry, the findings will help stakeholders develop effective measures to inhibit the exacerbation of corruption. As the principal factors involve interrelated project, psychosocial, statutory, organisational and regulatory aspects, a concerted effort from all stakeholders (e.g., political leaders, businesspeople, government officials, construction personnel, enforcement agencies, international watchdogs, and the general public) is needed when dealing with the supply and demand sides of the corruption issue, founded upon the triple pillars of rationales, opportunities and pressures. Considering that self-interest (personal gain) and official misconduct (abuse of power) are central to corrupt actions, while ethical decisions are closely tied to personal values and beliefs, structural mechanisms for managing ethics and inculcating values of integrity and anti-corruption at all levels of society are requisite for the betterment of the construction industry in both national or transnational arenas.

Conclusions and recommendations

Corruption is a serious and widespread concern that continues to plague the construction industry, particularly in developing countries, with far-reaching negative implications for all

facets of society. The pervasive nature of corruption in the industry demands a deeper understanding and identification of the principal inducing factors involved. This study presents the results of a survey of the causes contributing to corrupt practices in the industry. The results demonstrate that all the 18 causes identified are perceived as significant. The most critical of these are “personal greed towards money”, “relationships between the parties”, lack of ethical standards”, “intense competitive nature” and “large amount of money involved”. Four underlying factors are identified, comprising: (1) the unique nature of construction industry and extensive competition involved; (2) unscrupulous leadership, culture, and corruption perceptions; (3) a flawed legal system and lack of accountability; and (4) ineffective enforcement and inefficient official bureaucracy, representing the basic dimensions of corruption in the industry. These underlying causal dimensions help provide a comprehensive understanding of the vulnerabilities of the sector and identify the ‘red flags’ in construction project delivery.

The findings of the study provide some guidance for devising preventive and anti-corruption strategies for the construction industry. The primary factor in Malaysia and other developing countries is the existence of irregularities in the tendering environment, with flawed procedure designs and implementation. Since most projects lack a culture of transparency and accountability, mismanagement and oversights are commonplace. To correct this, a commitment to greater transparency and accountability, such as publishing construction contracts and implementation details, are needed to improve efficiency, governance and reduce costs (Kenny 2012). Thus, the award of projects must be strictly merit-based (Zhang et al. 2017) with rigorous supervision and audit (Le et al. 2014b). In addition, the leadership of government agencies and business entities need to set an example, with a strong tone against corruption, make ethical performance a strategic priority, and promoting a mind-set that corruption has no place in any culture (Bowen et al. 2007; Ho 2010). Another sustainable

transformation to eradicate corruption is to cultivate moral values in children to become responsible future members of society and strengthen the ethical training of related stakeholders (Mumford et al. 2003; Othman et al. 2015). Developing countries such as Malaysia can also emulate best practices from the least corrupted countries in the world. For example, Singapore has the lowest crime rate due to the severe penalties and good policing of the regulations to instil discipline (Abdulai 2009). In this light, improvements to the regulation system such as stiffer penalties and improved implementation and enforcement of corruption-related laws and regulation provide obvious potential deterrents (Le et al. 2014b; Zhang et al. 2017).

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TBA

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Figure and Table Captions

Figure 1: Scree plot for 18 items

Figure 2: Factor profile of causal dimensions of corruption

Table 1: Forms of corruption in the construction industry

Table 2: Causes of corruption practices by different authors

Table 3: Demographic profile of respondents

Table 4: Mean and ranking of causes of corruption practices

Table 5: Results of the KMO and Bartlett tests

Table 6: Total variance explained

Table 7: Comparison between countries

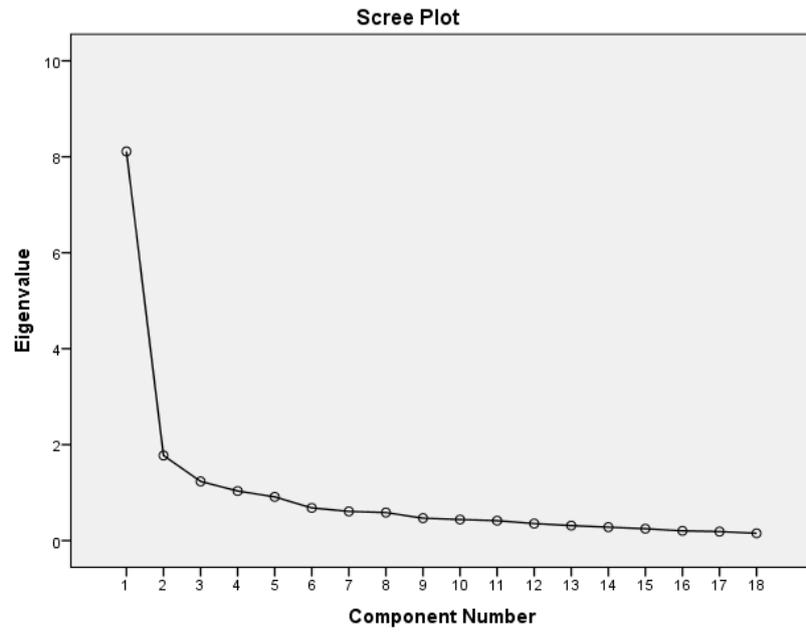


Figure 1. Scree plot for 18 items

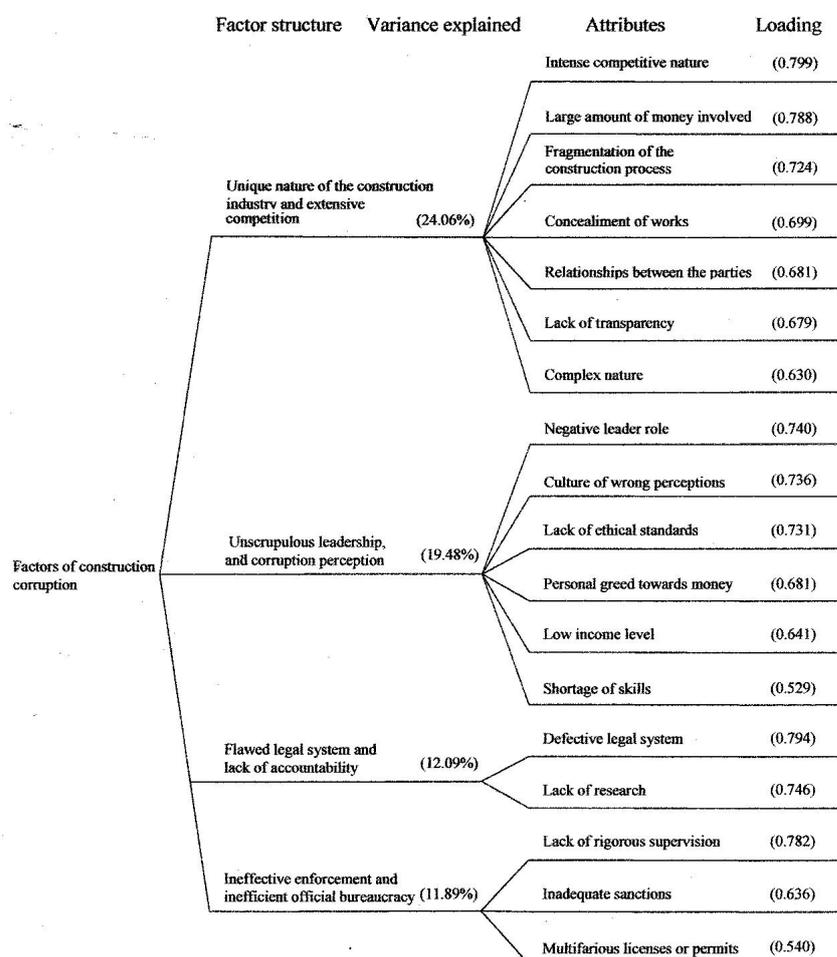


Figure 2. Factor profile of causal dimensions of corruption

Table 1. Forms of corruption in the construction industry

Form of corruption	Description (Construction practices)	Authors
Bribery	Also known as ‘speed money’ constituting “payment made in order to gain advantage or to avoid disadvantage”. The payment can be in the various forms, such as cash, affirmative appointments and special privileges.	(Le et al. 2014b, p. 5; Sohail and Cavill 2008)
Fraud	A common form of corruption, with activities that include the modification of documents and intentionally misguiding and concealing information, theft of equipment and materials, and generating fake invoices for materials which are not received at site.	(De Jong et al. 2009)
Collusion	Refers to collusive tendering in the construction industry, by which all the tenderers collude over the overall tender bids for major projects, intentionally raising or lowering the bids to create a situation which the high bid is common.	(Hartley 2009)
Bid rigging	Similar to collusive tendering, involving both the tenderer and tenderee. The tenderee deliberately creates a restricted situation (e.g., short time constraint or inadequate requirement) during tendering to assist a favoured tenderer to win a contract.	(Bowen et al. 2012)
Embezzlement	Refers to an owner misappropriating construction project funds, which leads to delayed payment to the contractor, resulting in the postponement of a project or project failure. It negatively affects the cost management of construction projects.	(Le et al. 2014a; Sohail and Cavill 2008)
Dishonesty and unfairness	Relates to untrustworthy and unfair conduct, which is commonly occurrence in tendering, the contract negotiation phase, and construction phases. For instance, the contractor carries out sub-standard work, overclaims project expenditure, and is biased in tendering.	(Alutu 2007)
Kickback	Reflects in tendering phase when a tenderer offers an economic advantage to the owner’s consultant in return of such favoured outcomes as a tender award or extension of the tendering period. For instance, a contractor provides part of his income to a government official in return for the approval of building plans.	(Le et al. 2014a)
Conflict of interest	Refers to a professional who is unable to accomplish its responsibilities impartially due to conflicting personal or professional interests in a project. For instance, a site supervisor supervising a site on behalf of the contractor, while also having a relationship with the owner.	(Hartley 2009; De Jong et al. 2009)
Extortion	Conduct in the form of the pressing extraction of bribes and requesting assistance from significant parties in a project in order to obtain a desired outcome. This normally happens between two parties to a project, for example, from the main contractor to sub-contractor or from client to material suppliers. It also results in the abuse of project funds that involves providing illegal payments to other individuals.	(Bowen et al. 2012; Le et al. 2014a; Sohail and Cavill 2008)
Negligence	Refers to a professional who is unable to practice due care of professionalism and ethical behaviour. Negligent activities include inadequate specifications, and sub-standard work due to poor quality of materials, workmanship and supervision.	(Vee and Skitmore 2003)
Front companies	Reflects the organization entities that are created by higher-level personnel in the owner’s or government organisation to gain unlawful benefits in awarding contracts.	(De Jong et al. 2009)
Nepotism	Refers to conduct in which a tenderer is able to secure a construction tender with the assistance of personnel in the organisation. This normally involves a relationship with a member of the same family. This corruption conduct can reduce the quality of a project if the awarded tenderer is not qualified.	(Bowen et al. 2012; Hartley 2009)

Table 2. Causes of corruption practices by different authors

Ref	Causes	Authors														Frequency		
		(Kenny 2009)	(Tabish and Jha 2011)	(Nordin et al. 2012)	(Gunduz and Önder 2013)	(Tanzi 1998)	(Tanzi and Davoodi 1998)	(Zou 2006)	(Sohail and Cavill 2008)	(Nordin et al. 2011)	(Olusegun et al. 2011)	(Stansbury 2005)	(Le et al. 2014b)	(Le et al. 2014a)	(Zhang et al. 2017)		(Bowen et al. 2012)	(Neelankavil 2002)
C1	Fragmentation of the construction process	√	√	√														3
C2	Complex nature			√	√		√											3
C3	Large amount of money involved							√	√					√				3
C4	Intense competitive nature			√					√									2
C5	Lack of transparency	√							√	√	√							4
C6	Concealment of works										√							1
C7	Relationships between the parties								√			√						2
C8	Defective legal system							√	√	√			√	√				5
C9	Lack of rigorous supervision	√										√		√				3
C10	Inadequate sanctions								√					√	√			3

Table 2. (Cont'd)

Ref	Causes	Authors													Frequency			
		(Kenny 2009)	(Tabish and Jha 2011)	(Nordin et al. 2012)	(Gunduz and Önder 2013)	(Tanzi 1998)	(Tanzi and Davoodi 1998)	(Zou 2006)	(Sohail and Cavill 2008)	(Nordin et al. 2011)	(Olusegun et al. 2011)	(Stansbury 2005)	(Le et al. 2014b)	(Le et al. 2014a)		(Zhang et al. 2017)	(Bowen et al. 2012)	(Neelankavil 2002)
C11	Multifarious licenses or permits				√								√				√	3
C12	Lack of research							√										1
C13	Personal greed towards money							√	√	√				√				4
C14	Low-income level		√	√				√	√	√								5
C15	Culture of wrong perceptions				√		√	√						√		√		5
C16	Negative leader role							√		√		√				√		4
C17	Shortage of skills															√		1
C18	Lack of ethical standards							√		√		√		√	√			5

Table 3. Demographic profile of respondents

Profile	Description	Total	Frequency (%)
Working experience	0 – 5 years	21	18.8
	6 – 10 years	43	38.4
	11 – 15 years	25	22.3
	16 – 20 years	12	10.7
	21 years and above	11	9.8
Position in company	Executive	49	43.8
	Manager	40	35.7
	Senior Manager	13	11.6
	Director / Top Management	10	8.9
Academic qualification	High School	2	1.8
	Diploma	4	3.6
	Bachelor's Degree	80	71.4
	Master's Degree	24	21.4
	Doctorate	2	1.8
Household income level	≤ RM3,000 per month	9	8.0
	RM3,001 - RM6,500 per month	28	25.0
	RM6,501 - RM10,000 per month	31	27.7
	≥ RM10,001 per month	44	39.3
Nature of project	Private	78	69.6
	Public	34	30.4

Table 4. Mean and ranking of causes of corruption practices

Ref	Causes of corruption practices	Overall (N = 112)			Test value = 3	
		Mean	SD	Rank	t-value	Significance (2-tailed)
C13	Personal greed towards money	4.161	1.009	1	12.169	0.000**
C7	Relationships between the parties	4.000	1.022	2	10.352	0.000**
C18	Lack of ethical standards	3.946	1.177	3	8.512	0.000**
C4	Intense competitive nature	3.893	1.085	4	8.707	0.000**
C3	Large amount of money involved	3.893	1.157	5	8.163	0.000**
C5	Lack of transparency	3.848	1.125	6	7.981	0.000**
C9	Lack of rigorous supervision	3.795	0.997	7	8.437	0.000**
C10	Inadequate sanctions	3.732	0.939	8	8.248	0.000**
C16	Negative leader role	3.723	1.133	9	6.757	0.000**
C14	Low-income level	3.714	1.181	10	6.400	0.000**
C11	Multifarious licenses or permits	3.670	1.102	11	6.431	0.000**
C15	Culture of wrong perceptions	3.616	1.050	12	6.207	0.000**
C6	Concealment of works	3.500	0.940	13	5.632	0.000**
C1	Fragmentation of construction process	3.411	1.119	14	3.883	0.000**
C12	Lack of research	3.411	1.119	14	3.883	0.000**
C2	Complex nature	3.366	1.170	16	3.311	0.001**
C8	Defective legal system	3.348	1.063	17	3.467	0.001**
C17	Shortage of skills	3.268	1.280	18	2.214	0.029 *

Note: **. The mean is significant at the 0.01 level of significance.

*. The mean is significant at the 0.05 level of significance.

Table 5. Results of the KMO and Bartlett tests

Parameter	Value
Kaiser-Meyer-Olkin measure of sampling adequacy	0.888
Bartlett's test of sphericity	
Approximate chi-square	1153.892
Degrees of freedom	153
Significance	0.000

Table 6. Total variance explained

	Initial eigenvalues		
	Total	Percentage of variance	Cumulative (%)
F1	8.111	45.062	45.062
F2	1.774	9.858	54.920
F3	1.234	6.857	61.777
F4	1.034	5.742	67.519

Table 7. Comparison between countries

Country/sector	Authors	F1: Unique nature of construction industry and extensive competition	F2: Unscrupulous leadership, culture, and corruption perception	F3: Flawed legal system and lack of accountability	F4: Ineffective enforcement and inefficient official bureaucracy
China/construction	(Zhang et al. 2017)	√	-	√	-
China/construction	(Le et al. 2014b)	√	-	√	√
Ghana/construction	(Owusu et al. 2019)	√	-	-	-
Italy/construction	(Locatelli et al. 2017)	√	-	-	-
Nigeria/construction	(Usman et al. 2012)	√	√	-	√
Nigeria/construction	(Olusegun et al. 2011)	-	√	√	√
South Africa/construction	(Bowen et al. 2015)	√	-	√	-
Asia Pacific/general business	(Andrews et al. 2019)	-	√	-	-
Global/general business	(Tanzi 1998)	-	√	√	√
India/general business	(Collins et al. 2009)	-	√	-	-
Frequency		6	5	5	4