

# **Factors influencing school building construction projects abandonment**

## **Abstract**

This study explores the factors that account for the abandonment of projects within the Ghanaian public education sector. The study adopted a survey of selected contractors, project management practitioners and clients in charge of the delivery of Community Day Senior High School Building projects. Employing factor analysis and structural equation modelling, the factors were categorised into five – political leadership, culture, external forces resources/funding and administrative/institutional. All these sets of elements were statistically significant in causing Ghanaian public-sector education building construction infrastructure projects abandonment. However, the most significant collections of factors are political leadership, followed by poor administrative/institutional practices, poor resource/funding, cultural factors and external forces.

**Keywords:** school building, construction, developing countries, public-sector projects

## **1. Introduction**

Over the years, a significant amount of money has been invested in infrastructure projects by many governments (Sambasivan and Soon 2007; Sweis et al., 2008); and Ghana is no exception (Amoatey et al., 2015; Damoah and Kumi, 2018). One of the critical areas of infrastructure projects are implemented is within the construction industry. However, evidence suggests that some of these construction projects have suffered several setbacks such as delays (Sambasivan and Soon 2007; Sweis et al., 2008), cost overrun (Shehu et al., 2014; Pero et al., 2015; Sinesilassie et al., 2017), requirement deviation, stakeholder dissatisfaction (Amponsah, 2010) and total abandonment (Ayodele and Alabi, 2011). Even though extensive research has been conducted into these setbacks, little is research into

factors that account for abandonment. This study, therefore, seeks to add to the existing literature on constructions projects abandonment factors, by focusing on school building construction in a developing country's context -Ghana. This study explores the factors that account for infrastructure projects abandonment within the Ghanaian public education sector by focusing on selected school building construction projects. To the best of our knowledge, this is the first time a study is being conducted to look at the factors of school building projects abandonment within the Ghanaian context using data collected from key stakeholders involved in project implementation processes. This provides first-hand information from key stakeholders on factors that influence abandonment. To address the aim of the study, the overall question to be answered is: what are the factors that account for Ghanaian public-sector school building construction projects abandonment?

Over the years the Ghanaian governments have embarked on construction projects in order to accelerate socio-economic development (Republic of Ghana Budget, 2012, 2015; World Bank, 2012, 2017). One of the critical areas in which these projects are carried out is within the education sector. Successive Ghanaian governments have invested vast sums of capital into the public-sector education infrastructure projects (Amoatey and Anson, 2017). Chief among them is the construction of schools (Damoah 2015; Damoah et al., 2015; Amoatey and Anson, 2017). The need to embark on school building projects within the public sector has been necessitated due to the infrastructure deficit and the need to improve on education in order to sustain recent economic growth that has occurred as a result of the discovery of oil in commercial quantity (Republic of Ghana Budget, 2012, 2015; World Bank, 2012, 2017; Amoatey and Anson, 2017). However, several of these building constructions have suffered several setbacks such as abandonment (Damoah and Akwei, 2017). Despite the pervasiveness of these setbacks in Ghana and many developing countries

in Africa, little is known in project management literature about the factors that account for this abandonment.

The Ghanaian public-sector construction project within the educational context is vital due to several reasons. First, despite the extant research conducted to find out about the root cause of project failure within the local meaning (Frimpong et al., 2003; Fugar and Agyakwah-Baah, 2010; Ofori, 2012; Amoatey et al., 2015; Damoah, 2015; Damoah et al., 2015), no study has investigated the school building construction projects in general and public-sector school buildings. Moreover, these studies have focused exclusively on factors that account for delays (Frimpong et al., 2003; Fugar and Agyakwah-Baah, 2010; Famiyeh et al., 2017), cost overrun (Frimpong et al., 2003; Famiyeh et al., 2017), requirement deviation (Amponsah, 2010; Damoah and Akwei, 2017) and scope creep (Amoatey and Anson, 2017). To the best of our knowledge, there is only one study devoted to the education sector, and that is the work of Amoatey and Anson (2017) that studied the factors that account for scope creep. Therefore, by focusing on abandonment, this study adds to literature within the local context of education infrastructure project implementation. Not only is this study important within the local context but also other developing countries which face similar infrastructure challenges within the public education sector.

Second, the Ghanaian government educational school building construction infrastructure is essential due to the numerous stakeholders that are associated with such projects and the potential negative impact that abandonment may have on these stakeholders. Due to the multiple stakeholders associated with such projects – with varying and opposition interest and power (Pan, 2005; Pan and Pan, 2006), it was therefore assumed that the factors that might account for abandonment might not be the same as those in the private sector and the factors that are often associated with construction projects abandonment within the performing organisations' settings.

Third, in developing countries such as Ghana, where the public-sector administration and management is highly political (Damoah and Akwei, 2017); the execution of these projects has been often highly political (Damoah et al., 2015) and as such the factors that may account for abandonment may not be the same as those generic factors that are often associated with performing organisations. Also, none of these studies focused on school building construction projects.

Lastly, due to the political nature of the implementation of public sector projects within the country (Damoah et al., 2015; Damoah and Akwei, 2017); coupled with weak public administrative and institutional systems (Killick, 2008; Amoako and Lyon, 2014), the factors that may cause abandonment might not be the same as those within the private sector and the performing organisations' settings. This study will be of interest to industry practitioners, policy makers and academics both in Ghana and other emerging economies with similar local dynamics.

The remainder of this research is presented as follows: the next section provides a general overview of school building construction projects abandonment within the local context, while part three is devoted to the review of related literature. It follows with the methodology in section four while section five presents the findings from the survey. The chapter six discusses the findings while section seven concludes the study by making practical and academic suggestions.

## **2. Literature Review**

### ***2.1 Selected Public Sector Educational School Building Construction Projects Abandonment***

Over the years, the Ghanaian government has solicited funds from the IMF, World Bank and Tax Payers to embark on building construction projects within the education sector (Republic

of Ghana Budget, 2012, 2015; World Bank, 2012, 2017). However, some of these projects have failed through delays, cost overrun, requirement deviation and abandonment (Republic of Ghana Budget, 2012, 2015; Ghana General News, 2016). For this research, the focus is only on recent high-profile school building construction projects initiated by the government in 2013 as a case study. This project consisted of building of two hundred (200) Senior High Community Day School to bridge the school building infrastructure gap, so that Free Education Programme could begin (Republic of Ghana Budget, 2012). However, after four (4) years of implementation, the successes of these buildings have been mixed (Republic of Ghana Budget, 2012; Mensah, 2018; Damoah and Kumi, 2018). While some of them were completed, the majority of them have been abandoned. Correctly, the 200-community day senior high buildings, only 50 were completed, and the remaining 150 were left at various stages after a change in government in 2016 (Mensah, 2018; Damoah and Kumi, 2018). This study uses these projects as a case study to explore the main factors that have accounted for the abandonment of these projects; hence, data are collected from projects management practitioners and clients involved in the execution of these projects.

## ***2.2 Previous Studies on Construction Project Abandonment***

Many reasons have been cited for the causes of construction projects abandonment in developing countries. For instance, within Nigeria, Ayodele and Alabi (2011), used a structured questionnaire survey to solicit data from quantity surveyors, civil engineers, architects, builders, and contractors on the causes and effects of Nigerian Construction project abandonment. In doing so, they used the relative importance index statistical technique and identified eighteen (18) causes of abandonment. In order of importance, they include: inadequate project planning, inadequate fund, inflation, bankruptcy of the contractor, variation of project scope, political factor, death of client, incompetent project manager, wrong estimate, insufficient cost control, faulty design, change of priority, improper

documentation, unqualified/inexperience consultants, administrative/legal action, delayed payment, dispute and natural disaster. In a similar research with the same research instrument, Mac-Barango (2017) solicited the perceptions of architects, quantity surveyors, and engineers on the factors of construction projects abandonments, several factors were identified, and they include: inadequate planning, inadequate funding, inflation, bankruptcy of contractors, variation of project scope, faulty design, delayed payment, and quackery (incompetence). Olalusi and Otunola (2012) used a structured questionnaire and interviews to identify factors of construction projects abandonment and found that: incorrect estimation, lack of available skilled personnel; inadequate planning, poor risk management, misunderstanding of work requirements, poor quality control by regulatory agencies, corruption and communication gap among staff are the main factors that cause abandonment.

In the Malaysian context, Addul-Rahman et al. (2013) used a questionnaire survey and interview to investigate the risks that are associated with housing construction projects abandonment and found several risks factors that account for abandonment. These are: economic, financial, legal, mansard, selling system-related factors, developed-rated factors and unforeseen risk factors. Hoe (2013) surveyed the entire industry within the Malaysian construction industry by soliciting the views of architects, developers, property consultants and the honorary secretary-general of the National House Buyers Association (225 participants) and identified forty-one factors of construction projects abandonment. Further, they found that the top ten most important factors include: financial difficulties faced by the owner, financial challenges faced by the contractor, unexpected bad economic conditions inappropriate mode of financing project, delays in interim payments, inadequate project feasibility studies, incompetent contractors or subcontractors, project control problems, inappropriate project planning and scheduling, and bureaucracy and red tape within the project.

Even though, these few studies paint a picture of the causes of construction projects abandonment; none of them specifically investigated building construction projects within the education sector. Therefore, this research gap calls for an exploratory study in this subject area. It adds to the growing literature in this subject area.

## **2.2 Hypothesis Development**

In agreement with extant project management literature; that suggest that projects are unique (Soderlund, 2004; Mir and Pinnington, 2014) and as such the factors that may account for failure is dependent on the geographical location of the project (Ahsan and Gunawan, 2010); the socio-cultural settings of the host country and the performing organisation (Maube et al., 2008); the project assessor (Ika, 2009; Carvalho, 2014); and the criteria being used in the assessment process (Amir and Pinnington, 2014); it is, therefore, proposed that the factors that may account for abandonment of educational building construction projects will depend on a number of factors within the study's local context. Therefore, the next section presents theoretical antecedents and attributes within the local context that may influence abandonment.

### ***2.2.1 Partisanship Politics and Public-Sector Projects Performance***

The Ghanaian public-sector school building construction projects abandonment may be explained from factors that relate to politics. In the context of this study, politics is used in relation to party and partisanship politics (Bob-Milliar, 2012). Theoretically, standardised political agency theories, frameworks and models indicate that closed attachment of citizens to political parties leads to failure of citizens to hold political leaders accountable for their stewardship, thereby leading to manipulation of institutional systems for private gains by political leaders (Foirina, 2002; Besley, 2007; Bob-Milliar, 2012; Asunka, 2015; Luna, 2015). Evidence from empirical studies also shows a positive relationship between partisanship

politics and accountability (Anderson, 2000; Hellwig and Samuels, 2008; Kayser and Wlezien, 2011). Studies in projects management also show a strong link between partisanship politics and projects performance (Damoah et al., 2015; Damoah and Akwei, 2017; Damoah and Kumi, 2018). In agreement with standardised political theories and empirical evidence, literature relating to Ghana suggest that citizens fail to hold their political leaders accountable to their stewardship when they are firmly attached to a political party (Bob-Milliar, 2012). Further, the Ghanaian democratic governance is dominated by an extreme form of partisanship politic (Bob-Milliar, 2012), which affects the appointment of public sector institutional leaders and managers, including public sector project execution leaders (Republic of Ghana Constitution, 1992; Damoah and Akwei, 2017). Due to the partisanship nature in the appointment of public sector institutions and project execution leaders, therefore, the expectation is that this will have a significant influence on public sector education school building construction projects abandonment. This leads to the first hypothesis:

***H1: Political leadership factors will lead to the Ghanaian Public Education Building Construction project abandonment.***

### ***2.2.2 Public Administration, Institutional Systems and Public-Sector Project Performance***

The Ghanaian public school building construction projects abandonment may be explained by the public administration and institutional systems operations within the country. The Ghanaian public administration and institutional systems are weak (Killick, 2008; Asunka, 2015); full of bureaucratic procedures (Amoako and Lyon, 2014) and institutional bottlenecks (Killick, 2008), which affect the business operation (Amoako and Lyon, 2014) and projects performance (Amponsah, 2010; Damoah and Akwei, 2017). We, therefore, expect that the public administration and institutional systems in the country will affect public sector



education school building construction projects abandonment. This lead to the second hypothesis:

***H2: Weak public administration and institutional system factors in Ghana will lead to Ghanaian public-sector education school building construction projects abandonment.***

### ***2.2.3 Resources and Public-Sector Project Performance***

A lack of resources may explain the Ghanaian public-sector school building project abandonment. Theories on resources indicate that the performance of organisations is influenced by the ability to own resources (Pfeffer and Salackcik, 1978; Hillman et al., 2009). This could be traced to the Resource Dependency Theory (RDT) espoused by Pfeffer and Salackcik (1978); which states that: organisations depend on resources and the resources come from external sources; the external environments consist of other organisations and therefore, the resources that an organisation needs are often in the hands of other organisations. Hence, organisations depend on each other (Pfeffer and Salackcik, 1978; Hillman et al., 2009). Accordingly, whoever possess resources possesses power; and as such, the basis of power is resources (Pfeffer and Salackcik, 1978). It can, therefore, be argued that whoever possesses resources, possesses power, hence, can influence projects abandonment. Further, empirical studies show that resources, which may include partly control the success of every project: material and human, tangible and intangible (Krigsman, 2006; Teigland and Lindqvist, 2007; Sweis et al., 2008; Ruuska and Teigland, 2009). In developing countries such as Africa, many projects suffer from several setbacks such as delays (Damoah and Kumi, 2018) and total abandonment (Fabian and Amir, 2011) due to inadequacy and resources withdrawals. Relative to Ghana, the country typifies classic example of an emerging economy that relies heavily on external resources such as money, equipment and human for the implementation of public sector projects (Republic of Ghana Budget, 2012,

2015; Bawumia, 2015; Damoah and Kumi, 2018). The implication is that withdrawal of resource support such as funding and workforce by donor countries, agencies and bodies may lead to the abandonment of Ghana public school building construction projects. This lead to the third hypothesis:

***H3: Lack of resources will lead to the Ghanaian public-sector education school building construction projects abandonment.***

#### ***2.2.4 External forces and Public-Sector Project Performance***

The Ghanaian public-sector school building projects abandonment may be explained based on factors relating to external forces outside the projects. These may include external issues such as a legal suit, donor countries, World Bank, disaster, weather conditions, external bodies that monitor education systems and pressure groups (Amponsah, 2010; Damoah, 2015). Empirical studies in construction indicate that these external influences construction projects performance to some extent Frimpong et al., 2003; Fugar and Agyakwah-Baah, 2010). The work of Frimpong et al. (2003), Fugar and Agyakwah-Baah (2010), and Damoah et al. (2015) identified external environmental forces such as unfavourable site and adverse weather conditions as factors that impacts on projects management performance. Even though none of these studies specifically looked at construction projects abandonment in the public sector, therefore the expectation is that these external factors could also affect the public-sector school building construction projects abandonment. This thus leads to the fourth hypothesis:

***H4: External forces will lead to the Ghanaian public-sector education school building construction projects abandonment.***

#### ***2.2.5 The Cultural Orientation and Public-Sector Projects Performance***

The Ghanaian national cultural orientation may explain the Ghanaian public-sector education school building construction projects abandonment. The role of the Ghanaian national cultural direction in explaining public sector education school construction project abandonment could be traced to the Hofstede's landmark six cultural dimensions -Power Distance; Individualism; Masculinity; Uncertainty Avoidance; Long-Term Orientation and Indulgence. Drawing on the six cultural aspects, the Ghanaian national culture has been categorised in recent publications (The Hofstede Centre, 2016). Moreover, the Ghanaian society is hierarchical in nature – practising a master-servant relationship, a situation where the rich and those in higher authority are reverends, worshipped and in some circumstance feared and portrayed as 'tin god' (World Fact book, 2015); hence, those portrayed as tin god could do whatever pleases them with impunity (Damoah and Akwei, 2017). Further, empirical studies in project management show that there are cultural factors which influence projects performance (Heeks, 2002; 2006; Saad et al., 2002; Muriithi and Crawford, 2003; Maumbe et al., 2008). In developing countries, the fundamental reason often cited as the cause of projects failure is culture (Heeks, 2002, 2006; Amid et al., 2012). There is also empirical evidence that suggests that the Ghanaian attitude towards public sector work is poor due to the cultural orientation inherited from the colonial rule from Britain and this affects projects' performance in the country (Amponsah, 2010). We expect that the factors within the national culture could lead to public sector school building construction projects abandonment. To this end, this leads to the last hypothesis:

***H5:** The national cultural orientation of Ghanaians will lead to public sector education school building construction projects abandonment.*

### **3. Methodology**

An initial literature review was conducted to identify the possible causes of construction projects abandonment. Fifty (50) factors were identified as evidenced in table 1 in the results section. However, because this study is focused on specifically on Ghanaian public sector school buildings, the identified factors were given to nine participants comprising of three participants from each of the targeted audience (project management professionals, contractors and public officials (clients)) involve in the selected school building construction projects stated in 2.1 above to for verification. This was done to ensure that all the identified factors are applicable within the study's context and to ensure that there is no repetition of elements. They were also asked to add any factor(s) that are within the study context that has not been added to the list. This is also in agreement with existing literature that states that projects are unique (Soderlund, 2004; Mir and Pinnington, 2014) and the factors that account for failure is may depend on the geographical location (Ahsan and Gunawan, 2010), and socio-cultural settings (Mukabeta et al., 2008), who is assessing the project (Agarwal and Rathod, 2006; Procaccino and Verner, 2006; Ika, 2009; Carvalho, 2014) and the criteria being used for the assessing (Amir and Pinnington, 2014). These were selected using purposive sampling technique -thus, only people with a minimum ten (10) years of working experience in their respective jobs were targeted. Potential participants' background was checked through their company website, LinkedIn profile, published work and third-party recommendations. They were then contacted through their company or institutions through gatekeepers. This was carried out in December 2016. On the basis of their feedback and suggestions, forty-two (42) possible factors were left and used as the questionnaire variables; as some of the elements were deleted and others added. The revised variables (factors) were put on a Five-point Likert Scale; where 1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree, 5= Strongly Agree and subject to the ranking by the participants.

The questionnaire survey was used to collate data from solicited the views of individuals in the participating audience on factors that causes Ghanaian public-sector school building projects abandonment using snowballing approach. This approach was the most appropriate as some of the project management professionals work for multiple projects. Further, because the plans have been abandoned, they could not be reached at work sites. Also, the all clients could not be contacted through the ministries because there had been a change of government, hence, replacement of personal and therefore, snowball approach was the best to get the maximum number of participants. Due to the political nature of such projects and the difficulty in obtaining data from such projects, all the possible players within the audience were targeted.

An initial pilot study consisting of 15 questionnaires were randomly given out to the participating groups (5 each of the three sets of participants). This was to test the validity of the questions in the questionnaires are understandable to the audience. Cronbach's coefficient alpha of 0.973 was obtained for the 42-item questionnaire showing high internal consistency and reliability of the questionnaire items. After the pilot, some of the terminologies and wordings were changed to reflect the meaning and understandings within the local context. The full survey collection then followed this and 450 questionnaires were distributed in person and by gatekeepers; which is above the number recommended by researchers such as Krantz (2016) as appropriate for the questionnaire survey. Out of this, 258 usable questionnaires were returned and used for the analysis; representing a 57% response rate. The participants responded by self-reporting, so they were collected either on the spot or a later date agreed by both parties. This was carried out between January and March of 2017. Before analysing the data obtained, it is essential to establish the suitability of data for the analysis to be conducted. First, a test for non-response bias was undertaken. Since a moderate

response rate was achieved for this study, it is essential to show that the opinions of non-respondents may not be significantly different from those who responded to the survey. A comparison of the mean values for the scale items revealed no significant difference between early (i.e. those who returned within the first three days) and late (those who responded after follow-up) respondents (Lings and Greenly, 2010). Therefore, non-response bias was not likely to be a problem with this data.

Next common method variance bias was tested since the data for the quantitative research was conducted using a single data instrument. This is necessary to ensure that the data instrument measures two or more unique construct variables. This study performed the Harman's (1967) one-factor test based on the approach described by Andersson and Bateman (1997), Podsakoff et al. (2003) and Schriesheim (1979). The one-factor test suggests that an exploratory factor analysis with the extraction of only one factor should have the variance explained to be less than 50% to show the absence of common method variance bias. Alternatively, researchers may perform exploratory factors analysis with the extraction all factors with Eigen values greater than unity; if two or more elements are extracted then common method variance bias is not a problem with the data. Exploratory factor analysis with the extraction of only one factor showed that the factor accounted for about 26.99% of variance explained (Which is less than 50% variance). Therefore common method variance bias was not likely to be a problem with this data.

In the analysis of data, both exploratory factor analysis (EFA) and structural equation modelling (SEM) were used (Chipulu et al., 2014). First, exploratory factor analysis with Varimax rotation was employed to identify the factor structure (a group of causes) of Ghana government school building construction project abandonment. This is because there currently exists no research to support or suggest a particular factorial configuration for the causes of school building projects abandonment in emerging economies. The findings (a

group of objects) from the EFA were then used to guide the development of the SEM model. In developing the SEM model, partial least squares structural equation modelling (PLS-SEM) (SmartPLS Release: 3.2.7 (Ringle et al., 2015) were used to find answers to the research questions for several reasons. PLS-SEM procedure is not affected by sample size or distribution of data (Hair et al., 2016).

To perform PLS-SEM, a researcher needs to assess the psychometric properties of the scales/factors by assessing convergence and discriminant validity for reflective constructs and multicollinearity for formative constructs (Hair et al., 2016). This process is also called confirmatory factor analysis. Once the scale/factors pass the necessary quality criteria, the researcher then proceeds to examine the structural path modelling. The significance of the structural paths is tested using bootstrap t-values (5,000 sub-samples) (Tortosa et al., 2009), a procedure available in PLS. This procedure helps to determine the factors/causes that are statistically significant (important).

#### **4. Results and Analysis**

## 4.1 Literature findings

**Table 1. Factors affecting construction projects abandonment**

	<b>Authors</b>	<b>Identified factors</b>
1	Addul-Rahman et al. (2013)	Late payment to contractor, Unstable finance by third party, Over budget, Bankruptcy by developer, Financial crisis, Weakness in financial management by developer, Weakness in construction management by developer, Economic crisis such as Asian Financial Crisis, Shortage of construction materials, Not achieving target sales due to the high prices market, Not achieving target sales due to the weakness in sales marketing, Housing development without feasibility studies, The excess of housing units supply, Financial failure by contractor, Weakness in management by inexperienced developer, Weakness in management by inexperienced contractor, Delay in work due to management failure by third party, Risks caused by subcontractor, Partner withdrawals from joint venture
2	Ayodele and Alabi (2011)	Inadequate project planning, inadequate fund, inflation, bankruptcy of contractor, variation of project scope, political factor, death of client, incompetent project manager, wrong estimate, inadequate cost control, faulty design, change of priority, improper documentation, unqualified/inexperience consultants, administrative/legal action, delayed payment, dispute and natural disaster
3	Mac-Barango (2017)	Inadequate planning, inadequate funding, inflation, bankruptcy of contractors, variation of project scope, faulty design, delayed payment, and quackery (incompetence)
4	Olalusi and Otunola (2012)	Incorrect estimation, lack of available skilled personnel; inadequate planning, poor risk management, misunderstanding work requirements, poor quality control by regulatory agencies, corruption and communication gap among personnel
5	Hoe (2013)	Poor sales, cost overrun, tight budget, lopsided joint venture, unhelpful financial institution, unexpected site condition, approval problems, unawareness of the need to complete infrastructure wholly, rise of interest rates, increase of the price of material and labour, change of contractor, the need to pay LAD, the developer is financially weak and does not have sufficient fund, the land of the development is bought by the developer getting a loan from the bank hence the need to continuously service the interest charges, the development products are sold too cheaply, the developer siphons the project's money elsewhere, Lopsided joint venture, Unhelpful financial institution,



## 4.2 Survey Result

Table 2: Background Information of Respondents

<b>Variables</b>	<b>Frequency</b>	<b>Per cent</b>
<b>Gender</b>		
Male	218	84.5
Female	40	15.5
<b>Age group</b>		
Below 20	3	1.2
20-30	131	50.8
31-40	106	41.1
41-50	15	5.8
Above 50	3	1.2
Total		
<b>Region</b>		
Greater Accra	156	60.5
Ashanti	28	10.9
Brong –Ahafo	7	2.7
Eastern	7	2.7
Central	8	3.1
Volta	16	6.2
Western	11	4.3
Upper –East	12	4.7
Upper West	4	1.6
Northern	9	3.5
<b>Category of Respondent</b>		
Contractor	63	24.4
Project management practitioner	141	54.7
Government official (Client)	54	20.9
<b>Years of Experience at Current Position</b>		
less than 1 year	26	10.1
1-5 years	154	59.7
6-10 years	57	22.1
11-15 years	13	5
16-20 years	4	1.6
21-25 years	4	1.6

#### 4.2. 1 Exploratory Factor Analysis (EFA)

The responses obtained on the questionnaire scale were subject to factor analysis with Varimax rotation. Figure 1 shows the scree plot derived from the EFA conducted. The report retains six factors based on Kaiser's rule which recommends maintaining elements with eigenvalues greater than unity and the fact that the scree plot showed a sharp curve after the sixth factor. The six factors account for about 62% of the total variance explained.

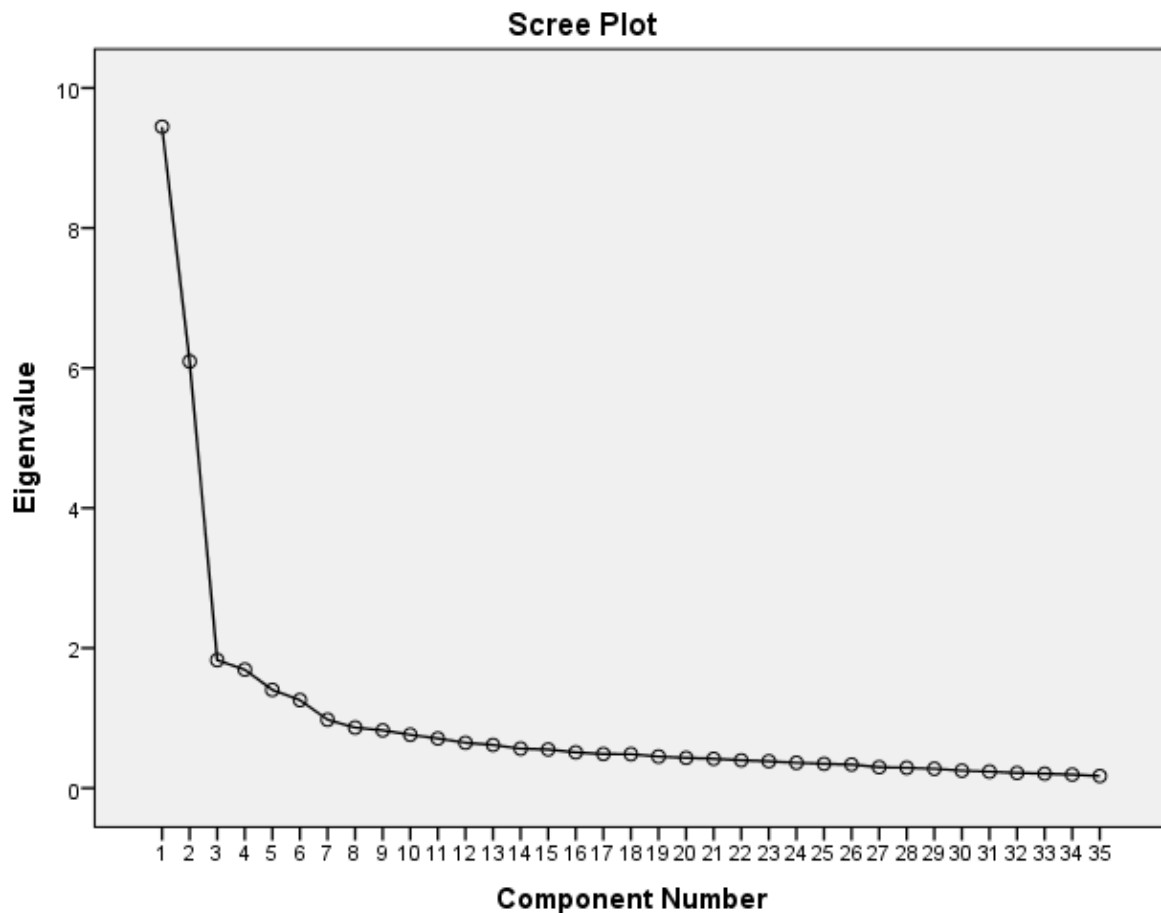


Figure 1. Scree plot for questionnaire scale items

Fourteen items loaded significantly into factor 1; all these items seem to suggest problems related to “Political Leadership”. Factor 2 is made up of eight items and relates to issues concerning “Institutional/Administrative factors”. Factor 3 contains three items and relates to issues concerning “Cultural factors”. Factor 4 contains four items and relates to issues concerning “Resources/Funding”. Factor 5 contains four items and relates to issues concerning “External Forces”. Similarly, the two items which loaded significantly into the sixth factor also relate to “External Forces”. As a result, the fifth and sixth factors were merged due to conceptual fit purposes. See table 3 for information on factor loadings. Reliability analysis using Cronbach's alpha was performed for the obtained factors (Hair et al. 2016). The results showed that "political leadership", “administrative/institutional factors”, “cultural factors”, “resources/funding problems”, and “external forces” obtained Cronbach’s alpha values of 0.939, 0.894, 0.765, 0.827, and 0.698 respectively, providing adequate evidence of internal consistencies of the factors in an exploratory study.

**Table 3: Factor Loadings of questionnaire items after Varimax Rotation**

Items	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
Poor planning	.087	<b>.811</b>	.123	.004	.071	.065
Poor supervision	.066	<b>.773</b>	.024	.245	.125	.045
Lack of monitoring	.119	<b>.787</b>	.074	.156	.137	-.118
Lack of Feasibility studies	.004	<b>.654</b>	.368	.057	-.022	.184
Bureaucratic processes	.119	<b>.822</b>	-.024	.180	.141	-.012
Project management technic/framework/models	.086	<b>.588</b>	.474	.040	.036	.177
Lack of commitment by project leaders (performing organization)	.018	<b>.618</b>	.303	.244	.020	.024
Wrong specification	-.035	<b>.527</b>	.438	.212	-.003	.064
Appointment of incompetent projects leaders	<b>.789</b>	.081	.101	.022	-.044	.002
Change in project leadership	<b>.748</b>	-.011	.118	-.001	.114	-.171
Political gains (political party level)	<b>.776</b>	.059	.149	-.031	-.046	-.006
Oppositions from opposition political parties	<b>.726</b>	-.016	.046	.002	-.076	.039

Political interference	<b>.763</b>	-.006	-.041	-.009	-.113	.062
Project not needed anymore	<b>.741</b>	-.009	-.005	.141	.024	-.028
Lack of commitment by project leaders (political leaders)	<b>.720</b>	.052	.218	-.175	.110	-.098
Deliberate sabotage from incumbent political appointees	<b>.760</b>	.054	.077	.071	.059	-.045
Political gains (individual level)	<b>.716</b>	.008	-.012	.117	-.051	.044
Corruption	<b>.745</b>	.156	-.015	.076	.017	.184
Personal gains (political projects leadership)	<b>.736</b>	.091	.037	.074	-.018	.150
Change in government	<b>.755</b>	.094	-.049	.080	.118	.061
Partisan politics	<b>.719</b>	.071	-.016	.092	-.035	.183
Refusal of consultants to certify work for next phase of project	<b>.675</b>	.062	-.091	.074	.040	.180
Release of funds government	.106	.244	.204	<b>.749</b>	.022	.167
Lack of human capacity	.121	.295	.205	<b>.733</b>	.153	.092
Starting more projects than government can fund	.241	.289	.231	<b>.671</b>	-.039	.194
Withdrawal of funding by donor countries, agencies and institutions	-.021	.172	.209	<b>.644</b>	.359	-.125
Resistance from local community	.069	.246	<b>.726</b>	.183	-.032	.111
Religious Belief system	.013	.191	<b>.723</b>	.157	.215	-.072
Traditional Belief system	.128	.146	<b>.691</b>	.250	-.027	.102
Unwillingness of donor countries to fund projects	-.071	.122	.175	.289	<b>.724</b>	-.134
Legal suit	.021	.073	-.110	.078	<b>.761</b>	.103
Land litigations	.041	.172	.068	-.145	<b>.625</b>	.497
Unwillingness of financial institutions to fund projects (financial credit facilities)	.032	.400	.371	.096	<b>.501</b>	.172
Sanction by regulators	.149	-.019	.049	.162	.109	<b>.806</b>
Sanctions by donor countries, agencies and institutions	.176	.282	.347	.165	.035	<b>.556</b>

KMO=0.896; Barlett's Test Chi-square=4898.21, df=595, p=0.000; Total variance explained=62.07%

#### 4.2.2 Confirmatory Factor Analysis

Further analysis of the five factors retained after EFA indicated that fourteen items had kurtosis  $> \pm 1.0$ ; whereas eleven pieces had skewness  $> \pm 1.0$ . More importantly, the Kolmogorov-Smirnov test of normality showed that  $0.167 < \alpha < 0.375$ ;  $p < 0.01$  for all items. Similarly, the Shapiro-Wilk test of normality showed that  $0.663 < W < 0.912$ ;  $p < 0.01$  for all

things. These imply that the data is not generally distributed; as a result, PLS-SEM was used to perform a confirmatory factor analysis and structural equation modelling.

Next, a test of the psychometric properties of the factors obtained was carried out. This process involves a test of convergence and discriminant validity. An examination of the results showed that three items including “Unwillingness of donor countries to fund projects”, “Legal suit” and “Sanction by regulators” under factor 5 had significant cross loadings. The offending items were omitted sequentially and model re-run after each deletion until the measurement model met the acceptable criteria for convergence and discriminant validity shown in Tables 4.

Cronbach's alpha for the five factors extracted was higher than 0.6, the minimum acceptable limit for exploratory research (Hair et al. 1998). Composite reliability for each of the five elements extracted was higher than 0.7, and average variance removed estimates were also higher than 0.5, meeting the minimum suggested by Hair *et al.*, (2016). Therefore, convergent validity has been adequately met.

Discriminant validity is met by the fact that the square root of the average variance extracted estimates for each of the five factors is higher than the inter-factor correlations between them (Fornell and Lacker, 1981; Hair et al. 2016) as presented in table 4. Recent research on variance-based structural equation modelling has suggested that the Fornel and Lacker criterion alone is not conclusive on discriminant validity (Henseler et al 2015; Osei-Frimpong, 2017), as a result it was decided to perform the heterotrait-monorail ratio (HTMT) of the correlations to be assessed using a specificity criterion rate of 0.85 (HTMT0.85). The results also presented in table 4 shows that none of the associations exceeded 0.85; as a result, the five-factor model demonstrates discriminant validity.

Table 4: Convergence and Discriminant Validity (Square root of AVEs in bold-diagonal)

Factor	$\alpha$	CR	AVE	Fornell-Larcker Criterion					Heterotrait-Monotrait Ratio (HTMT <sub>0.85</sub> ) Criterion				
				1	2	3	4	5	1	2	3	4	5
1. Political Leadership	0.939	0.946	0.557	<b>0.746</b>									
2. Administrative	0.894	0.915	0.574	0.175	<b>0.758</b>				0.189				
3. Cultural Factors	0.765	0.864	0.680	0.163	0.516	<b>0.825</b>			0.185	0.630			
4. Resources/Funding	0.827	0.884	0.658	0.243	0.547	0.514	<b>0.811</b>		0.257	0.634	0.644		
5. External Forces	0.623	0.789	0.559	0.207	0.552	0.441	0.466	<b>0.747</b>	0.249	0.699	0.586	0.590	

### 4.2.3 Structural Equation Modelling

Causes of Ghana Government (GG) School building construction projects abandonment was modelled as a second-order formative construct using the five factors identified during EFA as first-order constructs with reflective indicators. The structural paths are presented in figure 1. The significance of each track was tested using bootstrap t-values (5000 sub-samples). The bootstrap t-values also presented in figure 1 showed that all paths were statistically significant. Therefore, the five study hypotheses are supported in the present context. Comparatively, the most significant cause of Ghanaian public-sector education school building construction infrastructure project abandonment is political leadership, closely followed by poor administrative/institutional practices, poor resource/funding, cultural factors and external forces in descending order.

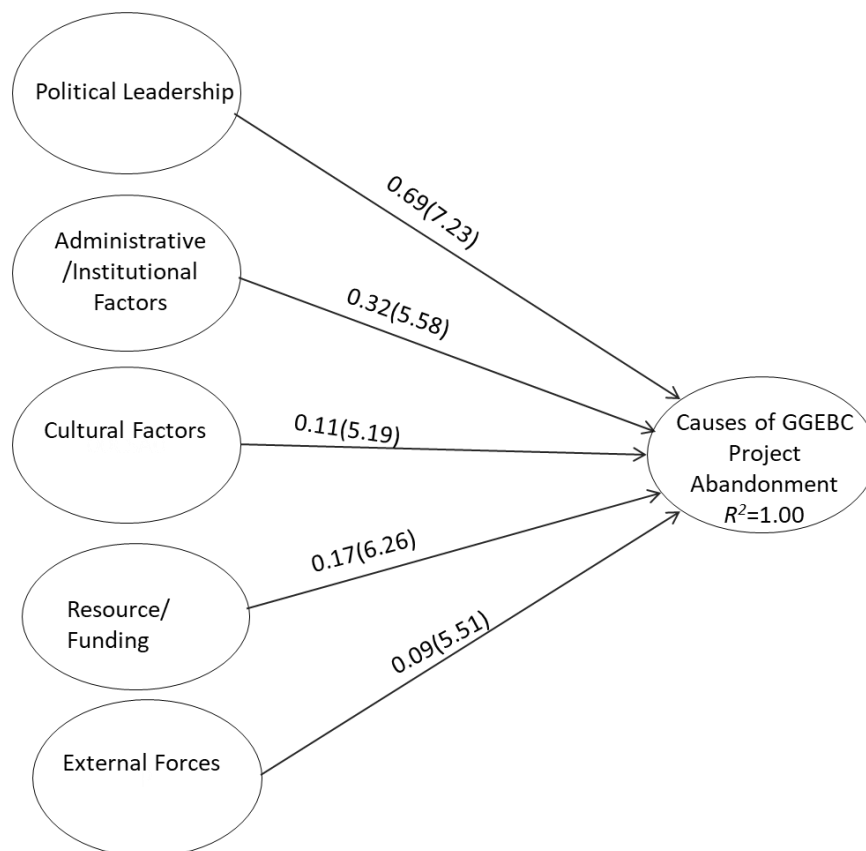


Figure 1: Structural path coefficients showing regression weights and bootstrap t values (in parenthesis)

Based on the findings from the structural model, the following hypotheses conclusions are made:

***H1: Bad political leadership will be a significant cause of Ghana Government education building construction project abandonment.***

A positive and significant relationship was obtained between political leadership and education building construction project abandonment ( $\beta=0.69$ ,  $t=7.23$ ,  $p<0.01$ ). This implies that bad/ineffective political leadership is a significant driver of Ghana Government education building construction project abandonment. Therefore, hypothesis one (H1) is supported/accepted in the present context.

***H2: Weak public administration and the institutional system will be a significant cause of Ghana Government's education building construction project abandonment.***

A positive and significant relationship was obtained between institutional systems and education building construction project abandonment ( $\beta=0.32$ ,  $t=5.58$ ,  $p<0.01$ ). This implies that the weak public administration and institutional system are significant drivers of the Ghana Government education building construction project abandonment. Therefore, hypothesis two (H2) is supported/accepted in the present context.

***H3: Lack of resources will be a significant cause of Ghana government education building construction project abandonment.***

A positive and significant relationship was obtained between the lack of resources/funding and education building construction project abandonment ( $\beta=0.17$ ,  $t=6.26$ ,  $p<0.01$ ). This implies that lack of resources is a significant driver of Ghana Government education building



construction project abandonment. Therefore, hypothesis three (H3) is supported/accepted in the present context.

***H4:** External pressure will be a significant cause of Ghana Government education building construction project abandonment.*

A positive and significant relationship was obtained between external pressure and education building construction project abandonment ( $\beta=0.09$ ,  $t=5.51$ ,  $p<0.01$ ). This implies that external force is a significant driver of Ghana Government education building construction project abandonment. Therefore, hypothesis four (H4) is supported/accepted in the present context.

***H5:** The cultural orientation will be a significant cause of Ghana Government education building construction project abandonment.*

A positive and significant relationship was obtained between cultural orientation and education building construction project abandonment ( $\beta=0.11$ ,  $t=5.19$ ,  $p<0.01$ ). This implies that cultural orientation is a significant driver of the Ghana Government education building construction project abandonment. Therefore, hypothesis five (H5) is supported/accepted in the present context.

## **5. Discussions and Implications**

### *Bad political leadership*

The findings show that several politically related factors account for Ghanaian government school building construction project abandonment. Further, these factors are the most

influential factors. Even though there are different political factors such as a change in government, partisanship politics, political interference, political corruption, starting more projects than the state can finance. However, it can be argued that they are all related in a way. These findings are not surprising as prior studies such as Amponsah (2010); Amoako and Lyon (2014); and Damoah and Kumi (2018) within the country indicate that virtually, everything within the public sector is politicised. Therefore, this study adds to these existing studies on the politicisation of the public sector, but in a different perspective of school building construction abandonment.

Other studies such as Damoah and Akwei (2017) have found that, politically, public sector projects such as construction and education-related projects are considered as a tool to garner political support of those workers in the public sector and such, there is direct control by the central government. Therefore, their direct and indirect control could impact on their performance. Politically, related issues such as a change in government have been linked to the reasons why post-colonial industrialisation programmes and projects were abandoned (Jeffries, 1982; Aryeetey and Jane, 2000). Similarly, Damoah et al. (2015), Damoah (2015), Bawumia (2015) and Damoah and Akwei (2017) all cite partisanship politics as one of the fundamental factors that impact on public sector projects performance.

Unsurprisingly, these political factors could lead to corrupt practices between the technocrats and the politicians as prior studies show that contractors, political party officials and technocrats can use connivance to syphon state funds through the award of construction contracts (Luna, 2015). Linking the work of Luna (2015) to this current study implies that, there is a possibility of school construction projects being abandoned if the funds earmarked for these projects are syphoned for personal gains.

The implication is that policy makers can use find as a guide during public sector construction projects implementation to devise apolitical strategies to reduce the factors that

can lead to abandonment. Likewise, building construction project management practitioners can use the findings as a guide to garner the necessary insights and skills needed to manage politically related factors to reduce and avoid abandonment.

#### *Weak public administration and institutional system*

The second most influential sets of factors of Ghanaian public-sector school building construction projects abandonment are weak public administration and institutional policy in Ghana. These factors include bureaucratic processes, poor planning, lack of feasibility studies, inadequate supervision, lack of monitoring, project management technic/framework/models, and lack of commitment by project leaders, for instance, are somehow influenced by political and cultural-related issues. This is supported by the work of Killick (2008) and Amoako and Lyon (2014) that found that there is a weak public administration system that impacts on the operations of businesses, though; they did not discuss the weak system in relation to construction projects. The implication is that foreign expatriates who execute local school building projects will find it difficult to cope with the demands of the public administration and institutional system. It's on records that many construction projects within the country are executed by foreign companies and expatriates (Bawumia, 2014, 2015; Ghana Budget, 2012, 2015; Addo, 2015; Damoah et al., 2015; Damoah, 2015); and therefore, this will have significant impact on their ability to execute these projects. Thus, project executioners within the country need to understand the public-sector administration and systems' dynamics to be successful.

#### *Lack of resources*

Lack of resources such as the release of funds, lack of human capacity, starting more projects than the government can fund, withdrawal of funding by donor countries, agencies and

institutions account for Ghanaian public-sector education school building construction projects abandonment. Ghana typifies developing country, in which donor countries fund the majority of its developmental projects such as education building construction projects. Accordingly, the completions of government projects are dependent on their willingness to support financially. In agreement with prior studies (Damoah, 2015; Damoah et al., 2015), most government projects in Ghana, primarily, within the construction sector, are carried out by expatriates who comes with their own machines and equipment because there is a lack of human resources who possess the requisite technical know-how, as well as computer and heavy-duty equipment needed in this sector. This finding has several implications: one, in agreement with previous studies (Krigsman, 2006; Ruuska and Teigland, 2009; Fabian and Amir, 2011), resources are very crucial in the execution of Ghanaian public-sector education school building construction projects and as such, policy makers should ensure that enough resources are available before the commencement of these projects. Second, Resources Dependency Theory (RDT) by Pfeffer and Salackcik (1978) as cited in Hillman et al. (2009) is evidenced here. The RDT states that external resources to organisation affect the behaviour of organisations; and as a result the activities of an organisation are influenced by external environmental forces and therefore, external resources may influence the success of local organisations. Thus, as Ghana is a typical example of an emerging economy where donor countries and agencies fund most of her infrastructure projects (See Bawumia, 2014, 2015; Ghana Budget, 2012, 2015; Addo, 2015), the withdrawal of funding support for any reason could lead to abandonment.

### *External pressure*

The fourth sets of influential factors of Ghanaian public-sector education school building construction projects abandonment are external forces; which is closely related to resources.

Like the reliance on external resources such as funding, the external pressure factors include: unwillingness of donor countries to fund projects; sanctions by donor countries; agencies and institutions; unwillingness of financial institutions to fund projects (financial credit facilities); together with other external forces such as sanction by regulators; legal suit, land litigations, within the country, could lead to the Ghanaian public-sector school building construction projects abandonment. However, the position of being fourth sets of reason for abandonment is surprising given that most infrastructure projects, especially within the public education system are financed by international organisations, agencies and donor countries (Bawumia, 2014, 2015; Republic of Ghana Budget, 2012, 2015; Addo, 2015; Damoah and Kumi, 2018). However, this could be linked to other external forces such as regulators, legal suit, and land litigations. Even though there is no empirical and documented evidence, but due to the illiteracy level and the cost of legal suit, many Ghanaians rarely patronise the court systems in the country. Further, as evidenced by prior studies such as Killick (2008), Amoako and Lyon (2014), Luna (2015) and Asunka (2015); the Ghanaian public institutions are weak; and controlled by the political elite (Bob-Millier, 2012; Luna, 2015; Asunka, 2015); and therefore, the regulators and the legal system are somewhat influenced by the politicians and those in high authority, hence, ordinary Ghanaian unwillingness to patronise them.

#### *The cultural orientation*

Cultural issues such as resistance from the local community, religious belief system and traditional belief system may lead to Ghanaian government projects abandonment. Even though extensive studies in project management indicate that one of the most cited reasons for projects failure is cultural factors, this finding is surprising as previous studies have assessed culture from the perspective of the design-actually gap (Heeks, 2002, 2006). Thus, incompatibility of project management frameworks, concepts, models to the local context

where these are not designed (Saad et al., 2002; Muriithi and Crawford, 2003; Maumbe et al., 2008; Amid et al., 2012). This finding could also be traced to the religiosity nature of Ghana. Global religiosity index ranks the country as the number is the index, where 96 per cent of the population are religious (Win International, 2012). This also has implications for project management practitioners, especially those who are not natives of the country. These foreigners may find it difficult to understand and agree with locals who may resist the construction of school building due to religious belief and tradition belief systems. What might be worrying most to the expatriates is the fact that these projects are meant to help the locals whose wards will be attending these schools.

## **6. Conclusions, limitations and future research**

### ***6.1 Conclusions***

Over the years, a significant amount of money has been invested in school building infrastructure projects by governments within the public-sector education, and Ghana is no exception. However, several of these building construction projects have suffered several setbacks through delays, cost overrun, requirement deviation, stakeholder dissatisfaction and total abandonment. Despite these setbacks, the literature indicates that few studies have looked at construction projects abandonment generally. Further, these studies have mainly focused on the effects of abandonment rather than the factors that account for abandonment. No one has looked at the abandonment of public-sector school buildings in a developing country's context. This study, therefore, sought to explore the factors that account for school building construction projects abandonment within the Ghanaian public education sector by focusing on abandoned Community Day Senior High School Buildings.

Using a questionnaire survey to solicit first-hand information from contractors, project management practitioners and clients forty-two factors are identified as the causes of

abandonment. Using factor analysis and structural equation modelling, the elements were categorised into five – political leadership, culture, external forces, resources/funding and administrative/institutional. All these sets of factors were statistically significant in causing Ghanaian public-sector school building construction projects abandonment. Comparatively, the most significant factors are political leadership, closely followed by poor administrative/institutional practices, poor resource/funding, cultural factors and external forces.

In relation to politics, several political leadership related factors were identified. These include a change in government, partisanship politics, political interference, political corruption, starting more projects than the state can finance. Theoretically, unlike prior studies that have looked at leadership from the performing organisation and the technical perspective, this finding extends building construction project management failure literature by adding a political dimension to the role of leadership in construction projects performance.

Regarding public administration and institutional system poor administration and institutional systems factors identified include bureaucratic processes, poor planning, lack of feasibility studies, inadequate supervision, lack of monitoring, project management technic/framework/models, and lack of commitment by project leaders. This finding espouses an essential factor that causes projects abandonment in construction projects management in that rarely do studies assesses the impact of public-sector institutions and administration systems in developing country and how they impact on projects performance. This sets the foundation for future studies to investigate the relationship between local public institutions and administration systems, and project performance in both the private and public sectors.

In terms of resources, the identified resources related factors include a release of funds, lack of human capacity, starting more projects than the government can fund, withdrawal of funding by donor countries, agencies and institutions. This finding is not surprising given that

resources have been cited by existing studies as a factor that affects many projects performance. Hence, this study confirms prior studies.

Regarding culturally related factors, we identified the causes of public-sector school building construction projects abandonment includes resistance from the local community, religious belief system and traditional belief systems. Even though culture has been researched extensively in project management studies and has been cited as the most common factor for projects failure in developing countries; these studies have been discussed mainly about management practices, models and frameworks that suffers from cultural-fit. By explaining culture from religious, community resistance and traditional beliefs systems, this study adds a different dimension to the study of the relationship between culture and construction projects performance in particular and projects performance in general.

Lastly, external forces factors identified are the unwillingness of donor countries to fund projects; sanctions by donor countries; agencies and institutions; the unwillingness of financial institutions to support projects (financial credit facilities); permission by regulators; legal suit, land litigations, within the country, external to the plans. Even though these factors are not often cited in project management literature, attention needs to be paid to them since performing organisations do not normally have total control over them.

## ***6.2 Recommendations***

Given that most of the factors causing government projects failure come from political leadership, it is recommended that parliament should make laws that would give independence to technocrats executing government projects, to avoid and reduce political interference. This will also help minimise administration problems that lead to abandonment. Further, the country should introduce a (40-year) development through an act of parliament to curb the excess of partisan political leadership. This will mitigate the constant abandonment



of government projects due to the change of government and partisan politics. This will also help reduce the problem of resources since the government will not have the liberty to embark on extra projects that may require additional funds and other resources from an external source. Institutions such as the office of the special prosecutor, auditor general's office, CHRAJ, the police service and other anticorruption institutions should be strengthened to reduce government interference and corruption which tends to lead to abandonment. Culturally, the locals should be educated on the need to balance the importance of embarking on such projects and their application of a belief system. This may not eradicate the cultural attitude that leads to abandonment, but it will help reduce the phenomenon. To minimise the impact of external forces contingencies measures should be made available before the commencement of each project.

### ***6.3 Limitations and future research***

The use of survey data collection technique by focusing on selected school buildings construction implies that the findings may not be generalised. However, this is an exploratory study that sets the foundation for future investigations into the entire education industry. It is, therefore, suggested that future studies should consider the use of sampling selection technique that may be more represented of the whole population.

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