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# Management of Government Funded Construction Projects in Ghana: Stakeholders' Perspective of Causes of Delays in Construction of Public Buildings.

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**Abstract**

Construction projects funded by the government of Ghana are plagued by time delays. This has resulted in disruptions to the development plans of the government. This research identifies and assesses the factors that cause time delays in government funded construction projects by focusing on the activities of stakeholders (Clients and professionals) in the public sector of the construction industry. Factors identified from literature review were incorporated into questionnaires to be answered by clients and professionals in the public sector of the construction industry in Ghana. Responses from 36 stakeholders were analysed to identify causes of time delays. Results from the analysis suggests that major factors that cause time delays are long bureaucratic process of honouring certificates, variation orders, cash flow problems, lackadaisical attitudes attitude to decision making, plant/ equipment efficiency and shortage of liquidity. Based on the factors identified it was deduced that the client is most of the time responsible for the time delays.

**Keywords:** Time delays, Government funded, Construction projects, Public sector.

## 1. Introduction

One of the principal ways in which modern societies generate new value is through projects which create physical assets that can then be used to facilitate the achievement of social and economic ends. (Winch, 2002) The creation of such assets which include schools, hospitals, roads, etc., is most of the time undertaken by governments to be able to attain targets set towards the improvement of conditions in various sections of their countries.

The construction industry in every country is responsible for the creation of around half of all the physical assets which make up about 10% of national wealth. (Winch, 2002)

The success of a project requires that the project is completed on time, within budget and meets the expectations of stakeholders. (Chatfield and Johnson, 2002)

Project failures are however common and can be attributed to many causes.

According to Armah, (1999), construction is considered unique in Ghana as it is in every country in the world, because it stimulates the growth of other sectors of the economy and contributes greatly to the overall growth of gross domestic product.

Construction has been a major part of government's expenditure since Ghana gained its independence in 1957. The government spends a lot of money in the provision of infrastructure in various sectors of the country, the most prominent being roads. The government's development plan, vision 2020, spells out plans of making Ghana a middle income country by the year 2020. Provision of infrastructure in the public sectors is prominent in the government's plans towards achieving this aim. This is particularly manifest in the education sector where the government through the Ghana Education Trust Fund (GETFUND) provides funding to improve education and infrastructure for educational institutions.

Government funded construction projects in Ghana are mostly beset with problems like delay, cost overruns, lack of funds in the middle of the project implementation and mismanagement of funds at various stages of the project's implementation. These, according to Armah (1999), can be attributed to economic difficulties within Ghana, the nature of the construction industry in Ghana and the manner in which construction projects are managed. There is however the need to identify causes of these problems in order to reduce or curtail the reoccurrence. It is in this vein that this research is being conducted on the causes of time delays that occur during the implementation of construction projects funded by the government in Ghana.

### 1.1 Time in Construction Projects

Time in construction projects can be regarded as the elapsed period from the inception of a construction project to the completion and handover of a building to the client. (Choudhury et al. 2004). 'Time is normally scheduled

 

to enable the building to be used by a date determined by the client's future plans. (Hatush and Skitmore in Chan, 2001)' Limited time is one constraint of any construction project. It is considered as one of the most important and in some cases, the most difficult constraint to manage.

The duration of construction projects from inception to completion is assuming great importance in the construction industry especially among Clients and consumers due to increasing interest rates, inflation and other commercial pressures, development plan targets, among other factors. They are no longer content merely with minimal cost and adequate functional performance for their projects. This means that it is in many instances most cost-effective to complete a project within the shortest possible time.

### 1.2 Delays in construction projects

A delay as defined by Thefreedictionary.com (2006) is 'to cause to be later or slower than expected or desired.'

Delays in construction projects are defined by Annan (2003) as extension or prolonging of project time. Delays also referred to as time overruns have been one of the major and most common problems affecting construction industries worldwide. They are costly to all parties involved in construction projects and often result in litigation, increase in cost of construction, abandonment of projects, disruption of development programmes, and destruction of contractors' and consultants' reputations among other things (Annan, 2003). It is therefore important for each member of the project team to be responsible for devising means to combat delays in the execution of their assigned responsibilities.

There has been a lot of research on delays in the construction industry; the types of delays, their causes, and effects. Even though most of the literature reviewed are not directly related to Ghana they are researches conducted in countries sharing similar characteristics with Ghana.

Preliminary research data conducted on delays in construction projects collected through literature review reveal that the causes of delays are common to almost all construction industries. The intensity or the gravity of the causes however differs with each industry.

Aibinu and Odeyinka, (2006) observed that 'delays in construction projects are caused generally by actions and inactions of project participants, which cause ripple effects on the roles played by others on the project team.'

The impact of delays on construction projects can be direct or indirect. The direct impact can be measured by calculating the exact time units of the project operation that has been directly affected. Annan (2003)

The indirect impact is the resulting ripple effect on the whole project a delay. This is usually difficult to measure. Annan (2003)

It has been pointed out, however, that when delays occur the client stand to lose in terms of disruption of programmes and sometimes having to spend more on the project than budgeted for. (Lock, 2003)

Such delays affect the reputation of both the consultant in charge and the contractor as well.

For the consultant and contractor, completing the current project and winning the next one is a very important priority (Winch, 2002) thus having delays in projects can cost them more.

In view of the above, it is therefore important for a project is carefully managed and monitored in order for it to proceed without unnecessary disruptions.

## 2. Methodology

In order to identify the factors that cause delays in government funded construction projects in Ghana, a review of literature was conducted on construction time and delays. Information from literature review was used to formulate questionnaires to be answered by stakeholders in the construction industry in Ghana, specifically in the public sector.

Forty one (41) factors were identified from the literature review as potential causes of delays in construction industries in many countries.

The aim of the questionnaire was to gather information about the level of occurrence of delays in the public sector of the construction industry in Ghana, and the factors that lead to their occurrence.

Basically the questions consisted of open and closed questions. They included questions that sought to know the name, profession, contact number and email address of respondents. They also had questions which sought to know how rampant delays are in the public sector of the construction industry. There was also the rating of hypothetical factors (which were put in a likert scale format) that cause delay according to how common they

 

occur; thus they rated 'Very Common', 'Common' to 'Not Common'. The factors causing delay were categorized into seven major groups namely contractor related, client related, consultant related, labour/ equipment related, material related, contract related and external factors.

## 2.1 Distribution of Questionnaire

The questionnaires were distributed to heads of projects divisions of public institutions like public universities, municipal assemblies, and other firms. Some of the questionnaires were distributed to professionals in the construction industry. The professionals chosen to answer the questions were architects, quantity surveyors, project managers, structural engineers and contractors. Sixty six questionaires were distributed among the professionals and the firms. Thirty six responses were received.

Table1: Questionnaire distribution and response rates

| Respondents | Number distributed | Number returned | Percentage of number distributed | Percentage of number returned |
|---|---|---|---|---|
| Clients | 10 | 4 | 15 | 11 |
| Architects | 15 | 13 | 23 | 36 |
| Contractors | 11 | 7 | 17 | 19 |
| Quantity Surveyors | 10 | 5 | 15 | 14 |
| Structural Engineers | 10 | 4 | 15 | 11 |
| Project Managers | 10 | 3 | 15 | 8 |
| Total | 66 | 36 | 100 | 55 |

## 3. Analyses and Evaluation of Data

On how rampant delays are in the public sector of the construction industry., it was discovered from the respondents that they have been or are involved in a total of two hundred and forty nine projects (249); meaning that each person has been or is involved in an average of seven(7) projects over the past five years. Out of the 249 projects, sixty seven (67) (27%) were/are within the proposed time scheduled, and one hundred and sixty two (182) (73%) had/ have been delayed. This means that five out of every seven projects have been/ are delayed. Table 2. below show the breakdown of the number of projects according to stake holders and the difference between projects finished within time and those that were or are being delayed.

Table 2: Breakdown of number of projects per stakeholders and their status in terms of Time

| Status of Projects | Clients | Architects | Structural engineers | Quantity surveyors | Contractors | Project managers | Total |
|---|---|---|---|---|---|---|---|
| Over time | 42 | 33 | 29 | 43 | 23 | 12 | 182 |
| Within time | 3 | 10 | 6 | 28 | 16 | 4 | 67 |

The next section of the questionnaire was to help identify the factors that cause delays in government funded construction projects in Ghana. In all 41 possible factors were identified from the literature review listed in a likert scale form with ranking 'Very Common', 'Common', 'Not Common' and 'Do Not Know' as the choices to be made by respondents. 'Very Common' means that the factor is recognised as a cause of delay in government funded construction projects and occur very frequently. 'Common' means the factor is recognised and occurs frequently. 'Not Common' means that the factor is recognised but hardly occurs. 'Do Not Know' means that factor is not known to be a cause of delay in government funded construction projects in Ghana. The rankings were later rated from 1 to four where 1=Very Common, 2= Common, 3=Not Common and 4=Do Not Know.

a. Delay Factors –selection of actors that are "COMMON" based on Majority selection.

 

A look through the results revealed that most of the factors are known to respondents to be factors of delay.

Some of the factors were chosen as 'Not Known' by a few of the respondents. Factors that are selected as not known by the respondents are as follows:

Inadequate contractor experience; Improper control of site resource allocation; Complexity of project; Using the same staff for other projects; Inadequate managerial skills; Shortage of liquidity; Method of construction; Inadequate flow of information between team members; Inadequate design team experience; Inadequate quality assurance and control; Preparation and approval of drawings; Inadequate quality assurance and control; Preparation and approval of drawings; Low motivation

Shortage in materials; Mistakes and discrepancies in contract documents; Weather Conditions; Problems with neighbours.

The following factors were identified as 'Common' causes of delays in government funded construction projects. They are listed according to the frequency of occurrence.

Cash flow problems; Long bureaucratic process of honouring certificates; Variation orders; Shortage of liquidity ; Low motivation; Inadequate managerial skills; Equipment availability and failure ; Long waiting time for approval of drawings; Improper control of site resource allocation ; Plant/equipment efficiency; Using the same staff for other projects; Low labour productivity; Poor Site Management; Shortage in materials; Inadequate contractor experience; Lackadaisical attitude to decision making; Ambiguity in requirement/scope of project; Poor contract management; Inadequate flow of information between team members; Inadequate skilled labour; Non-adherence to contract conditions; No proper in house team; Unrealistic proposed contract duration; Importation of materials; Land ownership disputes.

In all Twenty five (25) factors had majority of the factors saying they are common, with minority saying otherwise for the same factors. Fifteen (15) of the factors recorded majority of them saying they are not common, with minority saying otherwise. There was one tie.

### 3.1 Statistical Analysis

Further analysis of the data was conducted in order to be able to statistically select the factors that are recognised as frequent causes of delays in government funded construction projects in Ghana, based on the level of agreement among all the respondents (stakeholders). The statistical measure used was the Kendall's coefficient of concordance (Kothari, 2005) a non-parametric statistical method, to investigate the level of agreement between respondents. (Howell, 2002), (Kothari, 2005), (Vogt, 2005)

Table 3 below shows the ordered ranking of the factors that cause delays based on level of agreement between respondents.

 

Table 3: Ordered Rankings of factors of delay

| No. | Factors | W | Rankings |
|---|---|---|---|
| 1 | Method of construction | 0.84 | 1 |
| 2 | Long bureaucratic process of honouring certificates | 0.84 | 1 |
| 3 | Variation orders | 0.83 | 2 |
| 4 | Cash flow problems | 0.78 | 3 |
| 5 | Lackadaisical attitude to decision making | 0.77 | 4 |
| 6 | Inspection and testing of completed portions of Work | 0.76 | 5 |
| 7 | Mistakes and discrepancies in contract documents | 0.74 | 6 |
| 8 | Plant/equipment efficiency | 0.74 | 6 |
| 9 | Shortage of liquidity | 0.71 | 7 |
| 10 | Inadequate contractor experience | 0.68 | 8 |
| 11 | Poor contract management | 0.68 | 8 |
| 12 | Non-adherence to contract conditions | 0.67 | 9 |
| 13 | Time used in drawing up contracts | 0.65 | 10 |
| 14 | Importation of materials | 0.64 | 11 |
| 15 | Mistakes and discrepancies in design | 0.63 | 12 |
| 16 | Weather Conditions | 0.63 | 12 |
| 17 | Regulatory changes and building Codes | 0.63 | 12 |
| 18 | Problems with neighbours | 0.61 | 13 |
| 19 | Long waiting time for approval of drawings | 0.61 | 13 |
| 20 | Low motivation | 0.60 | 14 |
| 21 | Unforeseen ground conditions | 0.59 | 15 |
| 22 | Major disputes and negotiations | 0.58 | 16 |
| 23 | Preparation and approval of drawings | 0.58 | 16 |
| 24 | Equipment availability and failure | 0.57 | 17 |
| 25 | Unrealistic proposed contract duration | 0.56 | 18 |
| 26 | Low labour productivity | 0.53 | 19 |
| 27 | No proper in house team | 0.52 | 20 |
| 28 | Inadequate managerial skills | 0.50 | 21 |
| 29 | Improper control of site resource allocation | 0.49 | 22 |
| 30 | Poor Site Management | 0.49 | 22 |
| 31 | Labour supply | 0.48 | 23 |
| 32 | Inadequate design team experience | 0.48 | 23 |
| 33 | Undefined organisational structure | 0.45 | 24 |
| 34 | Ambiguity in requirement/scope of project | 0.43 | 25 |
| 35 | Shortage in materials | 0.41 | 26 |
| 36 | Inadequate skilled labour | 0.39 | 27 |
| 37 | Inadequate flow of information between team members | 0.37 | 28 |
| 38 | Land ownership disputes | 0.34 | 29 |
| 39 | Using the same staff for other projects | 0.29 | 30 |
| 40 | Complexity of project | 0.27 | 31 |
| 41 | Inadequate quality assurance and control | 0.17 | 32 |

Factors That Are Agreed On As Common causes of delay.

From Table 3, it can be seen that 27 out of the 41 factors are agreed upon by all the respondents (stakeholders) as known to be COMMON factors that cause delay. Out of these factors, the respondents show weak agreement on eight (8) and agreed or strongly agree on nineteen (19).

3.1.1 Selection of Factors.

The analysis so far has identified two sets of lists of factors of delay. The first list is made up of factors that have

 

been selected as 'Common' by cumulative effect of individual independent responses. The second list comprises of the factors that have been selected as 'Common' based on agreement among respondents.

In order to identify the factors that cause delays in government funded construction projects, another selection was made consisting of factors which fell within both categories of 'Common' by majority selection, and 'Common' by level of agreement among the respondents (stakeholders).

Table 4 below, shows the various factors that are potential causes of delays and their positions within the two categories. Common = Common by majority selection, Agreed= Common by level of agreement among respondents. N= No, Y=Yes

Table 4: position of factors that cause delay within the categories of 'Common' by majority selection and 'Common' by level of agreement

| No. | Factors | Common | Agreed |
|---|---|---|---|
| 1 | Method of construction | N | Y |
| 2 | Long bureaucratic process of honouring certificates | Y | Y |
| 3 | Variation orders | Y | Y |
| 4 | Cash flow problems | Y | Y |
| 5 | Lackadaisical attitude to decision making | Y | Y |
| 6 | Inspection and testing of completed portions of Work | N | Y |
| 7 | Mistakes and discrepancies in contract documents | N | Y |
| 8 | Plant/equipment efficiency | Y | Y |
| 9 | Shortage of liquidity | Y | Y |
| 10 | Inadequate contractor experience | Y | Y |
| 11 | Poor contract management | Y | Y |
| 12 | Non-adherence to contract conditions | Y | Y |
| 13 | Time used in drawing up contracts | N | Y |
| 14 | Importation of materials | Y | Y |
| 15 | Mistakes and discrepancies in design | Y | Y |
| 16 | Weather Conditions | N | Y |
| 17 | Regulatory changes and building Codes | N | Y |
| 18 | Problems with neighbours | N | Y |
| 19 | Long waiting time for approval of drawings | Y | Y |
| 20 | Low motivation | Y | Y |
| 21 | Unforeseen ground conditions | N | Y |
| 22 | Major disputes and negotiations | N | Y |
| 23 | Preparation and approval of drawings | N | Y |
| 24 | Equipment availability and failure | Y | Y |
| 25 | Unrealistic proposed contract duration | Y | Y |
| 26 | Low labour productivity | Y | Y |
| 27 | No proper in house team | Y | Y |
| 28 | Inadequate managerial skills | Y | N |
| 29 | Improper control of site resource allocation | Y | N |
| 30 | Poor Site Management | Y | N |
| 31 | Labour supply | N | N |
| 32 | Inadequate design team experience | N | N |
| 33 | Undefined organisational structure | N | N |
| 34 | Ambiguity in requirement/scope of project | Y | N |
| 35 | Shortage in materials | Y | N |
| 36 | Inadequate skilled labour | Y | N |
| 37 | Inadequate flow of information between team Members | N | N |
| 38 | Land ownership disputes | Y | N |
| 39 | Using the same staff for other projects | Y | N |
| 40 | Complexity of project | N | N |
| 41 | Inadequate quality assurance and control | N | N |

 

From Table 4 the following was found out:

i. Delay factors that are 'Agreed upon as Common' and 'Common'

The factors listed below were selected in the two categories as both 'Common' and 'Agreed upon as Common' and were thus selected as the main ones that cause delays in government funded construction projects in Ghana.

Long bureaucratic process of honouring certificates; Variation orders; Cash flow problems; Lackadaisical attitude to decision making; Plant/equipment efficiency; Shortage of liquidity; Inadequate contractor experience; Poor contract management; Non-adherence to contract conditions; Importation of materials; Mistakes and discrepancies in design; Long waiting time for approval of drawings; Low motivation; Equipment availability and failure; Unrealistic proposed contract duration; Low labour productivity; No proper in house team.

ii. Delay factors that are 'Agreed upon as Common' but 'Not Common'

The factors listed below are those which were selected as common by agreement but not selected in the other category:

*Method of construction; Inspection and testing of completed portions of work; Mistakes and discrepancies in contract documents; Time used in drawing up contracts; Weather Conditions; Regulatory changes and building Codes; Problems with neighbours; Unforeseen ground conditions; Major disputes and negotiation;Preparation and approval of drawings.*

This means that respondents had experienced one time or the other and therefore agreed on as a cause of delay on a project. However, they do not represent a common cause in the view of the majority. They are not common in the sense that they do not often occur, or they are not frequent causes.

iii. Delay factors that are 'Common' but 'Not Agreed upon as Common'

The factors listed below were selected as common by majority selection but not by agreement:

*Inadequate managerial skills; Improper control of site resource allocation; Poor Site Management; Ambiguity in requirement/scope of project; Shortage in materials; Inadequate skilled labour; Land ownership disputes; Using the same staff for other projects;*

This means that they are known to majority of the respondents (not all) as common causes of delay on construction projects, but respondents generally have divergent view on them. The respondents do not agree that they cause delay even though they know of it as a factor that is common.

iv. Delay factors that are both 'Not Common' and 'Not Agreed upon as Common'

The factors listed below were selected as common by majority selection but not by agreement:

*Labour supply; Inadequate design team experience; Undefined organisational structure; Inadequate flow of information between team members; Complexity of project; Inadequate quality assurance and control*

This means that they are known to majority of the respondents (not all) as common causes of delay on construction projects, but respondents generally have divergent view on them. The respondents do not agree that they cause delay even though they know of it as a factor that is common.

Conclusion

In accordance with the aim of this research, 17 factors were identified as causes of time delays in government funded construction projects in Ghana. The major factors identified were long bureaucratic process of honouring certificates, variation orders, client's cash flow problems (which sometimes lead to abandonment of project), consultants' lackadaisical attitude to decision making and plant/ equipment efficiency. Other factors identified are shortage of liquidity, inadequate contractor experience, poor contract management, non-adherence to contract conditions, importation of materials, mistakes and discrepancies in design, long waiting time for approval of drawings, low motivation of staff, availability and failure of equipment, unrealistic proposed contract duration, low labour productivity and finally lack of proper in house team.The first three factors that were identified as causes of delays fall into the category of client related factors. This means that the most common causes of delays are the fault of the client.

One of the features of this research is that the perspectives of all the relevant stakeholders in the construction industry were considered. This certainly had influence on the results. For what the client will see as a common

 

factor may not be common to the Architect or the Structural engineer etc. It was in this light that in addition to selecting the factors that are 'Common' by selection of majority, a test of their level of agreement was conducted in their selection.

Therefore those factors that were not selected by the analysis do not necessarily represent a "rejected list" in the real sense. They could well be key factors should the research be conducted only with consultants, or only with clients etc. The selected list represents the stakeholders view.

**References**

Aibinu, A. A., and Odeyinka, H. A. (2006) Construction delays and their causative factors in Nigeria. Journal of Construction Engineering and Management. 132, (7), pp 667-677

Annan, E., (2003) Causes of construction delays in Ghana; case study: District Assembly Common funded projects in Ashanti Region. Kwame Nkrumah University of Science and Technology. (Unpublished)

Armah, E. ( 1999) The changing face of the construction industry in developing countries under International Monetary Fund(IMF) and World Bank policies. (A study of the Republic of Ghana). University of Greenwich. (Unpublished)

Chan, A. P. C., (2001) Time-cost relationship of public sector projects in Malaysia. International Journal of Project Management. 19, (4) pp. 223-229 (online) assessed 10.01.2007 at www.ingentaconnect.com/content/els/02637863/2001/00000019/00000004/art00072 -

Chatfield, C., and Johnson, T., (2002) Step by step Microsoft Project version 2002. Microsoft Press.

Choudhury, I. and Phatak, O. (2004) Correlates of time overrun in commercial construction. American Schools of Construction Proceedings of the 40th Annual conference. Brigham Young University Provo Utah. (online) accessed on 03.08.2006 at www. Peresearch.pe.ttu.edu/ASEE/Abstract/ASEE-GSW2004-049.doc

Dictionary.com (2006) 'Top web results for delay' (online) accessed on 05.01.2007 at http://dictionary.reference.com/browse/delay.

Kothari, C. K. (2005). Research Methodology: Methods and Techniques. 2nd Ed. New International Age Publishers.

Lock, D., (2003) Project Management. Eighth edition. Gower Publishing limited

Winch, G. (2002) Managing construction projects. Blackwell Publishing