

Original Paper

Government Compliance with Public Procurement Policy and Performance of Construction Enterprises in Cameroon: A Micro Panel Modelling Approach

Pius Ayekeh Tachang, PhD Candidate^{1*}, Dobdinga Cletus Fonchamnyo, Associate Professor², & Edokat Edward Oki Tafah, Professor³

¹ Faculty of Economics and Management Sciences, The University of Bamenda, Cameroon

* Pius Ayekeh Tachang, PhD Candidate, Faculty of Economics and Management Sciences, The University of Bamenda, Cameroon

Received: June 12, 2020

Accepted: June 23, 2020

Online Published: July 2, 2020

doi:10.22158/uspa.v3n3p56

URL: <http://dx.doi.org/10.22158/uspa.v3n3p56>

Abstract

This paper aimed to investigate the implication of government compliance with public procurement policy for the performance of enterprises operating in the construction sector in Cameroon. To achieve its objectives, the paper made use of a micro panel collected with the help of structured questionnaires. The Pooled OLS and the random versus fixed effects models were used for the analyses. Findings revealed that the contract winning rate of construction enterprises increases monotonically over the period under study. While the performance of construction enterprises stagnated over the period 2013-2016, it only witnessed a drop in 2017 and 2018. The pooled OLS and the Random effect regression results revealed that government compliance with payment duration of construction enterprises' bills positively and significantly affects the performance of construction enterprises in Cameroon. Based on these findings, the study recommends that the government could consider redressing the policies on the regular and prompt payment of enterprises' bills within the timeline specified in the contracts to enable them meet up with their financial requirements, thereby contributing to their overall performance.

Keywords

government compliance, public procurement policy, performance, construction, enterprises, micro panel modelling, Cameroon

1. Introduction

The construction enterprises are widely seen as the main drivers of development and a vital solution for inadequate infrastructure widely recognized to be holding back economic growth in most of developing countries (Shadmanov, 2015). To this effect, the governments are perceived as a key policy makers in the development of infrastructures as their compliance with the duration of payment of enterprises' bills largely determines the performance of construction enterprises in the domain of infrastructural development, especially in emerging economies (Srinivasarao, 2013). This is particularly the case of Africa where the desire for increase in infrastructure is widely felt and the construction enterprises' activities contribute in improving the overall performances of construction industries across Sub Saharan African countries in general, and the CEMAC countries in particular (Anugwo et al., 2017).

Al-Rahmani (1988) and Braddon (2012) believe that for Third World countries to gain economic independence there is a vital role to be played by productive investment in public infrastructure. In developing countries, public infrastructure stimulates economic dynamics, and through its diverse activities it promotes economic growth (Rojas-Ramirez & Molina-Vargas, 2018). Therefore, if more and higher quality of infrastructure is available, then productivity will be higher and the average production costs will drop (Aschauer, 1990). However, the absence of infrastructure constitutes an obstacle to the implementation of development policies as well as the achievement of higher levels of sustainable growth (World Bank, 1994). Having an enabling and thriving infrastructure in any nation is a key driver of its economic vibrancy. Infrastructure spending, therefore, creates jobs in the construction industry and increases productivity by enabling businesses to operate more efficiently. This explains why most governments are now emphasizing on the need for new jobs creation in the construction sector. This is usually achieved, via a local, regional or central government spending to build or repair physical structures and facilities that are most needed by commerce and society as a whole to thrive. Moreover, the urge to pursue large-scale industrial development projects primes on the development agenda of these governments. These situations are considered as essential ingredients in driving growth and job creation (Greg, 2019).

The infrastructural development projects are in larger part realized by the construction industries. Their motivation for the achievement of these infrastructure constructions is viewed differently, depending on whether it is within the context of the advanced economies or developing countries. Gurara et al. (2018) posited that in the advanced countries, infrastructure investment entails the provision of physical structures of varying types which are used by industries as inputs to produce goods and services. To achieve this dream, Western Nations set out to continually improve *both* the "social infrastructure" (schools and hospitals), and the "economic infrastructure" (*energy, water, transport, digital communications, waste disposal networks and facilities*) (Chan et al., 2009). The latter constitute the essential ingredients in ushering in a successful competitive modern economy. Viewed from this angle, therefore, developed economies can be differentiated into performing or underperforming categories depending on the extent to which they successfully and satisfactorily provide these infrastructures. For

instance, in 2012, the United Kingdom underinvested in economic infrastructure. This led to rising levels of road and air transport congestion, as well as increasing air and rail transport delays, which led to the United Kingdom being described as an underperforming economy and ranked 24th in the World for “quality overall infrastructure” (Laryea et al., 2010; World Economic Outlook, 2012).

It is on these premises that Cameroon, an economic hub and giant in the CEMAC Zone in Central Africa, believes infrastructural development is a prerequisite to economic emergence. In effect, the Government in the last decade or so, has set as target the accomplishment of the dream of emergence into modernity by 2035. To realize this New Dream, Cameroon has engaged giant steps towards the achievement of enabling infrastructure such as roads, railways, hydro dams as well as the revival of its agricultural sector (Gweth, 2012). Statistics reveal that in 2013, 32% of all paved roads in Cameroon were in good state, 10% in average conditions, while 58% were in poor conditions (African Development Bank Report, 2013). Policy makers in Cameroon have in the past decade quickened the steps towards getting the quantity and quality of infrastructure right, through the intermediary of the construction enterprises.

Review of literature has not found empirical studies which have attempted to evaluate how well construction enterprises in developing countries are faring in terms of compliance with public procurement construction policies by government as well as by construction enterprises. This study focuses on Cameroon and attempts to assess whether the existing public procurement policy (*public contracts code as it is called in Cameroon*) enables construction enterprises to attain higher levels of performance. Within the context of construction business, performance refers to the ability of a construction firm to bid successfully for construction projects, then provides construction services with superior quality at lower costs and within a shorter time, so as to attain superior performance and continue to thrive in the construction business (Lu, 2006; Tunji-Olayeni, 2015). Moreover, performance relates to the key strategies and competitive advantage that these construction enterprises operating within the framework of the public construction procurement policy will gain in order to outperform competitors (Hubbard et al., 2008). This paper, therefore, sets out to identify key variables that determine the performance of construction enterprises operating within the framework of the public procurement policy in Cameroon.

Construction enterprises in Africa, over the last decade, have been largely linked with reported cases of poor work quality, cost overrun, frequent delays, increased rework, low productivity, low profit margins and low compliance with public procurement procedures (MINMAP and ARMP annual reports, 2013-2017; Tunji-Olayeni, 2015). A growing number of public procurement scholars (Letchmiah, 2012; Bolton, 2016) have recently become interested in studying the role public procurement plays in the socio-economic development of many developing countries. In the 2000s, research on the relevance of public procurement was limited to portraying it as a tool, instrument or lever for promoting activities that usher in economic development and assistance to historically disadvantaged groups (Knight et al., 2003; Adediran & Windapo, 2017). It is based on these arguments

that this paper attempts to compute and track the evolution of the performance of construction enterprises over the period 2013-2018 in Cameroon. It further estimates the effect of government compliance with public contracts code on the performance of construction enterprises in Cameroon using a micro panel. The remaining sections of this paper are structured into four sections which include literature review, methodology, discussion of findings and conclusion and policy recommendations.

2. Literature Review

The notion of compliance is enshrined in the principal- agent theory, since one is the principal (government) and the other is the agent (construction enterprise), with each trying to maximise self-interest. This theory was developed from the pioneer work of Arrow (1974) and it elucidates the conflict of interest that may arise from a principal-agent contract due to hidden characteristics, intentions and actions of the agents that cannot be known with certainty by the principal. Broadly speaking, the principal is someone, organization or institution that hires another to act on its behalf (*the Government*), while the agent (*construction enterprise*) is the person, organization or institution hired (construction enterprises) to perform the task in question.

Therefore, adapting this theory to the context of this study, construction enterprises as well as the government aim at providing good infrastructures to the citizens. The research findings of Kum (2018) report that good infrastructure enhances the wellbeing of citizens and its absence can be a major obstacle to industrialization. Across Africa, there has been this belief that industrialization has the ability to bring prosperity, new jobs and better incomes for all. This explains why policymakers and politicians from across the continent have always injected into their campaign slogans the promise to industrialize Africa once in power. Evidence provided by Tafirenyika (2016) demonstrates that Africa was more industrialized 40 years ago than it is today, with its gross GDP from manufacturing sector witnessing a decline from 12% in 1980 to 11% in 2013.

For a long time, it is widely accepted that the construction industry is the key driver of infrastructural development, and thus plays an important role in the national economy by accelerating and improving the wheel of economic growth (CIB, 1999). The contribution of the construction industry to the growth of the economy varies depending on whether we are in a developed or developing economy. In the nineties, Bon and Pietroforte (1990) surveyed the historical comparisons of the contributions of the construction sectors to the growth of the economies of the United States, Japan, Italy and Finland. Their results indicated that construction sectors in these developed economies excel in perfecting service delivery, and further contribute to the maintenance and repair of existing buildings and road infrastructure.

Empirical evidence (Khan, 2008) of the role of the construction sector in contributing to economic growth in the Pakistan, as a case study for developing countries, concluded that the construction industry is a vital sector which provides new infrastructure like roads, railways, airports, new hospitals,

schools, housing and other forms of building and construction edifices, to any emerging country. Khan's findings corroborated with the results of Dakhil (2013) which revealed a strong evidence that this sector played a significant role in providing infrastructure and input to economic growth in Libya especially following a widespread destruction of infrastructure in the post Muammar Gadhafi period in early 2010. The empirical evidence from these developing countries conform with the results from Durdyev and Syuhaida (2012) study which showed that construction promoted economic growth and development, generated considerable output and further contributed to the increase in labour employment of Turkmenistani.

Researching on the difficulties and challenges of construction enterprises in the developing countries with lessons drawn mostly from experiences of some countries with comparable levels of development, Ofori (2000) noted that in the area of infrastructure, construction enterprises should be well-poised to benefit from globalization rather than being victims of it. Ofori further argued that these enterprises should consider the pertinence of local culture when executing their activities which is likely to enhance their efforts towards improving on their performances. To strengthen the idea of the relevance of local or country specific conditions in the performances and categorization of construction enterprises, Akinmurele and Odey (2017), working on the empirical data from construction industries in Nigeria, acknowledge that the construction market is animated by foreign and indigenous firms. According to Ibrahim et al. (2014), 95% of all construction enterprises operating in Nigeria are indigenous while the remaining 5% are foreign in origin. Between 2010 and 2013, the volume of construction contracts in Nigeria awarded to foreign construction firms is significantly greater than that awarded to their indigenous counterparts (Tunji-Olayeni, 2015). Akinmurele and Odey questioned the rationale behind the secondary role played by indigenous construction enterprises by own government whereas they are expected to play a leading role in providing jobs for the fast growing work force and further championing the Nigerian development drive.

The major question here is whether these construction outfits, playing such an important role in the economy, are having business their own way. In an attempt to find possible answers to this preoccupation, Bakar and Tabassi (2012) surveyed the key factors contributing to the growth of the Malaysian construction companies. They concluded that customer orientation, management and product quality factors are the main determinants of the performance of construction companies in developing countries. Raken (2016) reported that adopting new technology and managing documents are crucial elements in assessing a construction firm's growth. In their assessment of the major challenges of construction firms in Ghana, Laryea et al. (2010) revealed that they are at crossroads because head-on challenges like productivity, profitability, project performance and sustainability must be addressed before any significant growth of these firms can be achieved.

Cartwright (2017) research generated a list of top ten challenges and difficulties faced by small construction enterprises in developing countries. Outstanding among them are: skilled labour shortage, undercapitalization, inadequate planning, uncontrolled growth, cost of raw materials and slow

payments. Evidence of these obstacles to the growth of African small and medium enterprises was highlighted by Ubani *et al.* (2010), in the Nigerian construction industry which they agree is said to be “*sleeping*” because of their inability to deliver construction services effectively and efficiently. Further, they present a handful of shortcomings such as clients and customers’ dissatisfaction, project time and cost overruns, low quality and shoddy outputs, project conflict between the contractors and claims arising from variations in contract sum. All these they blame on the construction enterprises’ inability to manage projects properly. However, a careful cross-review of the literature highlights important challenges like slow payments of contractors’ bills and poor management and mastery of documentation by construction enterprises during the bidding, award and execution phases of construction jobs.

These concerns have received very little research attention so far. Specifically, and taking the case of Cameroon, slow payment of bills of construction enterprises by Government has been a major preoccupation. Based on the reviewed literature and to the best of our knowledge, no research has attempted to assess the implication of government compliance with the public contracts code for performance of construction enterprises in Cameroon. Thus, the effect of Government compliance with the public procurement policy on performance of construction enterprises in Cameroon remains an empirical question.

3. Methodology and Data

3.1 Sources of Data

The data used for the study is a micro panel. The data was collected with the help of a structured questionnaire from construction enterprises in Cameroon with head offices in the Centre, Littoral, North West, South West, South and West Regions of Cameroon. The data was collected over the period 2013-2018. The sampling technique used in this study did not follow the conventional method of selecting a sample from a population. In effect, information from key contracts services like Public Contracts Regulatory Board, Ministry of Public Contracts, Ministry of Public Works and Ministry of Urban Development and Housing, revealed that the number of medium- and large-sized construction enterprises with identifiable addresses and still active in construction business in Cameroon in the past 10 years for example, stands at about 140. This figure is taken as the sample. And given that these researchers could reach out to almost all of the 140 construction enterprises. The technique used in collecting the data was an interview using structured French and English versions of questionnaire serving as a guide. Prior to the interactive discussions during the interview sessions, appointments were taken with the promoters of these enterprises to agree on the venue and time, as well as allow them to be psychologically prepared. Therefore, the sample size of 140 medium and large construction enterprises is used in this study. This sample size approximates the sample of 150 contractors that Ibrahim (2014) used in a similar study examining projects planning with indigenous contractors in Nigeria. Consequently, a total of 140 structured questionnaires were prepared and parceled for administration by the enumerators during their interviewing sessions with the promoters of the construction enterprises in the entire study

area. Six enumerators, all holders of undergraduate degrees, were engaged for the face-to-face interviews with the selected construction enterprises.

3.2 Model Specification

The basic functional model for this study captures the relationships between government compliance with public construction procurement policy and enterprise performance over time, given as follows:

$$Performance = f(\text{government compliance}) \quad (1)$$

The performance of construction enterprises can be modelled as a function of government compliance with procurement policy and other control variables. The model takes the following form:

$$PCE_{it} = \alpha_0 + \alpha_1 GC_{it} + \sum_{k=2}^m \alpha_k X_{kit} + \varepsilon_{1it} \quad (2)$$

Where: PCE_{it} denotes the performance of construction enterprise, i , the year, t ; GC_{it} represents government compliance with public procurement policy; X_{kit} stands for vector of other variables expected to influence performance of construction enterprises, α_0 is the intercept, α_1 gives the magnitude of the effect of government compliance on the performance of construction enterprise, i denotes an enterprise, and t represents the year.

3.3 Definition and Measurability of Key Variables

3.3.1 Government Compliance with the Procurement Policy (GC)

This is strictly captured in terms of compliance with payment duration from the Government side, through the competent State finance and Accounting Officer, by respecting the time-limit for payment of contractors' bills. In line with Article 30 Of the Prime Ministerial Order No. 033/CAB/PM of 13 February 2007, these payments on account to Contractors of work done and received variously by Project and Contract Mangers, must be effected according to the frequency fixed in the Special Administrative Conditions which must not exceed 90 days (03 months) from the day of receipt of the said bills.

It is measured in terms of the number of months spread out from 1 to 5 months that enterprises wait before getting paid. Payments effected within the first 03 months implies *compliance* on the side of Government, while those carried out during the 4th and 5th Months and without interest on overdue payments calculated from the day following the expiry of the said deadline up to the day of issuance of the payment voucher by the Finance and Accounting Officer, implies *non-compliance* (ARMP Procedures Manual for Payment of Public Contracts, 2011). The Public Contracts Regulatory Agency stipulates in its Special Administrative Conditions that the amount of the interest on overdue payments is calculated according to the following formula:

$$I = A \times (n/360) \times (i)$$

Where

I = Interest to be calculated and pay to the contract holder following the delay in payment

A = Amount, all taxes inclusive, due the holder of the contract

n = Number of calendar days of delay

i = Discount rate of the issuing bank of the currency under consideration

3.3.2 Performance of Construction Enterprises (PCE)

This study turns away from employing traditional methods of assessing the performance of construction enterprises. It evaluates the performance of construction enterprises in Cameroon from the perspectives of how well they are faring especially when they comply, during the bidding process, with the administrative, financial, operational, and technical aspects of the Public Procurement Policy. Performance of construction enterprises in this study is the *dependent variable* and it is multifaceted since it includes both financial and operational performance indicators. The main proxies for the evaluation of the performance of construction enterprises include:

- i) Contract winning rate: it is the number of contracts won compared with the number of contracts tendered for in a year, and is calculated follows:

$$\text{Contract winning rate}(CWR) = \frac{\text{Number of Contracts won}}{\text{Number of contracts bided}} \times 100 \quad (3)$$

- ii) Volume of Contracts won: it captures the monetary value of all the contract amounts (ca) won within the year and is presented as the sum of amounts of all contracts (n) won:

$$\text{Volume of contracts won (VCW)} = \sum (ca_1 + ca_2 + ca_3 + ca_4 + \dots + ca_n) \quad (4)$$

- iii) Projected Annual Profit Margin (APM) declared.

These performance indicators were used to construct a performance index using the Principal Component Analysis (PCA)

Constructing the Performance Index Using Principal Component Analysis

It is generally agreed that the use of a composite indicator of performance allows to summarize in single value information about one or more dimensions of performance. The aggregation is done through a functional form. The most widely used functional form in the construction of composite indicators is as follows:

$$PCE_i = w_1 a_1 + w_2 a_2 + \dots + w_j a_j = \sum_{j=1}^J w_j a_j \quad (5)$$

Where w_j denotes the weight associated with each indicator of performance; a_j represents an indicator of performance.

Therefore, to construct the composite index of performance using the Principal Component Analysis (PCA), the weights are derived from the first "principal component" which is a linear combination that accounts for the highest variance in the distribution. Each indicator of performance a_j , can be written as a linear combination of J components or factors, as follows:

$$a_1 = v_{11}A_1 + v_{12}A_2 + \dots + v_{1j}A_j \quad (6)$$

$$a_2 = v_{21}A_1 + v_{22}A_2 + \dots + v_{2j}A_j \quad (7)$$

$$a_j = v_{j1}A_1 + v_{j2}A_2 + \dots + v_{jj}A_j \quad (8)$$

Where; A_1, A_2, \dots, A_j are unobserved components that are uncorrelated with each other.

The solution will be of the following form:

$$A_1 = v_{11}\tilde{a}_1 + v_{12}\tilde{a}_2 + \dots + v_{1j}\tilde{a}_j \quad (9)$$

Where

\tilde{a}_j Represents a standardized variable, $\tilde{a}_{1j} = \frac{a_{1j} - \bar{a}_1}{s_1}$.

Given that the data is collected on 104 enterprises over 6 years, that is, from 2013-2018, the data is micropanel in nature. This is a dataset in which the behaviour of entities is observed over time. These entities, in the context of this study, are construction enterprises.

After constructing the Performance index using the PCA, we normalize the index to lie between 0 and 1 in order to ease interpretation. The objectives of normalizing the index are to eliminate redundant data and also ensure data dependencies make sense (Mark, 1996).

To normalise the performance index, we employ the Min-Max Normalization approach as used by Nardo et al. (2005).

$$\text{Normalised } PCE_i = \frac{[PCE_i - \text{Min}(PCE_i)]}{[\text{Max}(PCE_i) - \text{Min}(PCE_i)]} \quad (10)$$

Where PCE_i denotes the performance index of each enterprise, $\text{Max}(PCE_i)$ is the max value of performance index and $\text{Min}(PCE_i)$ is the minimum value of the performance index. Min-Max Normalization technique is very popular and has been applied in the construction of many composite indicators, the best-known of which is the Human Development Index (HDI) (UNDP, 2014).

An index is thus constructed for Government compliance using the different dimensions of government compliance and the Principal Component Analysis (PCA).

3.4 Estimation Technique

After the pooled OLS estimation we employ the Fixed Effect (FE) and Random Effect (RE) models for robustness check. FE explores the relationship between predictor and outcome variables within an entity (construction enterprise).

The fixed effect (FE) model is specified as:

$$PCE_{it} = \pi_0 + \pi_1 GC_{it} + \pi_2 EC_{it} + \pi_3 GC_{it} * EC_{it} + \sum_{k=2}^m \pi_k X_{kit} + a_i + v_{it} \quad (11)$$

It should be noted that, $E[v_{it}/GC_{it}, EC_{it}, GC_{it} * EC_{it}, X_{kit}, a_i] = 0$

The fixed-effects model controls for all time-invariant differences between the individuals, so the estimated coefficients of the fixed-effects models cannot be biased because of omitted time-invariant characteristics. The key insight is that if the unobserved variables do not change over time, then any changes in the dependent variable must be due to influences other than these fixed characteristics.

The random effects model is:

$$PCE_{it} = \pi_0 + \pi_1 GC_{it} + \pi_2 EC_{it} + \pi_3 GC_{it} * EC_{it} + \sum_{k=2}^m \pi_k X_{kit} + \mu_{it} + v_{it} \quad (12)$$

Where; μ_{it} = between enterprise error, and v_{it} = within enterprise error.

4. Presentation and Discussions of Results

4.1 Descriptive Statistics for Pooled Data

Table 1 hoists the pooled descriptive statistics of the variables considered in the construction of the indices and in the regression analysis. Column (1) harbouring the mean values of the variables considered reveals that on the average the construction enterprises in Cameroon have a contract winning rate of 60.48%.

Table 1. Descriptive Statistics of Pooled Data

	Mean	Standard Deviation	Min	Max
Contract Winning rate	60.48	54.25	0	550
Volume of Contracts won x 10 ⁶ (FCFA)	1156	3279	53	30005
Projected Annual Profit Margin				
Incurred Losses	0.026	0.160	0	1
Profit margins of 0% (breakeven)	0.019	0.138	0	1
Profit margin of 1-3 %	0.096	0.296	0	1
Profit margin of 4-6 %	0.105	0.307	0	1
Profit margin of 7-9%	0.133	0.340	0	1
Profit margin above 10%	0.619	0.4859	0	1
Composite Performance Index	0.866	0.112	0	1
Government Compliance Index	0.428	0.182	0	1
Staff Strength	27.163	55.65	1	900
Number of engineers	2.522	3.204	1	55

Source: Computed by Author using Stata 14.

Notes. It is possible to have a contract winning rate of above 100 as indicated by the max value of 550 since some enterprises can be awarded contracts through direct award whereas they never tendered for.

The descriptive information further depicts that the average volume of contracts won by construction enterprises in Cameroon is 1156×10^6 . These figures suggest that Cameroon construction enterprises regularly have 6 in 10 chances of winning contracts that confer them enough volume of construction works to permit them keep their personnel busy, and further allow them to offset their loans with the commercial banks. Equally, results indicate that enterprise performance index obtained via the principal component analysis has an average value of 0.866. The performance index was constrained to lie within the interval [0, 1] by normalising the index. The main reason for normalisation of the composite index is to ease interpretation since the process of normalisation helps to put the different variables used in constructing the index on the same scale. An average value of 0.866 which is close to 1 indicates that the performance of the construction enterprises in complying with the key bidding clauses of the public contracts code is high. The pooled results indicate that the Government Compliance Index has a mean value of 0.428. This index was also normalised to render it within the interval [0, 1]. Based on the government compliance value of 0.428, we can descriptively report that government compliance level is low since it is below the midpoint of the scale. In other words, government defaults more on the expected time of payment of contractors' bills. The pooled data further indicates that construction enterprises in Cameroon have average staff strength of about 27. The bulk of these staff is usually recruited within the areas of the projects under execution, in line with the government prescriptions to construction enterprises to regularly involve local populations in the execution of government projects so as to cause them feel the impact of these projects. Regarding the number of engineers employed by a construction enterprise, findings reveal that averagely there are about 3 engineers per construction enterprise in Cameroon. These key technical personnel are indispensable and irreplaceable in the successful execution of construction projects.

4.2 Descriptive Statistics by Year

Table 2 displays the evolution of the variables across the time series from 2013-2018. Descriptive findings indicate that on the average, the contract winning rate of construction enterprises in Cameroon increases monotonically between 2013-2018. Specifically, the average contract winning rate of construction enterprises was found to increase from 51.23% in 2013 to 67.87% in 2018.

Table 2. Descriptive Statistics by Year

Variables	(1)	(2)	(3)	(4)	(5)	(6)
	2013	2014	2015	2016	2017	2018
Contract Winning rate	51.2 (42.8)	56.7 (59.8)	61.2 (59.6)	61.7 (52.0)	63.7 (38.3)	67.9 (66.7)
Volume of Contracts won x 10 ⁶	1094 (3347)	988 (2956)	872 (2520)	1110 (3131)	1456 (3952)	1407 (3638)
Annual Profit Margin						
<i>Incurred losses</i>	0.069 (0.255)	0.043 (0.204)	0.010 (0.101)	0.010 (0.099)	0.010 (0.102)	0.022 (0.146)
<i>Profit margins of 0%</i>	0.023 (0.151)	0.022 (0.146)	0.040 (0.198)	0.010 (0.099)	0.000 (0.000)	0.022 (0.146)
<i>Profit margin of 1-3 %</i>	0.092 (0.291)	0.108 (0.311)	0.101 (0.303)	0.108 (0.312)	0.094 (0.293)	0.075 (0.265)
<i>Profit margin of 4-6 %</i>	0.103 (0.306)	0.097 (0.297)	0.111 (0.316)	0.098 (0.299)	0.115 (0.320)	0.108 (0.311)
<i>Profit margin of 7-9%</i>	0.172 (0.380)	0.129 (0.337)	0.121 (0.328)	0.157 (0.365)	0.125 (0.332)	0.097 (0.297)
<i>Profit margin above 10 %</i>	0.540 (0.501)	0.602 (0.492)	0.616 (0.489)	0.618 (0.488)	0.656 (0.477)	0.677 (0.470)
Composite Performance Index	0.872 (0.109)	0.861 (0.122)	0.860 (0.122)	0.869 (0.111)	0.869 (0.082)	0.865 (0.126)
Government Compliance Index	0.388 (0.152)	0.410 (0.166)	0.424 (0.171)	0.433 (0.183)	0.447 (0.205)	0.464 (0.202)
Staff Strength	19.66 (27.94)	22.50 (37.09)	26.70 (49.13)	27.146 (41.80)	31.767 (59.82)	34.323 (91.80)
Number of engineers	2.073 (1.631)	2.244 (2.122)	2.330 (2.080)	2.660 (2.858)	3.049 (5.704)	2.647 (2.609)

Source: Computed by author using Stata 14. Standard deviation in parentheses.

The descriptive information on Table 2 further indicates that the average volume of contracts won by construction enterprises in Cameroon by year is 1094 in 2013, which dropped to 988 in 2014 and 872 in 2015. Further, the volume of contracts won increased to 1110 in 2016 and 1456 in 2017, before dropping again in 2018 to 1407. Regarding the projected annual profit margins, descriptive findings indicate that the percentage of construction enterprises that incurred losses decrease from 6.9% in 2013 to 1% in 2015. This percentage stagnated at 1.0% from 2015 to 2017 and only slightly increased to 2.2% in 2018. As for the proportion of construction enterprises that were breaking even, our empirical findings inform that these proportions were 2.3%, 2.2%, 4%, 1%, 0% and 2.2% in 2013, 2014, 2015, 2016, 2017 and 2018 respectively.

Looking at the percentage of construction enterprises that realized profits from 1-3%, results indicate a fluctuating trend from 2013 to 2018. Specifically, between 2013 and 2014, the proportion of construction enterprises that realized annual profits rose from 9.2% in 2013 to 10.8% in 2014. This was followed with a downturn in percentage to 10.1% in 2015 and a slight improvement to 10.8% in 2016. In 2017, the percentage was 9.4% and finally 7.5% in 2018. In addition, findings reveal that the percentage of enterprises with annual profit margin from 4-6% has been fluctuating. Specifically, 10.3% for 2013, 9.4% for 2014 and 11% for 2015. However, the findings further reveal that 9.8% of the enterprises realized annual profit margin between 4-6% in 2016. Meanwhile, in 2017 the proportion improved to 11.5% and then dropped to 10.8% in 2018.

The percentage of construction enterprises with annual profit margin from 7-9% witnessed a decreasing trend over the period 2013-2015. In particular, in 2013 the proportion stood at 17.2% while in 2014 and 2015 it decreased to 12.9% and 12.1% respectively. In 2016 it improved to 15.7% and reduced to 12.5% in 2017 and 9.7% in 2018 respectively. Concerning the percentage of enterprises that realized a profit margin above 10%, findings show the percentage increasing monotonically over the period 2013-2018. That is, it increased from 60.2% in 2014 to 61.6% in 2015. In 2016, the proportion stood at 61.8% before improving to 65.6% and 67.7% in 2017 and 2018 respectively, with a standard deviation of 0.470.

Furthermore, the descriptive findings inform that the normalized performance index of construction enterprises in Cameroon depicts a fluctuating trend. The evolution of the performance over time reveals that the performance index decreased from 2013 to 2015 and increased from 2015 to 2016. It stagnated from 2016 to 2017 and witnessed a drop again from 2017 to 2018. In particular, in 2013, the performance index was 0.872 units which reduced to 0.861 units in 2014 with standard deviation of 0.122. Further, the performance index in 2015 was 0.860 and improved to 0.869 units in 2016 with a standard deviation of 0.122 and 0.111 respectively. Also, in 2017, the performance index of construction enterprises was 0.869 with standard deviation of 0.082, while in 2018 it decreased to 0.869 with standard deviation of 0.126.

Looking at normalized government compliance index, the findings indicate that government compliance had an index in 2013 of 0.388 units with a standard deviation of 0.152. Furthermore, in

2014 and 2015, government compliance increased to 0.410 units and 0.426 units respectively. From 2016 to 2017, it rose to 0.433 and 0.447 units respectively. Government compliance stood at 0.464 units in 2018.

The descriptive statistics by year equally reveal that the average staff strength of construction enterprises witnessed an increase over the 2013-2018. Findings also indicate that the average number of engineers employed by construction enterprises in Cameroon was about 2 engineers from 2013-2015 and increased to about 3 engineers over the period 2016-2018.

4.3 Effect of Government Compliance on Enterprise Performance: Regression Results

Table 3 displays estimates of the pooled regression results under different assumptions. In column 1, we consider only government compliance explaining the performance of construction enterprises. Based on this assumption, results of the pooled OLS estimate of government compliance reveal a positive and significant effect on the performance of construction enterprises in Cameroon (Column 1). Thereby, indicating that a unit increase in government compliance increases the performance of construction enterprises in Cameroon by 0.055 points. In addition, when the year dummies were considered in the regression model, the effect of government compliance on the performance of construction enterprises in Cameroon increases to 0.058 points on average. These findings reveal that a unit increase in the government compliance index, increases performance of construction enterprises by 0.058 points. Equally, when we considered time-varying control variables (staff strength and number of engineers) that are expected to affect the performance of constructions, the effect was found to be 0.057 points.

When the time-invariant control variables were considered in the regression, the effect of government compliance on performance was significant. This implies that a unit increase in government compliance will improve construction enterprise performance in Cameroon by 0.054 units. The implication of these findings is that when the government increases its compliance rate, this leaves enterprises with enough resources to execute their construction projects on time and thus attain higher level of performance. These findings are consistent with the works of Kitching et al. (2015) who researched on government regulation as a dynamic influence of government policies on the small business performance in London. They concluded that government compliance is a pre-requisite for the overall performance of small businesses. This is equally in agreement with the findings of Chittenden et al. (2002); Crain and Crain (2010); Ubani et al. (2010); and Klapper et al. (2006) who variously argued that government regulations are critical in influencing macro level economic indicators such as performance and labour productivity of enterprises.

Table 3. Effect of Government Compliance on Performance: Dependent Variable Is Performance Index

VARIABLES	(1)	(2)	(3)	(4)
Government Compliance	0.0549*** (0.0211)	0.0577*** (0.0214)	0.0568*** (0.0218)	0.0535** (0.022)
d2014		-0.0097 (0.0136)	-0.0134 (0.0145)	-0.0111 (0.0138)
d2015		-0.0115 (0.0133)	-0.009 (0.0138)	-0.00580 (0.0132)
d2016		-0.045* (0.027)	-0.006 (0.0135)	-0.00238 (0.0129)
d2017		-0.059** (0.028)	-0.061** (0.029)	-0.069*** (0.027)
d2018		-0.076*** (0.028)	-0.073** (0.030)	-0.081*** (0.0271)
Staff strength x10 ⁻²			-0.002 (0.007)	-0.002 (0.007)
Number of engineers			0.007** (0.003)	0.006** (0.0025)
Age of promoter				0.0019*** (0.0005)
Years of existence				0.0015** (0.0006)
Primary				-0.0184 (0.0296)
Secondary				0.0145 (0.0281)
Tertiary				-0.0208 (0.0266)
Male				-0.0223** (0.0107)
Constant	0.851*** (0.0101)	0.858*** (0.0131)	0.856*** (0.0137)	0.777*** (0.0413)
Observations	463	463	435	435
R-squared	0.015	0.12	0.41	0.44

Source: Computed by author using Stata 14.

Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

The introduction of the year dummies helps to capture the intertemporal changes in performance. Findings reveal that from 2013 to 2015, none of the year dummies was significant. This is an indication that over the period 2013-2015, the performance of the construction sector in Cameroon stagnated. However, in the year 2016, the performance of construction sector decreased (column 2) by 0.045 points with respect to the base year 2013 and it is significant at 10%. In Columns 3 and 4 the 2016-year dummy was not statistically significant. Regarding the 2017 and 2018 year dummies, result indicates that the performance of construction enterprises in Cameroon decreased with respect to the base year by 0.059 and 0.075 respectively for 2017 and 2018. In column 3 in which we have controlled for time-varying control variables, the results indicate that the performance of construction enterprises further deteriorated in 2017 by 0.061 units and 0.073 units in 2018 compared to the performance in 2013. Lastly in model 5, the findings from pooled OLS indicate that the construction enterprise performance in Cameroon further dropped to 0.069 in 2017 and 0.081 in 2018.

The variable, staff strength, which was included in the regression represents the staff size per enterprise in terms of number of employees. The pooled regression results depict that the staff strength was not significantly correlated with the performance of construction enterprises in Cameroon. However, the number of engineers harboured in a construction enterprise was significantly related to the performance of construction enterprises. That is, a unit increase in the number of engineers in the construction enterprise will lead to 0.007 units increase in the performance of construction enterprises in Cameroon (Column 4) and by 0.006 in Column 5. Amoah et al. (2011) research on the quality performance of construction firms in Ghana concluded that the number of technical staff such as engineers, surveyors and architects greatly accounts for the performance of small-scale construction enterprises in Ghana. Their findings are also in agreement with the works of Jha and Iyer (2005) who researched on the potential factors contributing to the quality performance of construction projects in India. They concluded that amongst other success attributes, key technical personnel's competence contributes positively and significantly in enhancing the quality performance of construction projects.

Results further indicate that the age of the promoter, relates positively with performance of construction enterprise in Cameroon. Specifically, the age of the promoter in years increases the performance of construction enterprises by 0.002 points. Another variable that was found to be significant was the years of existence of the enterprises. Results depict that an additional year in the construction business increases the performance of the construction enterprise by 0.002 points. These findings are in agreement with the research works of Callistus et al. (2014) who all concluded that age and experience of the promoter of construction enterprise are key determinants of the performance of small-scale contractors operating within the construction firms in Ghana.

Regarding the level of education of the promoter, findings show that the educational level of the promoter is not an important variable in predicting the performance of the construction enterprise. Equally, results indicate that being a male promoter, reduces the performance of the enterprises. This finding depicts some gender disparities in terms of performance. Specifically, the performance of

construction enterprises with female promoters is 0.022 points higher than the performance of construction enterprises with male promoters.

Since the study is based on the panel analysis, we implemented the fixed effect and random effect for robustness check. The Fixed effect and Random effect models are presented in the appendix. These models qualitatively confirms the pooled regression results.

5. Conclusion and Policy Recommendations

This study aimed to investigate the effect of government compliance with public procurement policy on the performance of the construction enterprises in Cameroon. Specifically, the study seeks first, to compute and track the evolution of the performance of construction enterprises over the period 2013-2018 and, *second*, to estimate the effect of government compliance with public procurement policy on the performance of construction enterprises. To achieve the set objectives, the study makes use of a micro panel collected with the help of structured questionnaires, the Pooled OLS, and Random versus fixed effect models. Findings revealed that the contract winning rate of construction enterprises increases monotonically over the period of the study (2013-2018). Equally, results from the study indicated that the performance of construction enterprises stagnated over the period 2013-2016 and only witnessed a drop in 2017 and 2018. This is likely justified by the political upheavals and the ensuing economic downturn in three (Far North, North West and South West) of Cameroon's ten Regions that has affected all sectors of the economy including the construction sector. The pooled OLS and the Random effect regression results revealed that government compliance positively and significantly affects the performance of construction enterprises in Cameroon.

As a policy implication of this study, the government of Cameroon should consider redressing policies on the regular and prompt payment of enterprises' bills within the timeline specified in the contracts to enable these enterprises meet up with their financial requirements. Policy makers involved in the payment of enterprises' bills should consider reinforcing the payment of interest on delayed payment of bills in order to compensate enterprises for opportunity cost of late payment.

References

- ADB Report. (2013). *Annual Report of African Development Bank's activities for the year 2013 in the Economic life of African Countries Growth and Development*.
- Adediran, A., & Windapo, A. O. (2017). The influence of government targeted procurement strategies on the growth performance of construction small and medium-sized contractors (SMCs) in South Africa. *International Journal of Construction Supply Chain Management*, 7(3), 151-164.
- Akinmurele, L. (2017). Local construction companies decry lack of government support. Business day, 30. Retrieved January 5, 2019, from http://www.constructionkaiser.com/wp-content/uploads/2017/03/Businessday_Focus-on

- Amoah, P., Ahadzie, D., & Dansoh, A. (2011). The Factors affecting construction performance in Ghana. The perspective of small-scale building contractors: *Ghana Institution of Surveyors Journal, The Ghana Surveyor*, 4(1), 41-48.
- Anugwo, I. C., Shakantu, W., Saidu, I., & Adamu, A. (2018). Potentiality of the South African construction SMME contractors globalising within and beyond the SADC construction markets. *Journal of Construction Business and Management*, 2(1), 41-49.
- ARMP Manual (2011). *Procedures Manual for Payment of Public Contracts*.
- ARMP Report. (2013-2018). Reports of Activities of the Agency for Public Contracts Regulation. *ARMP, Yaounde, Cameroon*.
- Arrow, K. J. (1974). *The Limits of Organization*. W.W. Norton & Co. Inc.
- Aschauer, D. (1990). *Why is infrastructure important?* Proceedings of a Conference, Federal Reserve Bank of Boston.
- Bakar, A. H. A., & Tabassi, A. A. (2012). Key factors contributing to growth of construction companies: A Malaysian experience. *World Applied Sciences Journal*, 1(9), 1295-1304.
- Bolton, P. (2016). Public procurement as a tool to drive innovation in South Africa. *Potchefstroom Electronic Law Journal*, 16(2), 2-35. <https://doi.org/10.17159/1727-3781/2016/v19i0a1286>
- Callistus, T., & Anzagira, F. (2014). Factors affecting quality performance of construction firms in Ghana: Evidence from small-scale contractors, civil and environmental. *Civil and Environmental Research*, 6(5), 18-23.
- Cartwright, D. (2017). *Top 10 Challenges Facing Small Construction Companies*. Retrieved January 2, 2019, from <https://www.buildsoft.com.au/blog/top-10-challenges-facing-small-construction-companies>
- CIB. (1999). Managing Construction Industry Development in Developing conceptual model and multivariate research approach. *Academy of Management Review*, 9, 114-127. <https://doi.org/10.5465/amr.1984.4278106>
- Chan, C., Forwood, D., Roper, H., & Sayers, C. (2009). *Public Infrastructure Financing: An International Perspective*. Productivity Commission Staff Working Paper.
- Chittenden, S., & Poutziouris, P. (2002). Regulatory burdens of small business: A literature review. *Small Business Service*, 6(5).
- Crain, N., & Crain, M. (2010). The impact of regulatory costs on small firms. Retrieved from <http://archive.sba.gov/advo/research/rs371tot>
- Dakhil, A. (2013). The Role of the construction industry to economic development in Libya. Development of Turkmenistan. Energy Education Science and Technology Part A: Energy Development: the “Bon Curve”. *Construction Management and Economics*, 24(7).
- Durdyev, S., & Syuhaida, I. (2012). *Role of the Construction Industry in economic Economy Watch (2010)*. The Construction Industry.
- Greene, W. H. (2012). *Econometric analysis* (4th ed.). Englewood Cliffs, N. J.: Prentice-Hall.

- Greg, D. (2019). What are ways economic growth can be achieved? *Investopedia*.
- Gilthorpe, M. (1996). The importance of normalisation in the construction of deprivation indices. *Journal of epidemiology and community health*, 49(2), 45-50. https://doi.org/10.1136/jech.49.Suppl_2.S45
- Gweth, G. (2012). *Conditions sine qua non for an emerging Cameroon come 2035*.
- Hausman, J. A. (1978). Specification tests in econometrics. *Econometrica*, 46, 1251-1271. <https://doi.org/10.2307/1913827>
- Hubbard, G., Rice, J., & Beamish, P. (2008). *Strategic management: Thinking, analysis, action* (3rd ed.). French Forest, NSW: Pearson Education Australia.
- Ibrahim, I. I., Githae, W., & Stephen, D. (2014). Indigenous contractors' involvement and performance in construction procurement systems in Nigeria. *Global Journal of Researches in Engineering*, 14(1), 1-15.
- Jha, K. N., & Iyer, K. C. (2005). Factors affecting cost performance: Evidence from the Indian construction projects. *International Journal of Project Management*, 23, 283-295. <https://doi.org/10.1016/j.ijproman.2004.10.003>
- Kitching, J., Hart, M., & Wilson, N. (2015). Burden or benefit? Regulation as a dynamic influence on small business performance. *International Small Business Journal*, 33(2), 130-147. <https://doi.org/10.1177/0266242613493454>
- Khan, R. A. (2008). *Role of Construction Sector in Economic Growth: Empirical Evidence from Pakistan Economy. First International Conference on Construction in Developing Countries (ICCIDC-I) "Advancing and Integrating Construction Education, Research & Practice" August 4-5, 2008, Karachi, Pakistan*.
- Klapper, L., Laeven, L., & Rajan, R. (2006). Entry regulation as a barrier to entrepreneurship. *Journal of Financial Economics*, 82(3), 591-629. <https://doi.org/10.1016/j.jfineco.2005.09.006>
- Knight, L., Caldwell, N., Harland, C., & Telgren, J. (2003). Government Reform and Public Procurement. In *Academic Report of the First Workshop, International Research Study of Public Procurement, April 10-12, 2003*. Budapest, Hungary.
- Kum, F. V. (2018). *Can Cameroon become an emerging economy by 2035?*
- Laryea, S., & Mensah, S. (2010). The evolution of indigenous contractors. In *Ghana West Africa Built Environment Research (WABER) Conference, 27 -28 July 2010, Accra, Ghana* (pp. 579-588).
- Letchmiah, D. R. (2012). *An examination of the effectiveness of the Preferential procurement in the South African construction industry* (Ph.D Thesis). Faculty of Engineering and Built Environment, University of Witwatersrand, South Africa.
- Lu, W. (2006). *A system for assessing and communicating contractors competitiveness* (PhD Thesis). Hong Kong Polytechnic University, Hong Kong. Retrieved from repository.lib.polyu.edu.hk/jspui/handle/10397/2096

- Luu, T., Kim, S., Cao, H., & Park, Y. (2008). Performance measurement of construction firms in developing countries. *Construction Management and Economics*, 26, 373-386. <https://doi.org/10.1080/01446190801918706>
- Mark, R. (1996). *Research Made Simple: A Handbook for Social Workers* (p. 413). Thousand Oaks, CA: Sage.
- MINEPAT/BUCREP. (2005). *Cameroon Third General Population Census in November 2005*. Ministry of the Economy, Planning and Regional Development, Yaoundé.
- MINMAP Report. (2013-2018). *Reports of Activities of the Ministry of Public Contracts*. MINMAP, Yaoundé, Cameroon.
- Morakinyo et al. (2012). Business structure of indigenous firms in the Nigerian construction industry. *International Journal of Business Research & Management*, 3(5), 255-264.
- Nardo, M., Saisana, M., Saltelli, A., Tarantola, S., Hoffman, A., & Giovannini, E. (2005). *Handbook on Constructing Composite Indicators: Methodology and User Guide*. OECD Statistics Working Papers, 2005/3, OECD Publishing.
- Odediran, S. J., Adeyinka, B. F., Opatunji, O. A., & Morakinyo, K. O. (2012). Business Structure of Indigenous Firms in the Nigerian Construction Industry. *International Journal of Business Research & Management (IJBRM)*, 3(5), 255-264.
- Odey, H. T. (2017). Challenges of indigenous construction enterprises in Nigeria. *Business day*, 30.
- Ofori, G. (2000). Challenges of Construction Industries in Developing Countries: Lessons from Various Countries. Retrieved January 8, 2018, from <https://www.researchgate.net/publications/242410723-challenges-of-construction-industries-in-developing-countries-lessons-from-various-countries>
- Pietroforte, R., & Bon, R. (1990). Historical Comparison of Construction Sectors in the United State, Japan, Italy and Finland using input-output tables. *Construction Management and Economics*, 8(3), 233-247. <https://doi.org/10.1080/01446199000000021>
- Raken. (2016). *5 Success Factors for Construction Firms Construction Marketing Association*.
- Rojas-Ramirez, L. E., & Molina-Vargas, A. (2018). Public infrastructure and its importance for economic growth: The case of Oaxaca (Mexico). *Ecos de Econ*, 22(46). <https://doi.org/10.17230/ecos.2018.46.1>
- Rwelamila et al. (2000). Project procurement systems in the attainment of sustainable Construction. *Sustainable Development*, 8(1), 39-50.
- Shadmanov, S. (2015). Infrastructure and economic growth in Uzbekistan. *International Journal of Economics, Commerce and Research*, 5(1), 9-16.
- Srinivasarao, B. P. (2013). Infrastructure development and economic growth: Prospects and Perspectives. *Journal of Business Management and Social Sciences Research*, 2(1), 81-91.
- Tafirenyika, M. (2016). Why has Africa failed to industrialize? *Africa Renewal Magazine*, August 2016. Retrieved from <https://www.un.org/africarenewal/magazine/august-2016/why-has>

Tunji-Olayeni, P. F. (2015). Development of competitiveness indices for indigenous Construction firms in Nigeria. A PhD thesis presented to the Covenant University of Ota, Nigeria.

Ubani, E. C., Nwachukwu, C. C., & Nwokonkwo, O. C. (2010). Variation factors of project plan and their contributions to project failure in Nigeria. *American Journal of Social and Management Sciences*, 1(2), 141-149.

United Nations Development Programme (UNDP). (2014). *Human Development Index (HDI) Report 2014*. UNDP: New York, NY, USA.

Wooldridge, J. M. (2010). *Econometric analysis of cross section and panel data*. Cambridge: Mit Press.

World Bank. (1994). *Informe sobre Desarrollo Mundial 1994: Infraestructura y desarrollo*. Washington, D.C.: World Bank.

World Economic Outlook. (2012). *Coping with high debt and sluggish growth. World economic and financial surveys*. International Monetary Fund.

Appendix

Table 4. Effect of Government Compliance on Construction Enterprise Performance

VARIABLES	(1)	(2)
	Fixed Effect model	Random Effect model
Government Compliance	0.0512 ** (0.0212)	0.0514** (0.021)
d2014	0.000796 (0.00761)	-0.001 (0.008)
d2015	0.00805 (0.00732)	0.007 (0.007)
d2016	0.0105 (0.00719)	0.010 (0.007)
d2017	-0.0130* (0.00761)	-0.012*** (0.003)
d2018	-0.0718*** (0.0265)	-0.015*** (0.0027)
Staff x10 ⁻²	0.004 (0.007)	0.004 (0.006)
Number of engineers	0.0772*** (0.022)	0.0504** (0.023)
Constant	0.942***	0.936***

	(0.00758)	(0.0101)
Observations	435	435
within	0.2450	0.2433
R-square between	0.6954	0.7019
overall	0.5734	0.5784
Number of id	92	92
Haussmann test [Prob>chi2]		9.84 [0.2765]

Source: Computed by author using Stata 14. *Standard errors in parentheses**** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$