Investigating the Causes and Effects of Construction Project Failure at a Public University in the Central Region of Ghana

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ABSTRACT

The issue of construction project failure has become a subject matter for researchers the world over since a lot of construction projects fail. Universities in Ghana need a lot of infrastructure development such as building of lecture theatres and halls of residence to enable them admit more students who apply every year in search of higher education. Construction projects at the university require a huge capital outlay to execute. It is therefore worrying that money is lost through construction project failure depriving the university of the needed development. The study therefore selected a particular university in the Central Region as a case study because the university has several failed construction projects. The study set out to examine the causes and effects of construction project failure on stakeholders of the university.

Information gathered through literature review was used to prepare detailed questionnaire for a quantitative study. The questionnaire was used to collect data on construction project failure. The data collected was analyzed using tools such as Microsoft excel and structural equation models. Several causes of construction project failure were identified and grouped under four themes as leadership, administration, external factors and resources. Similarly, several effects were identified and discussed under four themes as monetary effects, public image, lack of development and effects on teaching and learning. The study recommended that the university must improve upon project planning and re-examine all stalled projects and focus on completing them one at a time instead of starting new ones. The study also recommended that project technical officers must map out a strategy for effective supervision of construction projects.

Keywords: Project, construction, failure, leadership, administration.

INTRODUCTION

Background

Studies conducted worldwide indicate that companies and governments through project failure are losing huge sums of money (Espiner, 2007; Asay, 2008; Fabian and Amir, 2011; Damoah, 2015). According to Amponsah (2010), the rate of project failure in Ghana is high and it involves excessive cost. This is supported by Akande (2018) that projects are failing at an alarming rate with huge financial implications. He continued to say that out of every three infrastructure projects in Ghana, at least one fails or is unable to achieve one of its objectives of time, cost or scope. This situation is not different from infrastructure projects on campuses of some public universities in Ghana. The creation of human capital that can positively transform an economy and assist the state or country to compete internationally depends on tertiary education. It is acknowledged that the degree of human capital development is greatly influenced by tertiary education (Mohammed et al., 2016). It is therefore important that universities get the needed infrastructure projects to provide a serene environment for effective teaching and learning activities to be able to produce the right caliber of people for economic development.

In spite of the attempt by university authorities and successive governments to beef up infrastructure on public university campuses, there are several of such projects which do not live up to their expectations. In fact, some of them are abandoned for so many years after erection of their foundation due to one reason or the other. The ones which get completed eventually either exceed their cost by a substantial margin or exceed their

completion period by several months or years. According to the Auditor General's report (2020), fourteen (14) projects which were valued at Seventy-Eight Million, Nine Hundred Thousand Ghana Cedis (GHS78,900,000.00) and funded from internally generated funds were abandoned by the University. The report further said that eight (8) of the projects were abandoned in the bush with broken down airconditioners, damaged windows, rotten door frames and other forms of severe deterioration.

Various stakeholders may perceive what constitutes project failure at the University differently although the nature of some failed projects leave no doubt whatsoever that they have indeed failed. Most previous researchers therefore used the triple line definition by Freeman (1984) which looks at project success or failure in terms of meeting their cost target, quality expectations and project delivery time to address the issues of project failure.

According to Doloi, (2013), construction project failure is a pervasive challenge within the industry, characterized by cost overruns, delays and suboptimal outcomes, leading to significant financial losses and erosion of stakeholder trust. Despite its widespread occurrence, there exists a critical gap in understanding the intricate web of causes and effects that contribute to the failure of construction projects. The lack of a comprehensive and systematic analysis hampers the industry's ability to proactively identify, address and mitigate the underlying factors, hindering the progress toward achieving successful project outcomes. This research endeavors to address this gap by conducting a comprehensive investigation into the causes and effects of construction project failure. Specifically, the research seeks to examine the factors that cause construction project failures and to assess the effects of construction projects failure.

Problem Statement

Governmental construction project initiatives are essential for a nation's citizens and individuals because they lay the groundwork for that nation's prosperity. Public universities, private individuals, businesses, groups and governments often carry out diverse projects to achieve various predetermined aims some of which include the provision of accommodation, good roads and other infrastructure for the citizenry and even as an avenue through which employment is created to improve the standard of living for the people. The flourishing of world economies largely depends on construction projects undertaken by various governments and therefore they are very crucial for every country (Amoatey, 2015). As a result of development, several governments spend lots of capital in construction projects such as construction of dams, bridges, building infrastructure for schools and colleges, industries, stadia, market and so on but unfortunately, most of them end up been abandoned due to one reason or the other. In effect they fail to meet their objectives. Economic growth is largely propelled by construction of the needed infrastructure. It is therefore very important to manage the construction projects efficiently. It is very unfortunate therefore that most projects in Ghana do not see the light of day, abandoned during the course of construction after spending millions of cedis. According to experts, project failure impacts every facet of project management and the economy; from agriculture, education and construction to electricity and knowledge management and information technology (Ntshangase & Tuan, 2019; Razanakoto et al., 2018; Damoah & Kumi, 2018; Akhavan & Pezeshkan, 2014; Stanley & Uden, 2013). Project failure is defined differently depending on the one undertaking the evaluation and the particular point in time he evaluates. It also depends on the indicators he uses to assess and what constitutes the failed project in line with what was reasonably expected by stakeholders, as stated by (Lindhard & Larsen, 2016; Carvalho, 2014; Heeks, 2006; Mir & Pinnington, 2014; Alias et al., 2014 & Note, 2015). However, projects which are abandoned before their completion leave no doubt about the fact that they have failed. According to APM (2021), a project is an original, short-lived endeavor that is carried out to accomplish predetermined goals. These goals may be expressed in terms of outputs, outcomes or benefits. Every project is built on the pillars of time, money and quality. A project often qualifies as successful if it completes its tasks on schedule, within budget and in accordance with the set objectives. In accordance with the project acceptance criteria and within predetermined boundaries, the Association defines project management as the use of processes, methods, skills, knowledge and experience. Final deliverables in project management are subject to a limited amount of time and money. However, the definition of a project failure varies depending on the failure criteria that are applied.

One observable sign of a nation's progress is the effective completion of projects (Hanachor, 2013).

Notwithstanding this, an overwhelming number of government-funded projects in developing nations like Ghana are deemed to have failed (Eja & Ramegowda, 2019). Companies and institutions have to place a focus on managing projects by incorporation of adequate methodologies and tools and use of the best managerial methods to assist construction managers become top-notch in accomplishing the organizations' goals, such as the project's timely completion and within budget (Dick-Sagoe et al., 2023; Choudhry, Nasir & Gabriel, 2012).

Education is very important for the development of every nation. In the context of higher education, projects are important. Universities in Ghana must develop the top-notch infrastructure required to become a regional center of excellence for higher education through effective and efficient programs for human capital development.

It is therefore in order to study the causes and effects of the construction project failure and propose solutions to the problem.

Research Objectives

The study seeks to achieve the following objectives.

1. To examine the factors that cause construction project failure at the University.
2. To assess the effects of construction project failure at the University.

Research Questions

The study will answer the following questions.

1. What factors cause construction project failure at the University?
2. What are the effects of construction project failure at the University?

LITERATURE REVIEW

Stakeholder Theory

The concept of stakeholder theory was pioneered by Freeman (1984). He defined stakeholders as "any organisation or individual who can affect or is affected by the achievement of the organisation's objectives". He further proposed that institutions had stakeholders and he outlined the essential features of the stakeholder theory. In the past, the stakeholder theory was rarely used in research in project management. Uribe et al (2018) suggested that there is a positive influence of the dissemination of stakeholder theory on project management. They also concluded that stakeholder theory mainly influences the processes of four areas of knowledge concerning project management: project stakeholders, project risk, project communication, and project integration management.

The stakeholders involved in construction projects are examined using the stakeholder theory at the public university. The stakeholders of educational projects include students, government, parents, financiers, and the general public. The stakeholders support the activities of the organization if their inputs or interests are also considered. They may however act against the organization if they feel sidelined. Freeman (1984) further argued that all stakeholders who participate in an organisation's activities do so to obtain benefits. Stakeholder theory proposes that treating all stakeholders well creates a sort of synergy (Tantalo & Priem, 2014).

Therefore, the success or failure of the project can be correlated with how stakeholders view the value the project generates and the nature of their interactions with the project team (Bourne, 2008). The interest of the stakeholders must therefore be managed well in order to bring about success for the project (Missonier & Loufrani-Fedida, 2014). Olander and Landin (2005) assert that the negative attitude of any construction project stakeholders can contribute to delay and cost increment in projects due to difficulty in project design implementation. The achievement of construction project goals also includes stakeholder satisfaction (Eyiah-

Botwe, 2015).

Performance Measurement Theory

Performance is defined in literature in a variety of ways. The degree to which an operation satisfies primary metrics, performance targets, in order to meet the needs of the consumers, and secondary measures, for instance, is how Salaheldin (2009) defines performance. According to Harris & McCaffer (2013), as cited by Meng & Fenn (2019), although the construction industry frequently stimulates economic growth, a significant quantity of government data warns that it is difficult to monitor construction project performance efficiently and accommodate continuing environmental change. Egan (1998) developed key performance indicators for measuring construction project performance. Similarly, Pillai et al (2002) also developed the integrated performance index to measure project performance. The integrated performance index proposed three phases of project. The three phases are the project selection phase, execution of project phase and project implementation phase. The importance of the model is that it can be used at all stages of the project from its selection to its implementation and also serves as a guide for future projects. However, some project practitioners do not like the model because using mathematical formulas to combine the important components into an integrated performance index lacks clarity. The most preferred model is Egan (1998) key performance indicators. It is mostly used in measuring construction project performance. The elements consist of construction time, cost, and problems, as well as cost and time predictions, client satisfaction, safety, productivity and profitability. Compared to other models, this model is simple to use as it is understood easily by all project stakeholders. The performance of construction projects at the university needs to be measured to determine whether they are doing well or not. The indicators that can be used to measure the success or failure of the projects include; time of completion, the cost of project at the end of construction compared to the originally anticipated cost, the quality of the output against its pre-determined specifications and how satisfied the clients of the project become.

Empirical Review

PMI (2021) defined project as a brief project with a start and finish period and it must be used to produce an original good, service, or outcome. Similarly, Nzekwe et al (2015) defined it as a series of coordinated tasks and activities undertaken by organizations, which have objectives clearly defined, date of commencement, duration, resources needed and limits for its funding. Note (2015) however, defines a project as a group of particular actions that are tied to one another and have a specified objective that must be completed within a specific timeframe, budget and set of standards. Earlier writers like Smith (1985) had defined project as a onetime unique endeavor to do something that has not been done that way before. A very simple old definition is perhaps the one provided by Barnes (1989) who defined project as something which has a beginning and an end.

The construction industry is one of the oldest and biggest industries. Its importance cannot be overemphasized as it contributes immensely to the development of the country by creating physical infrastructure such as buildings, roads and many more. A construction project, according to Chitkara (2013), is a high-value, time-limited, unique construction mission that involves creating a facility or providing a service, with predetermined performance goals that are expressed in terms of quality specifications, completion dates, budgeted costs and other set restrictions. For the other facets of the Ghanaian economy to grow, Amponsah (2010) and Amoatey et al. (2015) indicated that the construction industry provides infrastructure and other facilities. Ayalew et al (2015) found out that the level of practice of construction project management in terms of safety, risk and time management was very low. Project failure is of a major concern such that it has been discussed in thirty-two global journals and counting (Habibi and Kermanshachi, 2018). This is in line with Allen et al (2014) who stated that project failure has attracted more attention. Nzekwe et al (2015) in their studies also concluded that the rate at which projects fail indicated by projects abandoned, project collapse, cost overrun and unsatisfied clients is high indeed. Project failure the world over has cost several companies and countries huge amount of money. For example, KPMG (2013) reports that in 2010, two-thirds of organizations in New Zealand experienced at least one project failure in the previous year. The average amount of loss was NZ$15 million. In the same study, it was reported that more than half of the respondents did not achieve their project results. Similarly, only 33%, 29% and 35% of projects achieved the project cost, time and scope objectives (KPMG,

2013). Several other projects also suffered huge delays in completion, denying the clients and end users the benefits of using such projects at the time they were required. Amponsah (2013) reported that between the year 2009 and 2011, Ghana lost about One Hundred and Twenty-Eight Million Dollars (US$128,000,000.00) as a result of ineffective implementation of projects. In his view, Ofori (2013), stated that the causes of project failure include poor planning, changing scope often and lack of control and monitoring of the project. Mar (2012) defined project failure simply as project cost overrun or overrun of schedule or failure to meet specifications of the client. Saidu & Shakantu (2017) gave examples which included Boston where a project for big data exceeded its cost by 500%. The Wembley stadium construction also had a cost overrun of 50% as well as the Western Australian Perth Arena which also exceeded its cost by more than three times. Perhaps the worst example as cited by Love et al (2011) is the 900% cost overrun of the Scottish Parliament building.

Ngacho (2013) points out two time aspects in project time: planned or expected project time and actual completion time. According to him, project time can be considered as the period between the start of the project to its completion. Similarly, Lensinko (2015) defined project time as the total amount of time from the start of the project on site to its actual conclusion, measured in days or weeks. A project is said to have failed in terms of time when the actual completion time exceeds the planned completion time. For example, there are cases where projects which were planned to complete in one year ended up finishing in three years. This is a clear case of project time failure. Zunjarrao (2017), categorized the factors which cause delay in execution of projects into three categories. These are contractor contributed factors which include ineffective and inadequate early planning and scheduling of project, improper and obsolete construction methods, regular changes to project schedule, lack of adequate experience and poor risk management. The second category which is consultant contributed factors include delay in approving designs, drawings and major work changes, delay in performing site inspection and testing. Owner contributed factors include delay in decision making process, delay in payment for work done and lack of experience on the part of the owner. Silva et al. (2016) indicated that the quality criterion used in determining project success or failure is a traditional criterion but is confusingly used. Some researchers (Pinto and Slevin, 1988; Atkinson, 1999; Chan and Chan, 2004) used quality as a single main criterion, other researchers (Chovichien and Nguyen, 2013; Al-Tmeemy, 2011) used quality, technical performance and functionality as separate criteria. Khosravi and Afshari, (2011) however defines project quality as meeting technical specifications. This is supported by Serradora and Turnerb (2014) who mentioned that quality goes with issues of technical performance and specifications and the achievement of functional objectives. It is thought that the functionality and technical performance in the context of construction projects are embedded with product quality and process quality. For the owner, designer and contractor, quality, technical performance and functionality are intimately related and crucial. Chan and Chan (2004) further mentioned that quality would be measured subjectively using a seven-point scale. From the forgoing, if a project fails to meet its technical specifications as outlined by the project, it can be said that the project has failed.

Hussein (2012) cited project scope definition without stakeholder engagements as the most prevalent reasons of scope creep (failure) in projects, as well as disregarding the multiple "red lights" on the project that might lead to scope creep as other results that conflicted with those of this research (failure). According to Gurlen (2013), project scope failure may be triggered by project team members' ambition to improve or perfect a situation. Project scope failure is not always attributable to the project teams. As stated by Adeniran and Fadamiro (2015), one major cause of scope failure is when the client provides inadequate project brief to the project management team or the engineers and contractors. He stated that even at the project inception stage, if the client is not able to provide sufficient information about what is required of the completed project to perform, the project is bound to be considered as failure. Prasad et al. (2019) also asserted that scope failure was most severe by asserting that "scope failure is a universal phenomenon related with undertakings in the construction industry". Ramegowda, (2019) believes that some causes of project failure are common across different projects. Several researchers have identified different causes of construction project failure some of which are similar to those provided by Damoah (2015). For instance, Wasim and Khalidi (2018) identified the top ten reasons for project failure in Pakistan as being an unreliable contractor, a delay in long-lead item procurement, a delay in contractor payments, inaccurate cost estimates, an inaccurate project schedule, an unreliable project team, a lack of project planning, an unreliable project manager, a delay in granting contractors access to the site, a lack of cash flows and a delay in the design phase. Ramegowda and Eja (2019)

also came out with similar findings with delay in payment to contractors, poor planning, design and scope changes almost running through all research findings. These causes are supported by the findings of Atarzadeh and Ow (2008) as cited by Hammond (2018) who identified lack of user involvement; lack of planning; incomplete requirements; lack of resources; and incorrect cost estimation among others. According to Ofori (2014), contract administration is the process of ensuring that each party complies with their stated contractual obligations up until the contract is either completed or canceled. It takes more than just effective contract administration to manage labor contracts properly. It entails managing the complex interactions between all parties and stakeholders while having a solid understanding of risk management and how it affects the completion and success of projects.

METHODOLOGY

The study adopted quantitative research approach to gather and analyse data. Quantitative method involves the collection and analysis of numerical data to answer scientific research questions. According to Creswell and Creswell (2017), it is an approach for testing objective theories by examining the relationship among variables. To analyze structural linkages, structural equation modelling, a multivariate statistical analytic technique, was applied. The approach combined component analysis and multiple regression analysis to evaluate the structural relationship between measured variables and latent constructs. In order to evaluate the link between endogenous and exogenous variables, the method makes use of features of factor analysis and multiple regressions (Gefen et al. 2000, Hair et al. 2006; Hair et al. 2017).

Philosophical position

Philosophy underpinning this research is pragmatism. It is a research philosophy which believes in the development of research methods which are practical and aimed at solving the problem and objectives achievement (Creswell and Creswell, 2017; Saunders, 2011). To achieve research objectives, rational and sensible approaches are adopted by researchers (Park et al, 2020). They further state that the best way to think about research is to perceive the nature of the problem as a first step then concentrate on tackling it in order to solve it.

Instead of making assumptions about the nature of knowledge, pragmatism is focused on finding solutions to real-world problems (Feilzer, 2010, p. 8). Pragmatism holds the view that the method that best helps solve a research question is the best method. A major consideration of pragmatism is the fact that knowledge is always based on experience and that these experiences shape our perceptions of the world (Kaushik and Walsh, 2019). According to Kelly and Cordeiro (2020), pragmatism's emphasis on the production of actionable information guarantees that research is both contextually relevant and theoretically informed, which favors research with non-government organizations in particular.

Research population, sample size and technique

The research used three categories of people at the university for the research. These are contractors and consultants, project related staff of the University and Student leaders of the University. In all the university had a list of one hundred and twenty-one (121) registered contractors and consultants. However, it came to light during discussions leading to obtaining the list that forty-nine (49) of them are not active. To gather appropriate responses for the study, the researcher decided to include only the active contractors and consultants. The Staff of the University selected for the study include those who are involved in project management, monitoring and supervision as well as project beneficiaries. They number up to one hundred and four (104). The Students are considered as the ultimate beneficiaries of the construction projects which are put up and are therefore able to talk about how the failure of projects affects them. The entire population of students of the university are many, it was considered ideal to focus on their leadership which is made up of one hundred and ten (110) people since the leaders represent the interest of the students. The leaders included the Students Representative Council executives and the leaders of the various halls of residence.

A total population of 286 was targeted for the second section of the study which involved the administration of questionnaire. The table below gives the population distribution.

Table 1: Population distribution for quantitative studies

Population characteristics	**Population size**
Student leaders	110
Contractors and consultants	72
Professionals	104
Total	**286**

Source: Filed work (2023)

Sample and Sampling Techniques:

The Yamane formula was used to calculate the sample size for the quantitative studies. A 95% confidence level and error limit =0.05.

$$n = \frac{N}{1+N\,(e^2)}$$

Where,

n = sample size

N = population size

e = level of precision

$$n = \frac{286}{1+286\,(0.05)^2}$$

n = 286/1.715 = 166.76

n = 167.

Table 2: Sample size

Population characteristics	**Population size**	**Sample proportion**	**Sample size**	**Sample size**
Student leaders	110	38.46	167	64
Contractors and consultants	72	25.17	167	42
Professionals	104	36.36	167	61
Total	**286**	**100**		**167**

Data collection instruments

A structured questionnaire was developed and deployed to collect quantitative data. The questionnaire had closed ended questions with a five-point rating scale**.** The scale used in the study was from strongly agree to strongly disagree indicating varying degrees of agreement with the statements put forward with regards to causes and effects of construction project failure. Before the questionnaire was rolled out, it was tested with some few people to determine their viability and to improve its validity and reliability. Adjustments required to make the instruments more solid and clearer were made after the pilot study.

One Hundred and sixty-seven (167) questionnaires were distributed to the respondents personally after they had been talked to about their willingness to participate in the research. Follow ups were made to some of the respondents to encourage them to fill the questionnaires. The respondents were also assured that the information provided is for academic purpose only so it would be treated with the confidentiality it really deserves. Out of the 167 questionnaire given out, 124 were completed and returned.

RESULTS

Test of validity

Table 3: Fornell-Lacker Criterion

	Admin.	External Factors	Lack of Develop.	Leadership	Monetary Effects	Project Failure	Public Image	Resource	Teaching and Learning
Administration	**0.809**								
External Factors	0.306	**0.798**							
Lack of Dev.	0.498	0.181	**0.809**						
Leadership	0.209	0.216	0.200	**0.921**					
Monetary Effect	0.164	0.173	0.148	0.391	**0.956**				
Project Failure	0.296	0.026	0.257	0.144	0.282	**0.958**			
Public Image	0.182	0.219	0.184	0.409	0.221	0.133	**0.893**		
Resources	0.221	0.432	0.376	0.117	0.127	0.250	0.206	**0.845**	
Teaching & Learning	0.106	0.261	0.408	0.253	0.236	0.286	0.282	0.485	**0.796**

Source: Field Survey (2023)

Table 4: Heterotrait-Monotrait Ratio (HTMT)

	Admin.	External Factors	Lack of Develop.	Lead.	Monetary Effects	Project Failure	Public Image	Res.
Admin.								
Ext. Fact.	0.693							
Lack of Develop.	0.094	0.556						
Lead.	0.138	0.547	0.396					
Mon. Eff.	0.601	0.599	0.286	0.589				
Proj. Fail.	0.548	0.297	0.201	0.215	0.397			
Pub. Ima	0.408	0.494	0.699	0.298	0.732	0.310		
Res	0.365	0.306	0.214	0.340	0.148	0.624	0.152	
Teac. & Learn.	0.177	0.542	0.570	0.716	0.255	0.515	.715	0.151

Source: Field Survey (2023)

Table 5: Factors Influencing Project Failure

	Path	**T-statistics**	**R^2**	**Adjusted R^2**	**Q^2**	**P-value**	**F^2**
Project failure			0.714	0.689	0.5319		
Administration	0.947	7.997				0.000	0.105
External Factors	0.754	7.361				0.000	0.552
Leadership	0.344	2.905				0.004	0.063
Resources	0.180	2.360				0.018	0.047

Leadership

Leadership had a positive and significant effect on project failure [B=0.344; $t(121) = 2.905$; $p < 0.05$]. A unit increase in leadership would lead to a 0.344 increase in project failure. This means that the leadership factors of lack of continuity, political interference, poor planning, corruption and lack of commitment by Heads of user departments and changes in project scope presented below qualitatively had positive and significant effect on project failure.

Leaders are responsible for project planning and resource allocation. Incompetent contractors project leaders may not adequately assess project requirements, allocate resources effectively, or create realistic project schedules. This can lead to budget overruns, resource shortages and missed deadlines. Contractors project leaders often need to make critical decisions and solve problems as they arise during a project. Ineffective leaders may struggle with decision-making, leading to indecision or poor choices that hinder project progress. Leadership includes managing and motivating the project team. Leaders who lack people management skills may struggle to inspire and engage team members, leading to low morale, conflicts and reduced productivity. Project leaders must identify and mitigate risks and issues as they emerge. Ineffective leaders may overlook or downplay potential risks, allowing them to escalate into significant problems that can lead to project failure. Leaders are responsible for managing project scope and handling changes effectively. Poor leadership can result in scope creep, where project requirements expand without proper evaluation, leading to project delays and budget overruns.

Administration

There was a significant relationship between administration and project failure [B=0.947; $t(121)= 7.997$; $p < 0.05$]. There was a relationship between administration factors and project failure. This was significant at 1 percent significant level. The relationship between administration and project failure can be complex and multifaceted. The administrative factors affecting project failure include participation by stakeholders, bureaucracy, lack of effective supervision, procurement processes, techniques for managing projects, poor communication and auditing processes.

Administration, in the context of project management, refers to the processes, policies, and decisions made by the project management team or the organization overseeing the project. While administration itself does not directly cause project failure, certain administrative factors or practices can contribute to project failure in various ways. These include poor planning, ineffective communication, bureaucracy, weak project management team, lack of effective supervision etc. Poor project planning, which falls under the realm of administration, can lead to project failure. Planning is essential for the successful execution of projects, but the universities need more effective planning with construction projects. Some projects are started without careful analyses of how they will be completed. As a result, projects are started but have yet to be completed, and you see another project starting also. In a study by Dick-Sagoe et al. (2023) and Boakye (2015), it was found that

planning, monitoring and payment delays were the root causes of project failure. Project failure has other effects, including the loss of capacity for public efforts and the emotional stress experienced by project stakeholders (Dick-Sagoe et al., 2023). Incomplete project scopes, unrealistic timelines, insufficient resource allocation and ineffective risk management are examples of planning-related issues that can undermine a project's success.

Lack of Resources

Resources had a positive and significant effect on project failure [B=0.180; $t(121) = 2.36$; $p < 0.05$]. A unit increase in resources would lead to a 0.180 increase in project failure. Resources are a critical factor in the success or failure of a project. Inadequate or mismanaged resources can significantly impact a project's ability to meet its objectives and deliver results on time and within budget. Thus the factors presented below which include capacity, financial resources, lack of materials and lack of equipment and materials had a positive and significant effect on project failure.

A lack of essential resources, such as skilled personnel, equipment, materials or funding, can lead to project delays and failures. Without the necessary resources, a project may be unable to progress or deliver according to the planned schedule. Financial resources are often a limiting factor for projects. If the project budget is insufficient to cover expenses or unforeseen costs arise, it can result in budget overruns and the inability to complete the project as intended.

External factors

External factors also had a positive and significant effect on project failure [B=0.754; $t(121) = 7.361$; $p < 0.05$]. A unit increase in external factors would lead to a 0.754 increase in project failure. Economic factors such as recessions, inflation, or currency fluctuations can impact a project's financial viability. However, the study identified the following factors which had a positive and significant effect on construction project failure. They include uncontrollable circumstances, changes in price of materials, force majeure and encroachment.

A downturn in the economy may lead to reduced funding, decreased demand for the project's output, or increased costs for materials and labour. Changes in laws and regulations can introduce new requirements, restrictions, or compliance costs that a construction project may not have initially anticipated. Failure to adapt to these changes can result in project delays or even cancellation.

Table 6: Effect of Construction Projects Failure

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
Project Failure -> Lack of Development	0.757	0.759	0.035	21.785	0.000
Project Failure -> Monetary Effects	0.682	0.687	0.049	13.926	0.000
Project Failure -> Public Image	0.633	0.637	0.053	11.866	0.000
Project Failure -> Teaching and Learning	0.686	0.690	0.045	15.097	0.000

Source: Field Survey (2023)

Monetary Effects

There was a positive and significant relationship between project failure and monetary effects at the university [B=0.682; $t(121) = 13.926$; $p < 0.05$]. These monetary effects include contractor hardships, cost escalation,

discourages investment and loss of revenue. A unit increase in project failure would lead to a 0.682 increase in monetary effects. When a project fails, the financial resources invested in that project are often wasted.

Lack of Development

There was a positive and significant relationship between project failure and lack of development at the university a [B=0.757; $t(121) = 21.785$; $p < 0.05$]. The factors which make up to the lack of development include slow infrastructure, sub-standard infrastructure, university under development and lack of capacity. The level of significance was at 1 percent significance level. A unit increase in project failure would lead to a 0.757 increase in lack of development at the university.

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Effects on Teaching and Learning

There was a positive and significant relationship between project failure and teaching and learning at the university [B=0.686; $t(121) = 15.097$; $p < 0.05$]. The teaching and learning factors which have positive effect on project failure include emotional stress on students, students demonstration and accidents.

Bad Public image

There was a positive and significant relationship between project failure and bad public image at the Public Universities of Ghana [B=0.633; $t(121) = 11.866$; $p < 0.05$]. A unit increase in project failure would lead to a 0.633 increase in bad public image. The bad public image has factors such as bad image for the university, external audit queries and Public Accounts Committee. Respondents indicated that when several construction projects fail, it negatively affects the image of the university. This is because the media picks up the problem and discuss it publicly. Respondents also indicated that, investors who visit the university question the reason why a lot of construction projects fail. Students and staff of the university also have the same view about the university and this does not augur well at all.

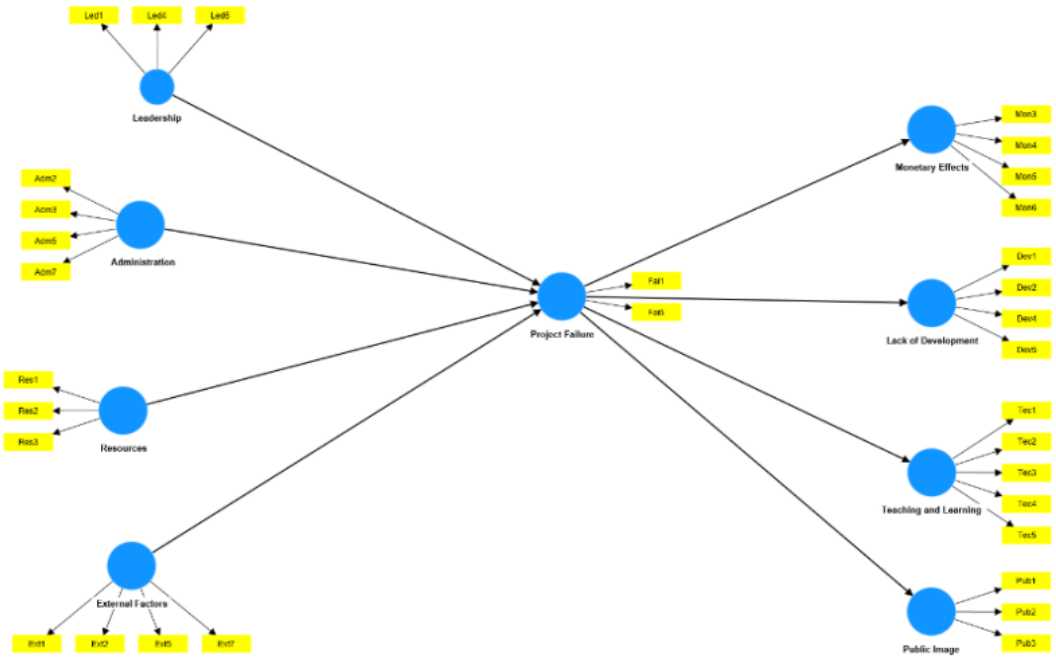

Figure 1: Model Output

CONCLUSION

Driven by the fact that there are several uncompleted and defective construction projects at the public university and yet the issue is not studied extensively, this research set out to investigate the factors that cause the failure and assess the effects of construction projects failure

The study identified thirty (30) causes of construction project failure. They were grouped under four themes and their relationship with project failure were examined. All the four themes of leadership, resources, administration and external factors had positive and significant relationship with construction project failure. The study also identified twenty (20) effects of construction project failure and grouped under four themes of monetary effects, lack of development, bad public image and effects on teaching and learning. All the four themes had positive and significant relationship with construction project failure.

Construction project failure is therefore a big challenge for the public university in the Central Region of Ghana.

RECOMMENDATIONS

The following recommendations are made based on the findings of the study.

1. Management should make construction project planning a priority. Planning would ensure that projects are scheduled appropriately. As part of planning, all related stakeholders of the project must be consulted to give their inputs during the project design stage to capture their expectations. This will reduce the incidence of changes in project scope once the project starts. As part of planning too, there must be financial planning.

2. The University must agree on a priority project at a particular point in time and put all the needed resources to ensure its completion rather than embarking on several projects at the same time. This will ensure that the projects are not stalled midstream due to lack of adequate financing.

3. To ensure quality construction projects at the University, technical people responsible for project management must put in mechanisms to ensure effective supervision. There must be experienced personnel at the project site to look at what goes on every day.

4. Management must re-examine uncompleted projects which have been abandoned at various stages such as at foundation level, to know why those projects started in the first place and carefully plan and invest resources into continuing such projects one at a time. This must be treated as priority rather than using the available funds to start new projects altogether.

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