

Critical Causes and Effects of Payment Delays in the Execution of Public Construction Projects in Ghana: Fresh Evidence from the Brong-Ahafo Region

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Abstract

The execution of public projects is an indispensable recipe for socio-economic development in any country. However, the successful execution and implementation of public projects in Ghana has been hampered by payment delays. In the contrary little is known about the critical causes and effects of payment delays in the execution of public projects in Ghana. It is against this background the study was conducted to identify and rank the critical causes and effects of payment delay and to be able propose mechanisms and strategies for mitigating its pervasive. The study employed a case study sample survey as a research design within a quantitative research methodological paradigm to investigate the research problem. The random and purposive sampling techniques were employed to select 30 contractors, 10 consultants/experts and 10 clients. The study therefore identified and ranked 10 causes and 13 effects of payment delays. It was realized that 8 out of the 10 causes of payment delays were considered critical because they all had mean score above the conventional mean 3.5 at 95% confidence on a five-point Likert scale with the top five critical causes of payment delay being; delay in certification (ranked no.1), poor financial management (ranked no.2), with holding of payment by clients (ranked no.3), ambiguous contractual provision (ranked no.4) and conflict among the parties (ranked no.5). It was also revealed that 11 out of the 13 effects identified including the top five consequences of payment delays included; leads to abandonment of projects (ranked no.1), results in cost overrun (ranked no.2), results in delay in completion of the projects (ranked no.3), leads to bankruptcy/liquidation (ranked no.4) and results in time overrun (ranked no.5) were considered critical. Based on the findings the study recommended that payment delay could be minimized if Proper payment schedules are been agreed by all the parties before the commencement of the project accompanied by regular communication between parties and prior anticipation cost overrun and time overrun in clear contractual provision.

Keywords: critical causes, effects of payment delays, execution of public projects, fresh evidence, Ghana

1. Introduction

The provision of infrastructure and all forms of social facilities are very necessary for proper functioning of a country. The government of Ghana is charged with sole responsibility of providing public projects but non-governmental organization and private individuals can also provide infrastructure with approval of state authorities. The construction of public projects in Ghana is a critical driver of economic development and an avenue for job opportunities as it ensures a fair distribution of employment to both the skilled and unskilled labour in the Ghanaian population (Amankwa, 2003). The sector was known to be having provided jobs for 2.3% of the active Ghanaian population as of 2003 which included both skilled and unskilled (Amankwa, 2003). A successful and adequate delivery of a good road networks and public infrastructure in an economy enhances nearly the performance of all the other sectors of the economy (Wang, 1994). Adequate and planned delivery of roads in a country has a greatest potential of enhancing education, transport, health, business efficiency, trade, cultural transmissions and housing delivery (Ayudhya, 2012).

The construction of public infrastructure requires colossal sums of money for proper and timely execution and delivery (Amankwa, 2003). In Ghana however, the construction of public projects are often awarded to contractors who execute such projects based on the contractual agreement between the state and the concerned contractor (Donkor, 2011; Fugar & Agyakwah-Baah, 2010). These contractors do not often have enough money to sustain the progress of the construction until the funds are provided by the state. Therefore, the timely payment of these funds coupled with diligent supervision allow for timely and quality delivery of these public projects (Ameer, 2005). However, After having awarded and signed the contract to the contractor, it is the expectation of the client that the contractor will execute and deliver the construction of the projects with due respect to the terms and conditions of the contractual agreements and on time whereas as the contractor also expects to be provided with enough funds to be able to deliver the concerned projects to the best standard of acceptability and on time (Ayudhya, 2012). In effect, the timely release of funds from the state and the receipt of such funds by the contractors are needed for successful completion of the projects.

It is therefore only natural that for a poorly resourced contractor (which is the dominant case in Ghana), failure to on the part of the client to make timely and regular payment of the funds, there is a high tendency for the project to be abandoned and at worst contractors might become bankrupt, suffocate and eventually fold up from the industry due to payment delays (Judi et al, 2010). Payment delays in execution of public projects in Ghana have been identified as the most critical setback in the successful carrying out of infrastructural development in Ghana (Fugar and Agyakwah-Baah, 2010). The negative effects of payment delay on the delivery of public projects in Ghana are far serious and threatening to be ignored. Agyakwah-Baah (2010) and Amankwa (2003) established that payment delays in the construction of public projects is a recipe for abandonment of major projects and shoddy work which eventually leads to disasters and road accidents in the cases of roads. Payment delays has been identified to be a major cause of the folding up of construction firms (Ayudhya, 2012), litigations between contractors and sub-contractors (Cheng, 2006) and frustration in the construction industry (Donkor, 2011; Judi et al., 2010; Ramus et al., 2006).

It is clear that the negative effects of payment delays on the successful execution of public projects are far undesirable and some rated irreparable. However, previous works have concentrated on examining project delays or payment delays under the context of cause or effects but there is paucity of research relating to major cause and effects of payment delays. This study therefore seeks to fill this knowledge gap by i) identifying and ranking the causes and effects of payment delays as well as ii) proposing remedial options to quell the situation and to improve the status quo in the execution of public projects in Ghana.

2. Empirical Review of Causes and Effects of Payment Delays in Public Projects

The paper sought to examine the critical causes and effects of payment delays on the successful execution of public projects in Ghana by undertaking a thematic review of literature relating to payment delays. The paper reviews scholarly articles, research papers, policy documents and theses relating to payment delays. The review established a conceptual definition for payment delays. It further reviewed literature regarding the causes and effects of payment delays on the successful execution of public projects as well as the existing strategies for addressing the of payment delays.

2.1 The Concept of Payment Delays

The concept of payment delays is not so much of debated construct regarding what it constitutes. However a number of opinions and definitions have been advanced for the concept. Amankwa (2003) opined that payment delays occur when honouring of payment is effected at a time later than the stipulated contractual time. This definition appears to be logical since the concept 'delay' comes to play only when a stipulated time is missed. Similarly, Judi et al. (2010) defined payment delays to involve the disappointment by the employer to pay the contractor within the time frame expressed in the contractual agreement. These two definitions measures payment delays by 'the contractual time and date' and that of the 'actual time and date of payment'. Ayudhya (2012) also shared the same view but rather extended the definition to include a situation where a contractor is not being paid at all for his work. However, the extension rather appears to be 'aggressive' since payment delays does not actually mean termination/revocation of the contract and the resulting possible non-payment. However, for the purposes of this paper, payment delays shall be considered a condition in which a contractually agreed amount backed by clearly defined covenants (Terms and Conditions) is not paid within the contractually agreed time and automatically creates addition to the time frame, non-completion of the contract or termination of the contract.

2.2 Causes of Payment Delays in the Execution of Public Projects

The incidence of payment delays in the execution of public projects in Ghana cannot be said to be a natural cause. Several factors have been identified by researchers from empirical research investigations and the available causes have been presented below.

A study by Ahmed et al. (2003) established that poor communication between contracting parties to the construction of the public project is a major cause of payment delays. Communication is a key tool in contractual relationships and it is expected that clients and contractors frequently discuss the progress of work and make arrangement for the preparation of interim payment certificates and the absence of this could be a recipe for payment delays. Similarly, Alaghbari (2005) reports that poor communication could cause payment delays in any contractual relationships especially those that takes a longer period of time to complete. Al-Ghafly (1995) also supports that claim that poor communication between contracting parties is one of the major causes of payment delays. Ayudhya (2012) reports that insufficient funds by clients and inaccurate bills of quantities are two critical causes of payment delays in the execution of public projects. Ayudhya posits clients are expected to pay contractors for the work done and if such clients do not have adequate amounts to settle the contractors often lead to payment delays. Similarly, Kaming et al (1997) disagrees with Ayudhya relating to insufficient by claiming that most public projects are often undertaken by the state that cannot be described to have insufficient

funds. Frimpong et al (2003) also supports the findings by Kaming et al (1997) that payment delays in public projects cannot be associated with insufficient funds by the client (state) but rather bureaucracy in the release of that fund. Frimpong et al (2003) also claimed that inaccurate bill of quantities could be a cause of payment delays if it is 'bloated' deliberately by the contracted and later identified by the client and indicated that the advent of technology and the bidding process eliminates the tendency of inaccurate bills of quantities in public projects.

It has been opined by Fugar and Agyakwah-Baah (2010) that the long and bureaucratic nature of honoring payment certificates (and interim payment certificates) is a critical cause of payment delays. This was also identified by Frimpong et al (2003) who confirmed that payment delays in public projects in Ghana can be traced to bureaucracy in honoring payment certificates. Ayudhya (2012) also echoed that in attempt by the state to ensure fair payment for level of workmanship delivered often introduce a number of stages in the 'payment equation' which end up delaying the actual payment against the stipulated contractual time. Similarly Kaming et al (1997) claimed that the bureaucracies in honouring has been ranked high by contractors as a cause of payment delays and also accounts for substantial number of bankruptcies in Ghana. Closely related to the bureaucracy in honoring payment certificated as a cause of payment delays is delay in payment certification (District Assembly Common fund newsletter, 2014). The newsletter noted that when the preparation payment certificates are delayed, payments are also delayed since the issuance of the payment certificates proceeds actual delivery of the funds. The newsletter also noted that the delay in certification is against the provision of the 1992 constitution of Ghana which mandates that public projects to the regular fund be paid quarterly. An earlier study by Ayudhya (2012) also supports this claim by the newsletter when the study established payment delays in Ghana can be traced to long delays in payment certification and disbursement of funds.

Alaghbari et al (2007) were of the view that shortage of resources of current year's project is a critical cause of payment delays in public projects. They opined that funds are often earmarked for such public projects from among competing projects in a national budgets and so in cases where eventualities leads to a shortage of the planned amount, it becomes very difficult to respond in the shortest possible time and consequently leads to payment delays. Similarly, Kaming et al (1997) in an earlier study also identified that inadequacy of resources on the part of the client (state) is the major cause of payment delay. Kaming et al (1997) however made a clear distinction between payment delays and project delays which are highly correlated with payment delays having a greater potential of driving projects delay and established that both can be caused by shortage of resources on the part of the client. Moreover, Kumaraswamy and Chan, (1998) noted that in cases where clients have sufficient funds and still withhold Payment, delays occur. Frimpong et al (2003) re-echoed this claim when they established that withholding of payment by clients for whatever reason accounts for payment delays in the execution of public projects in Ghana. An earlier study by Assaf et al (1995) identified poor financial management by client to be a cause of payment delays. They opined that when the funds allocated for public projects are not managed properly by taking care of inflation and economic indices, they often lose the purchasing power for the earmarked projects. They identified most public projects are often paid in different currencies and when the cedi depreciates against such currencies out of poor financial management, adequate amounts are not always available to payment contractors and the result is payment delays. Also, Mezher and Tawil (1998) also identified poor financial management by clients to be a critical cause of payment delays in projects construction.

Mansfield et al. (1994) opined that ambiguities in the contractual provisions have been known to be a cause of payment delays. They noted that when the terms and conditions relating honouring of payment are not clearly defined, it often leads to conflict among the parties and more often these differences are resolved before actual payments are honoured which in most cases delay payments. This claimed has also been re-echoed by Alaghbari et al (2007) and Ayudhya (2012) who also found ambiguous contractual provisions to be a cause of payment delays in the execution of public projects. It is worth noting that conflicts among the parties involved in the construction of the projects could lead to payment delays (Sambasivan and Soon, 2007). The authors noted that this is more acute in the relationship between contractors and subcontractors to the public projects but is also evident between clients and the contractor. Their study re-echoed that more often arbitration do not often resolve the conflict since financial matters are associated with aggression and more often end up in formal court proceedings who also do not give verdicts on cases timely. The result is that when these cases are even resolved, payments are honoured late. Furthermore, Latham (1994) also believes that the 'Use of Pay When Paid Clause' in Subcontractor payment also causes payment delays. Hamzah et al (2011) re-echoed that due to the poorly resourced nature of Ghanaian contractors, they do not often pay sub-contractors from their own resources. They only pay the subcontractors when they are paid by the clients and thus any delay in paying the contractor automatically creates a delay in the payment of the subcontractor (Latham, 1994).

It has also been identified by Baloyi and Bekker (2011) that local culture and attitude of the beneficiaries of the public projects could lead to payment delays. They believed that some cultures do not allow the use of some pieces of land for development and so when due diligence is not made to secure that land for

such projects; the progress of the project can be halted by the residents which could affect the time allocated for the projects. The results of these have been delays in completing projects which also instructs delay in the payment by the client. It amazing that that this claim has also be re-echoed by Alaghbari et al (2007), Judi et al (2010) and Hamzah et al (2011) as a recipe for payment delays in the construction of public projects in Ghana. It should be noted that while the researchers reserved their comments on these empirical findings, the claims are to be re-tested to identify the critical factors from the perspectives of all relevant parties to the execution of public projects in Ghana

2.3 Effects and Consequences of Payment Delays on the Execution of Public Projects

The occurrence and pervasiveness of payment delays is mostly accompanied by a number of consequences. Several effects or impacts have been identified to be engineered by payment delays. This paper did not make any distinction between effects and impacts of payment delays. The survey of the literature pointed out different impacts and effects which have been presented below.

Ramus et al (2006) reported that payment delays often leads to abandonment of public projects. They indicated that when contractors request for the honoring of the interim payment certificates and responses are not made by clients, a poorly resourced contractor tends to abandon the project until payments are made. The researchers added that even when level of the progress of work is being paid for by the clients, some contractors often terminate contracts which in most cases lead to abandonment of the projects. Similarly Ayudhya (2012) re-echoed that payment delays is one of the major recipes for projects abandonment in Ghana. Meng (2012) also identified that if a contractor is not well resourced and payments are delayed without effective notice given regarding the reasons for the delay, the contractor can suspend the performance of his obligations under the contract with the client and in an eventual circumstance, there is suspension of the whole project and sometimes abandonment of projects. It has also been reported that payment delays is the major causes of project delays (Lip, 2005). Lip opined that when there is no regular flow of funds to the contractor, a poorly resourced contractor might not be able to fund the progress of work and more often projects are suspended until the funds are made available. Also, Shi et al (2001) established that since public projects more often involves colossal sums of money, payment delays could lead to shoddy works or delay in the completion of the projects. Similarly, Fugar and Agyakwah-Baah (2010) identified that payment delays is one of the major causes of project delays in Ghana. They pointed out that payment delays leads to at least project delays and at worst abandonment of projects.

Judi et al (2010) also found out that payment delays are one of the causes of bankruptcy among contractors. The researchers in their empirical study identified that when contractors invest their own funds on public projects and payment is delayed by clients (in this case the state), they become financially handicapped and more often declared bankrupt. Similarly, Shi et al (2001) and Fugar and Agyakwah-Baah (2010) supports this claim when their studies all identified that payment delays is one of the causes of bankruptcy among contractors. It is worth noting that a failure of the contractor in getting consistent and timely payment could bring about project delay, diminished productivity and in the compelling case, the organization may go into liquidation (Meng, 2012). If payments are delayed the concerned contractor might not have the capacity to pay his banks, his sub-contractors, suppliers, hirers and specialists on time and more often creates the tendencies for contractors to be declared bankruptcy or liquidation. Moreover, Bob (2005) rather found out that aside being declared bankrupt, payment delays can lead to conflicts among the parties in the project construction. Bob believes that when payment are delayed, a poorly resourced contractor will not be able to pay the subcontractors and when the payment delay is lengthened, impatient parties to the contract often assort to aggression. Similarly, Meng (2012) found payment delay to be the major cause of conflict among parties to a contract.

Payment delays tend to affect the concerned contractor's public image since quality work might not be delivery without the regular flow of the money (Hasmori et al, 2012). The researchers were of the view that contractors get their dignity and honour based on their track record of quality work delivery and that their credibility becomes questionable if they deliver poor quality of work as a result payment delays. Also, Murdoch and Hughes (1996) found that payment has a long term negative social impact on the concerned contractor. Similarly, Agyakwah-Baah (2010) also identified that payment delay which often leads to project delay and abandonment in some cases leads to a negative public image of the contractor. Also, Ayudhya (2012) re-echoed that when contractors do not deliver quality standard of work as a result of payment delays, the public image is put into disrepute. Abdul Rahman et al (2011) rather reports that payment delays lead to time and cost overrun. They opined that when interim payment certificates are not honoured and works are suspended it often leads to an extension of the previously agreed time (Time Overrun). They also indicated that volatile nature of the economic indices affects the purchasing power of previous agreed sums (even when adjusted for inflation) rendering the funds insufficient and the need for additions to be made (Cost Overrun). Similarly, Ezekiel (2009) also found that payment delays can lead to time and cost overrun in the form of increased of interest payment, increase in cost of capital to the contractor and delay in completion of projects.

Oon (2002) found that payment delays have the highest tendencies of creating an opportunity for poor quality of work to be delivered. Oon posit that a poorly resourced contractor might not be able to adequately fund the progress of work when payments are delayed and they are attempted to still achieve the output with insufficient funds and as a result, these contractors compromise on quality for the work to be completed. Also, Murdoch and Hughes (1996) established that payment delays in public projects leads to poor quality of work and idleness of equipment. Similarly, Kikwasi (2012) found payment delays and poor supervision in public projects to be the cause of poor quality of work. Miles (1979) rather found that payment delays could leads to cash flow problems among contractors. Miles indicated that when a contractor does not have enough financial resources and payments are delayed, it can create cash flow problems for the concerned contractor and subcontractors. It should be noted that these cash flow problems in themselves identified by Miles (1979) could lead to delays and shoddy works. Similarly, Ofori (1991) and Cheng (2006) re-echoed the claim that payment delay can create cash flow problems for contractors and subcontractors. Cheng opined that the persistence of the cash flow problems could lead to liquidation which can be traced to the payment delays. Also, Fugar and Agyakwah-Baah (2010) and Judi et al (2010) also confirmed that payment delays leads to cash flow problems and financial hardship for contractors.

It has also been advanced by Lip (2005) that payment delays have a long term negative consequences on the users of the projects. Lip argued that when payments are delayed and contractors undertake shoddy work, the consequences are far great for the users of the project. Mohammed and Isah (2012) opined that road accidents in Ghana are mostly caused shoddy works during road construction which could also be traced to payment delays and poor supervision of the progress of work. These consequences become threats to the reputation of the contractors and also increase the risk of accidents for users of the project (Judi et al, 2010).

2.4 Appraisal of the Literature

In a nutshell, from literature review a conceptual definition of payment delays was established, a number of causes and effects of payment delays were identified. The causes and effects identified in the literature shall be ranked by the respondents in the study to ascertain the critical causes and effects so to be able to recommend options for sustainable reforms

3. Research Methods & Materials

This section of the paper presents the research methods and materials that were employed to investigate the causes and effects of payment delays. The study employed a case study sample survey research design within a quantitative research approach to investigate the critical causes and effects of payment delays in the execution of public projects in Ghana. Since payment delays are real life problems, it was instructive to examine the problem within a real life social setting backed by evidence from empirical data (Creswell, 1994) and as a result the case study sample survey was considered appropriate as a research design for the study. The study relied on both primary data and secondary information for the entire research process. The primary data consisted of the responses that were gathered from the respondents in this study. The secondary information for the study consisted of the literature from the scholarly journal articles, research papers, thesis, and policy documents referenced for this study. The secondary information was largely used to ascertain the existing findings on the causes and effects of payment delays. These were then taking through a scaled ranking by clients, experienced contractors and experts involved in the construction of public projects.

The population of the study consisted of clients, construction experts/consultants and A1B1 to A3B3 contractors registered with the Ghana Highway Authority in the Brong-Ahafo Region. These categories of contractors were targeted because the researchers were of the view that the type and size of projects they handle exposed them to payment delays which will enable them to rank the causes and effects of payment delays and to suggest ways of addressing them. The population of the contractors consisted of 37 A1B2 to A3B3 contractors. A sample of 30 (out of the total of 37) contractors who are actively undertaking involved in the construction of public projects, 10 experts/consultants who are supervising the works being undertaken by these contractors and 10 clients in the region were selected for the study based on suitability, proximity and easy access. The study employed the random sampling technique and the purposive sampling technique in selecting the sample size. The random sampling technique was used in the selection of the contractors whose numbers and addresses were readily obtainable from the Ghana Highway Authority in the region and the purposive sampling technique was used to select the consultants/experts and clients because the researchers had reasons to believe that they were involved in the execution of public projects and therefore were reasonably capable of providing informed responses. However, prior questions confirming their involvement in the construction of public projects was undertaken to be sure the right respondents were been surveyed.

In the end, 10 variables were identified as causes of payment delays and 13 variables were also identified as effects of payment delays in the execution of public projects in Ghana. The causes included delay in certification; poor financial management by client; withholding of payment by client; ambiguous contractual

provisions; conflict among the parties involved; technical problems; poor communication between contracting parties; shortage of resources of current year's project; the use of pay when paid clause in subcontractor payment; and local culture & attitude. The effects of the payment delays also included leads to abandonment of projects; cost overrun; results in delay in completion of projects; leads to bankruptcy or liquidation; time overrun; create cash flow problems; creates financial hardship; leads to conflict among parties; poor quality of work; creates negative chain effect on other parties; creates negative social impacts; idleness of equipment; and affect the contractors reputation.

The data was collected between January, 2017 and March, 2017. The three months period was considered long enough for the respondents to carefully rank the various causes and effects of payment delays. Drawing on the established causes and effects of payment delays in the literature, an exploratory survey (a pilot survey) using informal interviews was taken prior to the actual data collection to confirm the practical occurrence and relevance or otherwise in the Ghanaian perspective. A total of 7 contractors, 1 consultant and 1 expert were taken through the exploratory study. The thematic constructs evolving from the interview confirmed the issues identified in the literature but led to the omission of 'long term negative effect on users of the projects' as an effect of payment delays and also led to the splitting of 'creates cash flow problems' and 'creates financial hardship for contractors' as two different effects. The pilot survey also led to the inclusion of 'technical problems' as a cause of payment delays. The final data collection was undertaken using questionnaires. By convention those who were selected for the exploratory survey (Pilot Survey) were not included in the actual data collection.

The total of 50 questionnaires which included both close and open ended questions were grouped into four sections (Section A to D). The Section A solicited demographic data from the respondents using objective test. Section B solicited information on the factors causing payment delays in execution of public projects and required the respondents to rank the variable on a five point Likert scale of 5-very critical, 4-critical, 3-normal, 2-not critical and 1-not very critical. In section C information was solicited on the effects of payment delays on the execution of public projects which required the respondents to rate the variables on five point scale of 5-very critical, 4-critical, 3-normal, 2-not critical and 1-not very critical. Lastly, section D which comprised of open ended questions solicited information on ways of mitigating the prevalence of payment delays. Spaces were provided for them to make suggestions they deemed fit to respond to the causes of the payment delays. The questionnaires were personally given to the respondents and were later contacted for responses. The respondents were reminded they had enough time to respond to the questions and so opportunity was provided to even amend mistakes in their responses.

Remarkably, all the questionnaires (50) administered were received from the respondents which constituted 100% response rate. It was perhaps the interest associated with payment delays which is a critical challenge in the construction in Ghana today or the diligence by the researchers in making several follow-ups to the retrieve the questionnaires since the sample size was handy and the respondents could also easily be located. It should be reiterated here that the quality of results with Likert scales depends largely on the range of attributes given to the scale and clarity with which respondents interpret them. Considering the classes of respondents selected for the study, it is expected that they have enough experience to respond appropriately to the questions. The responses from the questionnaire were entered into the Statistical Package for the Social Sciences (IBM SPSS 20) now known as the Predictive Analytics SoftWare (PASW) for analysis. The scaled questions were analyzed using scale ranking (mean score analysis) and one-sample t-test presented in the form frequencies tables and percentages as well as ranked. Descriptive statistics (for the demographic data) and the suggestions given in section D was taken through content analysis. The various methods of analysis were presented collectively to provide comprehensive results and discussion.

4. Results and Discussion

This section of the paper presents the results of the data that was gathered. The findings on the demographic data, causes of payment delays, effects of payment delays and the suggestion for addressing payment delays has been presented below.

4.1 Demographic Information of the Respondents

The demographic data of the respondents consisted of Section A in the questionnaire. The researchers wanted differences in the level of expertise, experience and age brackets and gender distributions of the respondents. This was carried out to establish the high tendency of credibility and reliability to expect from the question. As a result the ages, gender, stakeholder's categories and the years of working experience in the execution of public projects were captured.

The respondents therefore comprised of 38 (76%) males and 12 (24%) females (**see table 4.1**). There was the need to include equal numbers from the different gender positions. However, there were very few females in the population than their male counterpart and as a result, the gender distribution is said to be fair

representation from each gender. The data also revealed that 2(4%) of the respondents were below 25 years of age, 29 (58%) of the respondent were between the ages of 25 and 35 years, 13 (26%) of the respondents of 36 and 45 years and the remaining 6 (12%) were above 45 years of age. The age distributions of the respondents also indicated a youth population in the sector evidenced by 31 (62%) of the respondents between the ages of 15 and 35 years (African Youth Carter, 2006). The respondents also constituted of 30(60%) contractors, 10 (20%) experts/consultants and 10(20%) clients. The study therefore captured opinions of the major players in project execution such as contractors, consultants and clients. The data also revealed that 12(24%) of the respondents had working experience below 5 years, 31(62%) of the respondents had working experience between 6 and 15 years and 7(14%) of the respondents had working experience above 15 years. It was realized that majority of the respondents 38(76%) had working experience ranking from 6 years and above meaning they had enough working experience to be able to make informed ranking of the variables. Only a few of the respondents 12(24%) had working experience below 5 years but they had sufficient knowledge of the industry in order to make informed ranking of the variables. The table below is a summary of the demographic information of the respondents.

Table 4.1: Demographic Information of the Respondents

Gender	No. of Respondents N=50	% of Respondents N=100%
Males	38	76
Females	12	24
Ages (Years)	No. of Respondents N=50	% of Respondents N=100
Below 25	2	4
25-35	29	58
36-45	13	26
Above 45	6	12
Stakeholder Category	No. of Respondents N=50	% of Respondents N=100
Contractor	30	60
Consultant	10	20
Client	10	20
Years of Experience	No. of Respondents N=50	% of Respondents N=100
Below 5	12	24
6-15	31	62
Above 15	7	14

Source: Authors' construct from survey data, 2017

4.2 Reliability Statistics on the Causes and Effects of Payment Delays

The researchers endeavoured to perform a statistical reliability test using the Cronbach's Alpha. The researchers wanted to determine the internal consistency in the data that was gathered to further ascertain how closely related the set of responses were as a group (see table 4.2). From the table, the alpha coefficient for the 10 items constituting the factors causing payment delays was 0.754 and the 13 items showing the effects of payment delays on public projects was 0.721. It can be noticed that all the variables under the study had Cronbach Alpha values above 0.7 indicating a strong and high correlation within the data set. The implication of this is that the right categories of professionals were included in the survey process and also provides further evidence that the respondents applied the best of their knowledge, experience and expertise in answering the questionnaires. This provides evidence that there was a general high degree of internal consistencies in the data set.

Table 4.2: Reliability Statistics

Item	Cronbach's Alpha	No. of Items
Factors causing payment delays	0.754	10
Effects of Payment Delays on road construction projects	0.721	13

Source: Authors' construct from survey data, 2017

4.3 Causes of Payment Delays

The respondents were required to rank the various factors causing payment delays in the execution of public projects in Ghana (see table 4.3). The table indicates ranking results made by the respondents using the mean score ranking where a mean score of 1.0000 indicates the respondents strongly considered that factor as not a very critical cause of payment delays whereas a mean score of 5.0000 indicates the respondents reached a consensus that the factor is a very critical cause of payment delays. However, a conventional mean score test value of 3.5000 at 95% confidence level was adopted as the hypothetical mean in deciding whether or not a factor was considered critical. Thus based on the five-point Likert scale, a factor was deemed critical if it had a mean score value of 3.5 or more.

Table 4.3: Mean Score Ranking of Causes of Payment Delays Using one sample statistics

Causes	N	Mean	Rank	Std. Deviation	Std. Mean	Error
Delay in certification	50	4.3400	1	1.02240		.14459
poor financial management	50	4.3000	2	1.03510		.1463
With holding of payment by clients	50	4.1400	3	.85738		.12125
Ambiguous contractual provision	50	4.0000	4	.75593		.10690
Conflict among the parties	50	3.8600	5	1.03036		.14571
Technical Problems	50	3.7400	6	1.13946		.16114
poor communication between contracting parties	50	3.6800	7	1.03884		.14691
Shortage of resources of current year's project	50	3.5200	8	.73512		.10396
The use of pay when paid clause in subcontractor payment	50	3.4600	9	.99406		.14058
Local Culture or Attitude	50	3.2800	10	1.01096		.14297

Source: Authors' construct from survey data, 2017

The analyses in table 4.3 above indicates that out of the 10 factors that were subjected to the ranking by the respondents, 8 of them were considered critical with mean scores above 3.5 and 2 were considered not critical with mean score values below 3.5. However, the first five critical causes of payment delays were; delay in certification payment certificate (ranked no.1 with a mean score value of 4.3400), poor financial management by client (ranked no.2 with a mean score value of 4.3000), withholding of payment by client (ranked no.3 with a mean score value of 4.1400), ambiguous contractual provisions (ranked no.4 with a mean score value of 4.000) and conflict among parties to the projects (ranked no. 5 with a mean score value of 3.8600). The two factors were ranked 9th and 10th position and were as well considered not critical included; the use of pay when paid clause in subcontractor payment (ranked no. 9 with a mean score value of 3.4600) and the influence of local culture and attitude (ranked no.10 with a mean score value of 3.2800).

It is worth reiterating that actual payment under a construction project is made after the preparation of interim and financial payment certificates and certainly delay in the certification will automatically delay the payment. It was no surprising that the respondents unanimously ranked it no. 1 (with a mean score of 4.3400) among the various causes of payment delays. This ranking is in line with Fugar and Agyakwah-Baah (2010) and (Ayudhya, 2012) who in their studies found delay in certification as the major factor causing delays in the execution of public projects. However, the finding contradicts the evidence from Assaf et al (1995) who did find delay in certification as a cause of payment delays. It should also be noted that poor financial management by either of the parties could certainly lead to payment delays or poor quality of work. When the earmarked funds for the construction of a projects is not carefully managed, the time value of money might render the poor managed funds insufficient to sustain the progress of the projects (Assaf et al, 1995). This is particularly so because the execution of public projects could span for many years and when the economic indices affecting the value and purchasing power of money is not carefully anticipated, part or full of the payment might be delayed (Mezher and Tawil, 1998) and no wonder poor financial management by clients was ranked no.2 (with a mean value of 3.4) immediately below the delay in certification. Similarly, Alaghbari et al (2007) found poor financial management as a critical cause of payment delays in the Malaysian Construction Industry.

Withholding of payment by clients was ranked no. 3 immediately below poor financial management by client as a cause of payment delays. It is noteworthy that when funds are poorly managed and clients realises the available at their disposal are not sufficient to honoured their part of the construction projects, funds are often withheld to find additional amounts to be able to sufficiently pay the concerned party and more often than not payments are delay until full amounts are available Fugar and Agyakwah-Baah (2010). Alaghbari et al (2007) also found this as a major cause of payment delays. An earlier study by Kumaraswamy & Chan (1998) also identified withholding of payment by clients as a major cause of payment delays. It was rather amazing that withholding of payment by clients was ranked higher than ambiguous contractual provisions and conflicts among the parties. This is because Fugar and Agyakwah-Baah (2010) and Ayudhya (2012) found these two as pervasive

causes of payment delays in Ghana. Interestingly, a study conducted in China by Sambasivan & Soon (2007) found unclear contractual provisions (ranked no. 4) and conflicts among the contracting parties (ranked no.5) as critical cause of payment delays. An earlier study by Mansfield et al (1994) also found unclear contractual provisions as a cause of conflicts among the contracting parties and consequently leading to payment delay. Frimpong et al. (2003) in Ghana found ambiguous contractual provisions and conflicts among parties to be inter-linked as critical causes of payment delays.

The analyses also revealed that the respondents ranked technical problem no. 6 as a cause of payment delays. It was however strange that technical problem was ranked above poor communications between contracting parties (ranked no. 7) as a cause payment delays. It should be noted that Ahmed et al. (2003) found technical problems and poor communications to be critical causes of payment delays. However, Alaghbari et al. (2007) did not find technical problem as a cause of payment delays but rather found poor communications among the contracting parties to be one of the major drivers of payment delays in the execution of payment delays. But considering the category of respondents for this study, the researchers maintain the claim that a technical problem is also a critical cause of payment delays. Also, the study found shortage of resources of current year's project to be the last cause of payment delays which was ranked no. 8 among the 10 causes with a mean score value of 3.5200. It is only natural that the use of pay when paid clause in subcontractor payment was considered not critical and was ranked no. 9 with a mean score of 3.4600. The respondents were basically contractors, consultants and clients who have never been subcontractors in any public projects and so their ranking did not really consider the association between contractors and subcontractors in construction projects. It however contradicts the findings of Latham (1994) who found it as a cause of payment delay some decades ago. The recent evidence could have been influenced by the category of respondents selected for the study since this mostly evidenced in the relationship between contractors and subcontractors. It is however in line with Baloyi and Bekker (2011) who found it to be an uncritical cause of payment and project delays. Local culture and attitude was scored last in this study as a cause of payment delay. It was considered not a critical cause of payment delays since it had a mean score of 3.2800 which was less than the hypothetical mean of 3.5 at 95% confidence level. Baloyi and Bekker (2011) found a contrary result which indicated local culture as a cause of payment and project delays. It is worth noting that Baloyi and Bekker established this when they were examining projects delay and not precisely payment delays and there the evidence in this study is far dependable than theirs. An earlier study by Hamzah et al. (2011) also contradicts the evidence in this study. Their study found local culture to be a cause of payment delays. They did not however rank it as a critical cause or just a cause and so does not completely contradicts the findings in this study.

4.4 Effects of Payment Delays

The respondents were required to rank the various effects of payment delays in the execution of public projects in Ghana (see table 4.4). The table indicates ranking results made by the respondents using the mean score analysis where a mean score of 1.0000 indicates the respondents strongly considered that effect as not a very critical consequence of payment delays whereas a mean score of 5.0000 indicates the respondents reached a consensus that the effect is a very critical consequence of payment delays. However, a conventional mean score test value of 3.5000 at 95% confidence level was adopted as the hypothetical mean in deciding whether or not an effect was considered critical. Thus, based on the five-point Likert scale, an effect was deemed critical if it had a mean score value of 3.5 or more.

Table 4.4: Mean Score Ranking of Effects of Payment Delays Using one sample statistics

Effects	N	Mean	Rank	Std. Deviation	Std. Error Mean
Leads to abandonment of projects	50	4.6400	1	.56279	.07959
Results in Cost Overrun	50	4.5600	2	.70450	.09963
Results in Delay in Completion of the Projects	50	4.5200	3	.70682	.09996
Leads to Bankruptcy/Liquidation	50	4.4800	4	.73512	.10396
Results in Time Overrun	50	4.4600	5	.73429	.10384
Creates Cash Flow Problems for Contractors	50	4.3600	6	.66271	.09372
Increases the Financial Hardship of Contractors and Subcontractors	50	4.2200	7	.93219	.13183
Leads to Disputes between parties to the contract	50	4.2000	8	.83299	.11780
Leads to poor quality of work/shoddy work	50	4.0600	9	1.21907	.17240
Creates negative chain effect on other parties	50	3.8200	10	.74751	.10571
Creates negative social impacts	50	3.5800	11	.78480	.11099
Idleness of Equipment	50	3.2000	12	1.30931	.18516
Affects the contractor's reputation	50	3.0200	13	1.40683	.19896

Source: Authors' construct from survey data, 2017

The analyses in table 4.4 above indicates that out of the 13 effects that were subjected to the ranking by the respondents, 11 of them were considered critical with mean scores above 3.5 and 2 were considered not critical with mean score values below 3.5. However, the first five critical effects of payment delays were; leads to abandonment of projects (ranked no.1 with a mean score value of 4.6400), leads to cost overrun (ranked no.2 with a mean score value of 4.5600), delay in completion of projects (ranked no.3 with a mean score value of 4.5200), leads to Bankruptcy or Liquidation (ranked no.4 with a mean score value of 4.4800) and leads to time overrun (ranked no.5 with a mean score value of 4.4600). The last two effects which were considered not critical were; idleness of equipment (ranked no.12 with a mean score value of 3.2000) and negative effect on the contractor's reputation (ranked no.13 with a mean score value of 3.0200).

The respondents ranked abandonment of public projects no.1 (with a mean score of 4.6400) as a consequence of payment delays in the execution of public projects. This is so empirical because in Ghana there is evidence to the effect that there are many abandoned public projects, and observers believe that the clients could not pay contractors for their services. Similarly, Ramus (2006) found that abandonment of projects could be a result of payment delays and political instability. It is interesting to reiterate that with a change of government in Ghana, most public projects which were initiated by the previous government in the national interest are not being paid for by the incumbent government and it is expected that a poorly resourced contractor will have to abandon the project. It was re-echoed by Ezekiel (2009) that Payment is the 'hottest recipe' for abandonment of public projects in Ghana especially failure to honour interim payment certificates. The respondents also ranked cost overrun no. 2 (with a mean score of 4.5600) as an effect of payment delays. The respondents ranked cost overrun immediately below abandonment of projects because cost overrun in itself can cause abandonment of projects. They believed when payments are delayed the time value of money might render the planned fund insufficient to handle to prior estimated cost. Ayudhya (2012) re-echoed this study stressed that the volatile nature of economic indices in Ghana had an impact on the cost of production in constructions which could be traced to payment delays. Similarly, Ezekiel (2009) and Ramus (2006) also identified cost overrun to be greatly driven by payment delays.

It is only logical that when honouring interim payment certificates and actual payment certificates are delayed there are the highest tendencies contractors will have to suspend the projects until funds are made available for the progress of the work to be rejuvenated. Even if the project is been undertaken by a well-resourced contractor, arrangement will have to be made to secure additional funds to continue with the project but in either case the planned construction time will be extended. Therefore it was no surprise when the respondents ranked delay in completion of projects no. 3 (with a mean score of 4.5200) as an effect of payment delays immediately after cost overrun. Previous studies by Ayudhya (2012), Ramus (2006), Ezekiel (2009), Alaghbari et al (2007), Fugar and Agyakwah-Baah (2010) also found delay in project completion to be the result of payment delays and other factors. It should also be noted here that when projects are suspended for longer period of time and contractors secure other better projects deals chances are that projects will be abandoned (Latham, 1994). The respondents ranked bankruptcy or liquidation (no. 4 with a mean score of 4.4800) directly below cost overrun as a consequence of payment delays. It noteworthy to indicate that when contractors expend so much financial resources on a project for progress of work which is not financially honoured by the clients and expect to get paid and payment are delayed, it is capable of rendering the contractor or the concerned party bankrupt (Ramus, 2006). Previous studies by Alaghbari et al (2007) and Ezekiel (2009) also found payment delays as a major cause of bankruptcy among contractors.

It is however surprising that time overrun was ranked no. 5 (with a mean score of 4.4600) directly below bankruptcy. Expectation was that time overrun and delay in project completion are all measuring an extension of the prior contractual time but the class of respondents selected for the study were all educated and experienced and could not have possibly misunderstood the two related concepts. Notwithstanding, Ramus (2006) and Ezekiel (2009) found time overrun to be a critical consequence of payment delays. Moreover, the analyses revealed that; creates cash flow problems for contractors (ranked no.6 with a mean score of 4.3600), increases the financial hardship of contractors and subcontractors (ranked no.7 with a mean score of 4.2200), leads to disputes between parties to the contract (ranked no.8 with a mean score of 4.2000), leads to poor quality of work/shoddy work (ranked no.9 with a mean score of 4.0600), creates negative chain effect on other parties (ranked no.10 with a mean score of 3.8200) and creates negative social impacts (ranked no.11 with a mean score of 3.5800) were also critical effects of payment delays in the execution of public projects in Ghana because they score means above the hypothetical mean of 3.5 at 95% confidence level. However, previous studies suggest that disputes among contracting parties was a very critical consequence of payment delays (Murdoch and Hughes, 1996; Oon, 2002; Hasmoni et al, 2012; Kikwasi, 2012) and could have been ranked among the first top five. This study however suggests otherwise (which ranked it no.10) but the quality of the study creates room for reliability in the evidence. Ayudhya (2012) and Alaghbari et al (2007) contradicts some of the findings in this study when they all established that negative social impacts on contractors was not a major consequence of payment delays. The researchers are very pessimistic regarding the criticality of that consequence since it score mean relatively

very close to the hypothetical mean of 3.5 at 95% confidence level.

The study also identified that idleness of equipment (ranked no.12 with a mean score of 3.2000 and affects the contractor's reputation (ranked no.13 with a mean score of 3.0200) are not critical effects of payment delays yet during the exploratory survey; the respondents confirmed they were practical consequences of payment delays. The findings are in line with Hasmori et al (2012) and Kikwasi (2012) who rather found them not to be effects of payment delays. It however contradicts the findings of Latham (1994) and Ayudhya (2012) who found them to be some of the effects of payment delays. The researchers are however optimistic that considering their mean score (as against the conventional mean of 3.5 at 95% confidence level, they are not very critical effects of payment delays. It is worth noting that these variables could still be tested with a larger sample size or even in a different geographical scope for further evidence.

5. Conclusion and Recommendation

5.1 Conclusion

The researchers attempted to rank the causes and effects of payment delays in the successful execution of public projects in Ghana and the evidence suggest that there are many consequences of payment delays than the causes. While some of the effects are highly irreparable, others can be managed yet at a financial cost. The top five critical causes of payment delay included; delay in certification (ranked no.1), poor financial management (ranked no.2), with holding of payment by clients (ranked no.3), ambiguous contractual provision (ranked no.4) and conflict among the parties (ranked no.5) and the top five effects of payment delays included; leads to abandonment of projects (ranked no.1), results in cost overrun (ranked no.2), results in delay in completion of the projects (ranked no.3), leads to bankruptcy/liquidation (ranked no.4) and results in time overrun (ranked no.5).

5.2 Recommendations for Practice

In response to the findings from the study regarding the causes and effects of payment delays and the suggestion proposed by the respondents to quell the menace of payment delays, the study make the following remedial options to correct the anomaly in practice. In the first place, clients should be diligent to ensure effective and proactive financial management and planning for projects so as to avoid the excessive influence of volatile economic indices on the time value and purchasing power of the funds. Secondly, contractual provisions should be clearly defined between all parties to the projects to avoid disputes when the time is due for interim and actual payment certificates to be honored. Moreover, proper payment schedules should to be agreed upon by all the parties before the commencement of the project. This should be accompanied by regular communication between parties to the project to aid smooth flow of information which would establish realistic duration and total cost for the project. Furthermore, it is prudent for contractors to plan their work properly for smooth flow of payment and information. Finally, the study also recommends that further researcher should be conducted to test the variables and to identify additional ways of mitigating payment delays in the execution of public projects in Ghana

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