

## Ranking of Variables Influencing Construction Project

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### **Abstract**

*Construction projects are successfully delivered when they are completed at targeted cost, time as well as meeting the required performance quality wise. The above assertion is often times more of an abstraction than reality. This research aims to identify several of those factors that inhibit project success with a view to ranking the degree of impact of these factors on project delivery time and consequently on success. The research using questionnaires as its instrument for data collection, obtains the personal data of the respondents as well as research components and other variables that influence project delivery. The research employed the statistical technique of percentile as well as central tendencies for the analysis of research components – (the variables influencing project delivery). The means score values of the variables formed the basis for the determination of the influencing variables. Research findings establishes as follows: (i) The mean score values of factors which contribute to delay in project delivery were between 2.26 to 4.02, where unfavourable economic policies with the value of 4.02 is the most critical and client's understanding of design, procurement and construction processes with a value of 2.26 is the least. (ii) Other factors that impact on project delivery time had mean scores between 2.93 to 3.96, this include unfavourable physical conditions, inadequate design, incomplete and late information quality management and so on. The research concludes that attaining project objectives at first budget and scheduled time is more of an abstract than reality and as such it important to put into cognizance the components and variables as established in this study. The research recommends and exploratory study on other aspects/factors affecting project delivery time and successful implementation.*

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**Keywords:** (i) Projects (ii) Construction Projects (iii) Successful Projects (iv) Target cost (v) Scheduled Time (vi) Project Success Determinants.

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### **Introduction:**

Project can be defined as any scheme/task which has a beginning an end. A project is accomplished by performing a set of activities. A Project can be defined as a non-routine, non-repetitive, one-off undertaking, normally with discrete time, financial and technical performance goals. The Construction industry is the sector involved with erection, repair and demolition of buildings and Civil engineering Structure in an economy (Nyangwa and Datche 2015). Construction projects are successfully delivered when they are completed at targeted cost, time as well as meeting the required quality performance: Forecasting project cost

at competition is of great importance to project management success. It is forward looking tool to assist project managers with the task of making timely and appropriate decisions about outcome of their in-progress (flaming and Koppelman 2006 cited in Narbaev and Marco 2014). Project performance is a critical issue for the construction industry. Project delivers such as timely completion and Client satisfaction are often used as Yardsticks to determine success. The failure of any construction project is mainly related to the problems and failure in performance. In furtherance to the above assertion Lavagnon (2009), has advanced some form of clarification on the issue that define and explain what is meant by “project Success”, citing authors like Belass, and Tokel (1996) asserted that the issue presents significant problems for investigators. Revealing that the project success, though popular have not led to a consensus on, a definition of, nor a means for measuring such success (Pinto and Selvin 1988). Baker, Morphy and Fisher (1974), concluded that there is no such thing as absolute success” in project management there is only the perceived success of a project. “They also point out that how we evaluate success probably changes over time. In Lim and Mohammed’s (1999) opinion, all of the Stakeholders in a project can hardly be said to hold the same point of view on this matter. Project success or project failure are not necessarily opposite or contradictory nations (Finch am, 2002), nor are they black and white issue, an expression used by (Baccarine 1999). The above assertion and counter assertions notwithstanding, project success is definable by the outcome of certain objectives in the course of running a project, also bordering on some efficient and effective fulcrum.

A project has a set of objectives or a mission. Once the objectives are achieved, the project is treated of a project, is completed the project comes to an end. A project has Life cycles which consist of the following stages (Conception stage, Design stage). It also a definite time Limit, it cannot continue forever. A project normally consists of diverse areas. Hence a project can be implemented only with team work. Other characteristics of a project include: Complexity, where in set of activities are related to diverged area. Subcontracting, arising due to the complexity of functions and activities. Risk and uncertainty. Customer specific nature, the change, a product are customized. Change, a product is not rigid in its life span. Changes occur throughout the life span of a project due to environmental, technological factors. Projects need good forecasting, rational choice, and optimality for effective utilization of resources. This above assertion therefore resonances with that of Belout, 1998 as cited in Lavagnon 2009, observed that “Project success” corresponds to project’s effectiveness).

Projects have non-routine activities. Each project is unique in the sense that the activities of a project are unique and non-routine. Project is “an organized unit dedicated to the attainment of goal – the successful completion of a development project on time, within budget, in conformance with predetermined programme specifications’ A project is any scheme or part of a scheme for investing resources which can be reasonably analyzed and evaluated as an independent unit. (Nagarajan, 2010) The project management Institute, USA defines a projects a System involving the Co-ordination of a number of separate department entities throughout the organization and which must be completed within prescribed schedules and time constraints.

Most construction projects have the propensity to overshoot their initial targeted cost as well as delivery time to other industries the characteristics and nature of the construction industry and its products exacerbates the Situation. This differential stems from the “one-off nature of the construction project. The product process takes place outside and is subject to the vagaries of environmental elements. Construction products are also unique, each with its

peculiar characteristics and challenges.

These Vagaries of the environmental elements coupled with the bulky nature of the projects as well as the large capital layout requirement imposes considerably pressure on the project delivery. Large Capital layout, bulk, nature. Based on the foregoing, it is reasonable to assert that the goals of successful projects are hinged on the attainment at first budget, completion on scheduled time and performance quality according some specifications. Achieving a successful project is however more of an abstraction/ than reality. Most construction projects it would seem can hardly be completed on their first budget, neither be completed on scheduled time these distortions. On budgets and schedules time in turn affect performance and thus successful delivery. The non delivery of a project as at when specified causes unhealthiness in a contract and may lead to abandonment, disputes and litigation, increased project duration and cost resulting from inflation, bad image of contractor, Client and consultants , and so on. Delay is associated with diverse issues which are traceable to the contribution of the client, contractor and consultant (Niazai and Gidado 2012). This research aims to identify and appraises those factors that inhabit project Success, with a view to suggesting relevant measures that enhance the achievement of successful projects. This it seeks to achieve by: revealing and elucidating on what successful projects are as well as the determinants of successful projects. (i) Identify several of those Variables which inhibit Successful project delivery. (ii) Determine, through ranking the severity of the variables which inhibit Successful project delivery.

The following define the scope as well as bounds within which results of the research hold: four local government areas of Rivers State – Ikwerre, Etche, Obio/Akpor and Port-Harcourt, Rivers State of Nigeria which lies between Latitudes 4.9N and Longitudes of 7.033E. The prevailing climatic element within the research Location, coupled with the situation, where construction projects take place and are subjected to the open, exacerbates the situation and thus gives impetus for the study. The three other Local government areas are very close to Port-Harcourt, which is the administrative capital of Rives State. There therefore exist the potentials for infrastructural developments, arising due to presence of Oil and gas Conglomerate. This also grants further impetus to the study. Furthermore, an analysis of the factors influencing construction time performance will indicate more clearly the nature of managerial actions timely delivery of projects and alleviate associated problems resulting from non project performance. The results of the research will reduce; minimize several of the losses that do occur fundamentally due to cost overrun, time snag and consequential impact on project delivery. Considerably works have been done on the spheres of project most of these work, it is however worthy to note, examined these causes as well as the effects of delays in construction project delivery, while others used predictive models to ascertain construction period estimation. There appears a paucity of works that focused on the ranking or the establishment of degree of this impact of those factors that inhibit project performance resultant of delays. This research is one of such effort; it focused on the ranking of the factors that contribute towards project performance.

This research draws from previous work of other researchers with respect to construction delays. Some of the early authors who focused on the causes as well as effects of construction project delays in construction project delivery. Baldin and Manthei (1971), in the USA, Arditi (1985) in Turkey and Bromilow (1988) in Australia. Other Authors include Okpala and Aniekwu 1988 and Dlakwa and Culpin (1990) in Nigeria, Chan and Kumaraswamy (1977) and Kumaraswamy and Chan (1988) in Hong Kong studied three effects of delays in

construction. Sullivan and Harris (1986) in the UK, Mezher and Tawil (1998). Lebanon, Al-Khali and Al-Ghaffly (1999), Assaf (1995) in Saudi Arabia and Ogunlana (1996) in Thailand, all studied predictive models for estimating construction duration. In the early 2000s efforts have been made towards determination of remedies to the issues of project delays. These authors include Aibinu and Jagboro (2002) in Nigeria, Belout and Gauvrea (2003) in Canada, Koushki and Kartan (2004), Assaf and Al-Hejji (2006), and Faridi and El-Sayegh (2006) in Saudi Arabia; Frinapong (2002) in Ghana and Bryde and Robinson (2005) in the UK. The structure of the paper is as follows: First it presents a background of the theoretical issues which border and govern the goals of successful construction projects, as well as those factors that pose challenges on attaining successful projects. This it was able to achieve through a comprehensive literature review. Thirdly, it adopts a research methodology that defines the focus, scope as well as the relevant research components, using relevant statistical methods. Fourthly, it undertakes an analysis on the factors that impact on the attainment of successful projects as well as the ranking of the degree of impact. Finally, it draws conclusion on the analyzed factors and issues, as well as offering relevant recommendations.

### **Review of related literature:**

#### ***Variables Influencing Project Delivery Time***

An array of variables has the propensity to influence project delivery time and invariably project success. These variables stem from project management inputs, human factors, staff motivation and its concomitant productivity and environmental factors.

#### **Project Management Input on Project Delivery Time.**

Project management inputs which influence project success that should be taken into account when estimating time include: (1) Quality Control and Management at the Design and Construction Stages. (2) Control of Construction Methods (3) Clients Understanding of the Design, Procurement and Construction Process (4) Understanding of Project Constraints (5) Staff Motivation and Productivity (6) Physical Environment and Site Conditions and Access (7) Poor Site Management and Supervision (8) Economic Policies and Other Externalities.

Andi and Minator (2003), have advanced a literature review on quality control and management as project management variables which influence delivery time. They reiterated that failure at the conceptual planning and design stages may lead to significance problems in successive stages of the project. Oyedele and Than (2006)'s heading provide relevant basis for the discussion variables that influence project success as they to quality control and management: Quality of design co-ordination, smooth flow of work, conflicting dusting information, timelines of issuing of revised drawings and so and so forth.

In a related perspective, Ponpeng and Liston (2003), have reported that contractor's quality management is an important factor affecting a contractor's delivery of a project within schedule. This can be ensured through good materials control and management, material procurement, storage, usage, testing, control, management of construction machinery and equipment. Cheung (2004) amplifying variables which influence project delivery within schedule, recognized construction methods that are reflective in the concentration of technical solution, process, testing methods and so on. Therefore, they reiterated asserting when developing programs for major projects, key parts and difficult projects should be prepared, presenting major contradictions, advantages and disadvantages, so as to effect discussion and comparison, then the best option will be selected. Issues as they relates to clients attribute and their project management and the effect upon the attainment of project objectives are also

reviewed by Lim and Ling (2002), pointing out such factors as understanding of the project constraints, the ability to effectively brief the design team, the ability to contribute ideas to the design and construction process and the ability to make authoritative decisions quickly and the stability of these decisions. Pheng and Chuan (2006), have posited that the type of client affects project performance, further observing that the clients understanding of project constraints afford appreciation of the challenges encountered by the main contractor to a project. Lerbinger (2006), cited in Chinyo and Akintoye (2008) are however not in total agreement with the assertion of Pheng and Chuan (2006), they are in the opinion that organizations that engage with stake holders actively are more likely to succeed.

Belaout and Gauvreau (2004), commenting on the attainment of project success as it relates to design, procurement and construction processes lies in the ability to effectively brief the design team, defining and communicating the project mission. They observed further that it is essential at the design stage to fully grasp client's needs and establish with them the project's limit and properties. Koushki (2005), has identified client's lack of experience as a major contributor to time delay. Odusami (2003), in a related perspective revealing the place of project manager's professional qualification reveals that professional qualification has a significant relationship to the overall project performance.

#### **Staff Motivation and Productivity and Impact on Project Delivery Time:**

Staff motivation induces productivity which impact on project success time wise. Performance depends on many factors like appraisals, employees motivation, employee satisfaction, compensation, training and development job security, organizational structure and others motivation formulates an organization, it is essential for organization to persuade motivation of their employees. Factors relating to motivation can influence workers attitude either negatively or positively as it relates to productivity and by extension as it project time delivery.

Fagbenle's et-al (2004) headings provide relevant basis for discussion on issues bordering on motivation and project time delivery: Job insecurity, employee turnover. Chain (2004), has recognized good working relationship of project team leaders with others as a factor that affects the construction speed of a project. Cox (2003), in a related perspective concludes that that on-time completion of work could be used a performance indication. The recognition of contributions is a good motivator for higher productivity. The existing relationship between motivation and productivity and subsequent time of effectiveness is further emphasized by other authors, see for example Fraser's (2000) conclusion on construction site managers attitude towards career advancement and effectiveness regarding construction performance. Arditi and Mochtar (2002), also posited that opportunity for career advancement impacts on productivity, revealing further an employee who knows that his/her career could be advanced by the organization will contribute his/her best to the organization.

Pheng and Chuan (2005), buttressed the existing correlations amongst motivation, productivity and project schedule efficacy, revealing further that salary is rated the fifth among thirteen factors of working environment regarded by managers as significantly affecting project delivery. High salary motivates to higher productivity whilst low pay leads to the contract. Secondly, employees who believe that their organization's pay systems are inherent uniform tend to be dissatisfied with their jobs. Pongpend and Liston (2003) have asserted that plant and equipment availability are criteria accredited for contractors performances. Ng (2003) identifies non-availability as one of the seven de-motivating factors

that lowers the morale of workers as it relates to productivity. O’conor and Yang (2004) concluded that higher levels of project. Scheduled success is particularly associated with high level of technology utilization. Rojas and Aramva Reekvi (2003) reported that interaction between construction tasks and resources significantly drives productivity.

### **Environmental and Physical Conditions and Impact on Project Delivery Time:**

Aside project management human factors as well as motivational inputs there over are other environmental and physical conditions which impact on project performance, schedule wise. Frimpay et-al’s (2003) work provides on array of environmental and physical variables which influence project delivery time. Ground problems and unexpected geological, the nature of demolition work, the structural stability of ground, the impact of water table etc. In a similar perspective Toor and Ogunlana’s (2008) headings provide relevant basis for discussions on the environmental and physical conditions that impact on project delivery time. Easy access to site, narrowness of road, and these issues influences the speed of construction. Issues related to proximity to required resources, narrowness of roads and congestion at site entry/exist are extensively reviewed else by the following authors. Tam et-al (2000), Zayed et-al (2005) and Jannadi and Bu-Khamsin (2002). Thomas (1999)’s headings and explanations provide relevant literature that extensively reviewed the impact of physical environmental elements. Adverse weather natural hazards, that cold, noise and light on construction activities.

### **Economic policies and there manifestations on project delivery time.**

The prevailing economic situations and government economic policies constitute potent sources of impact on project time delivery. Koushki and Kartan’s (2004) headings provide relevant basis for discussion on some economic factors. Availability of materials, equipment, interest rate, inflation, insolvency and bankruptcy etc. Chan et-al (2004)’s identified inflation and interest rate as relevant factors Sloanman (2008). Corroborating, has also opined that interest rate is an important determinants of business activities. Phua (2006), has reported that bankruptcy as well as the difficulties associated with obtaining credit facilities impedes performance. In a similar vein Frimpong et-al (2003), identified difficulties related to monthly payments as a factor that most often causes delay out of twenty-six potential factors studied.

Skitmore (2009), identifies lack of strategic planning for materials and labour as a major cause of delays on project delivery. Dai (2007), identifies the non-availability of materials as an impediment to the productivity of workers. Ng (2004), the non-availability of materials dampens the morale of workers and hampers productivity. Fagbenle et-al (2004), have observed that materials shortages and wastage cause low productivity among workers. Issue on Non-availability of materials as they to construction performance are extensively articulated elsewhere: Al-Resgaid and Kartan (2005) forwards review on the availability of equipment as a measure of performance. Pongpeng and Liston (2003), pointed out that plant and equipment availability are criteria accredited for contractors performance measure. Ng (2003), has Opined that non-availability is one of the seven de-motivating factors that lowers the morale of workers with respect to productivity. O’Conor and Yang (2004) concluded that higher levels of project schedule success are particularly associated with a high level of Technology utilization. Rojas and Aramva Reekul (2003), reported that interaction between construction tasks and resources significantly drives productivity.

Phua (2006) Reporting on the manifestation of Bankruptcy, has asserted that difficulty to obtain credit impedes performance this could affect the client or contractor. Frimpong et-al

(2003), identified monthly payment difficulties from the client as the factor that most often causes delay out of twenty-six potential delay factors.

## **RESEARCH METHODOLOGY**

This research is fundamentally affected through field work as well as literature review that is predicated on the articulation of existing knowledge on the variables influencing successful project delivery. The adopted methodology is considered appropriate in view of the nature of data that is collected, collated and the computational techniques employed. Hughes (2010)'s articulations provide relevant basis for the underlying philosophies and guidelines that influence the choice of procedures for carrying out research works and the subsequent impact on the adopted research methods and design. Rajasekan and Valli (2014)'s has also provided further articulations on the underlying philosophies and guidelines which influence the choice of methodology for research works. Rajasekan and Valli (2014)'s Study provides an appropriate basis for the choice of the research method and design. Mac-Barango's (2016) research on the ranking of the severity on variables influencing construction cost provides an appropriate basis for the choice of the research method. This research obtains archival data on the variables which influence project delay and subsequently on project success.

The research study area is Rivers State, one of the oil producing states of Nigeria. Rivers State bounded by the Atlantic ocean, Imo, (Abia and Anambra States) on the South, North, East and West respectively Data collected for the research spread over four Local government areas of the State Port-Harcourt, Ikwerre, Obio-Akpor and Etche. The study adopting exploratory approach, obtained archival data from a total population of one hundred and Eighty five State holders in the construction industry: Quantity surveyors (85), Architects (50) and civil engineers (50). A sample population of One Hundred and Twenty five State holders, using random sampling method formed the basis for collection and subsequently the analysis of data. The sample population consists of 50 Quantity Surveyors, 39 Architects, and 36 Civil Engineers this was spread over the four (4) Local government areas of the state. The research adopts questionnaires as its instrument for data collection. The choice of questionnaires as the format for data collection is predicated on the assertion of Mouton (2001), asserting that some form of measuring instruments have to be employed in the course of collection of data: The instrument is considered appropriate. The instrument is bifurcated into two sections: Part A deals with the personal data of the respondents whilst part B, focuses on the research variables. Each of the questions had options or alternatives from where respondents were expected to tick; this forms the basis for the analysis/ranking of the variables. The validity, soundness as well as the effectiveness of the instrument is enhanced following the caliber of stake holder in its administration.

In furtherance of ensuring the outcome of the validity of the questionnaire the collected data was coded, tabulated and analyzed highlighting several of the arrays of variables, each with its code number. In the analysis of data, the research, adopts the statistical technique, of central tendency, using the outcome of the mean score of each of the variables as relevant basis for determining the variables that impact on project delivery time.

## **Presentation of Research Data, Analysis And Discussion of Results.**

The data for the analysis of research component is presented in tables 4.1, 4.2, 4.3 & 4.4, showing response rate to questionnaires, professional ground of respondents, years of experience of respondents and category of construction activities in which respondents have involved in, respectively.

**Table 4.1 Response Rate to Questionnaires**

Questionnaires	No of Response	Rate (%)
Issued Questionnaires	185	100

**Table 4.2: Professional background of Respondents**

Professions	No of Response	Rate (%)
Architects	39	31
Civil Engineers	36	29
Quantity Surveyors	50	40
<b>Total</b>	<b>125</b>	<b>100</b>

**Table 4.3: Years of experience of Respondents**

Years	No of Response	Rate (%)
0 – 5	17	14
6 – 10	39	31
10 – 15	46	37
15 and above	23	18
<b>Total</b>	<b>125</b>	<b>100</b>

**Table 4.4: Category of construction activities respondents have been involved**

Construction Activities	No of Response	Rate (%)
Building works only	65	52
Civil engineering works only	25	20
Building & Civil engineering work	35	28
<b>Total</b>	<b>125</b>	<b>100</b>

**Results Of The Research Components.**

**Table 4.5: Ranking of Factors influencing Project delivery time**

S/N	INFLUENCING FACTORS	SA	A	N	D	SD	MEAN MARK	RANK
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	5	4	3	2	1		
1	12	19	1	51	42	2.26	9
2	52	39	2	15	17	3.75	6
3	51	45	6	12	11	3.90	3
4	25	15	0	48	37	2.93	8
5	51	43	0	14	17	3.78	5
6	55	45	0	15	10	3.96	2
7	49	36	5	17	18	3.65	7
8	57	43	4	12	9	4.02	1
9	54	36	2	21	12	3.79	4

#### Response Key

- 1 - Strongly disagree (SD)
- 2 - Disagree (D)
- 3 - Neutral (N)
- 4 - Agree (A)
- 5 - Strongly agree (SA)

Table 4.5 shows that unfavorable economic policies with mean score 4.02 is the most critical factor that contributes to delay in project delivery. Other factors include; unfavorable physical environmental conditions; inadequate design in the form of, inter alia, incomplete and late information; quality management during construction; poor site access, poor site ground conditions; motivation of staff and quality management during design, client's limited understanding of design, procurement and construction processes with mean score value: 3.96, 3.90, 3.79, 3.78, 3.75, 3.65, 2.93 and 2.26 respectively.

#### Discussion of Results:

This segment of the work discusses the outcome of the various in analysis as presented in Tables 4.1 to 4.5.

**Discussions:** Table 4.1 (Response Rate to Questionnaire: A total of hundred and eighty five respondents were sent questionnaires, out of 125 were retrieved. This represents 68%: The retrieval rate is therefore considered appropriate and should consequently lead to acceptable results. On table 4.2, the results shows, the professional background ground of the respondents. The result shows that all the respondents have constructed related background this implies that all the respondents are suitable and have the capability to state the factors affecting construction project delivery resulting from knowledge they have due to their professional inclination. Table 4.3, shows responses on the years of experience of respondents. 14%, 31%, 37% and 18% have work experience between (0-5), (6-10), (10-15), (15 and above) years respectively. The result is indicative that majority of the respondents have 10-15years of experience in the construction industry. Table 4.4: shows the various type of construction activities in which respondents are involved. The results show as follow:

52%, 20%, 28% are in building, civil engineering works and building and civil engineering. .

Discussion on Table 4.5 the tables establishes the degree of, severity the various factors influencing project delivery time. The result shows that unfavourable economic policies with mean score of 4.02 are the most critical factor that contributes to delay in project delivery. The other factors which contribute to delays in project delivery time recorded mean score values between 3.96 to 2.26, these factors are as heightened in (Table 4.5). Furthermore the results of the analyses on factors influencing timely project delivery indicated that client's limited understanding of design, procurement and construction process was not a factor to be given much attention as a variable that challenges timely project delivery. This is however not in agreement with the outcome of Koushki (2005), study which identified client's lack of experience as a major, contributor to time delay. It would appear reasonable to explain that the result of Koushki (2005) could actual be in agreement, with the outcome of the results of this research, where clients lapses are mitigated by the experience of the consultants and contractors. The result is also an indication that lack of motivation which recorded a mean scores value of 3.65, poses a great challenge to the timely delivery of projects. This result, also resonances with the outcome of the research of Rutherford (1990), who reported that motivation of workers, formulates an organization more successfully, because dissatisfied employees are constantly looking for improved practices to do a work. Some other pertinent aspects of motivation and its impact on project delivery time have been briefly summarized as follows: Chan (2004), asserted that the working relationship of project leaders with others affects the construction speed of a project. Fagbenle (2004), has observed that job insecurity employee turnover is a source of low productivity: Fraser (2000), in similar perspective, opines and concluded that construction site managers who actively seek career development exhibit behaviour which is effective regarding construction performance. Liston (2003) has also observed contractor's quality management system as an important factor affecting a contractor's delivery of a factor affecting contractor's delivery of a project within schedule; this assertion is in tandem with the results of this research which records a mean of 3.79, ranked 4<sup>th</sup> amongst the factors studied. Economic policy, by the outcome of this research the highest mean valve of 4.02, is ranked the number one factor that influence project delivery time in the construction industry, the result of this research also resonances with the assertions of Chan et-al (2004), who observed that unfavourable economic environment adversely affects the success of a project.

### **Summary Research Findings:**

The following are the salient features from review of related literature as well as the analysis of factors that influence project delivery time:

(1) Construction project success is based on a theoretical concept that project objective of is attained at first budget, scheduled/planned cost time and quality performance according to specification. (2) The attainment of objectives of construction project success is however more of an abstract than reality. The characteristics and nature of the construction industry as well as its production process and products exacerbates the observed aberration. Based upon the above the research undertakes analysis on the factors which influence the project delivery time and observes as follows: (a) Lack of motivation of workers has a propensity to negatively influence productivity, this has a resultant effect on project delivery time. (b) Economic policies and its attendant monetary and fiscal policies (interest rate, inflation, exchange rates and taxation) as well as the availability of materials, plants and adequate labour also influence project delivery time. (c) Quality of management during construction such as the level of supervision, activity sequencing and ineffective co-ordination of

resources negativity affects competition time of projects. (d) Site access, and conditions, such as high water table, underground discovery can influence project delivery time. (e) The physical environment conditions such as rainfall extreme high and low temperatures, influence project delivery time of project.

### **Conclusion:**

Attaining project objectives at first budget and at scheduled time is more of an abstraction than reality; this negates a theoretical assumption upon which the achievement of a successful project delivery lies: The characteristics, features, as well as the delivery process and products of the construction industry further exacerbates the identified aberration. The research further concludes from the review of related literature as well as the results that unfavourable, economic, policies is the most critical factor that impacts on project delivery time. Clients understanding of design, procurement and construction processes do not impact on project delivery time. Lack of motivation of workers significantly influences project delivery. Other variables which influence the project delivery time include environmental factors, the site access and conditions, economic policies and site management. The Quality of management during construction does significantly influence project delivery time.

### **Recommendation:**

The research recommends that undertaking an assessment of the factors that affect project delivery time and success such be guided by “realism” rather than “abstractions” that are skewed towards theorism and assumptions that define successful projects. The research, in this regard, further recommends that an exploratory study on other aspects/factors. Affecting project delay and successful implementation not covered by this research.

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