



**ORIGINAL RESEARCH PAPER**

**Economics**

**FACTORS AFFECTING PERFORMANCE & TIME SCHEDULE FOR MULTI-UNIT RESIDENTIAL BUILDING CONSTRUCTION IN DAR-ES-SALAAM, TANZANIA.**

**KEY WORDS:**

Performance, Time Schedule, Residential, Construction, Building Projects, Dar-Es- Salaam, Tanzania.

<b>Jaffari S. Jongo</b>	School of Architecture Construction Economics and Management(SACEM), Department of Interior Design, Ardhi University (ARU), P.O Box 35176, Dar-Es-Salaam, Tanzania.
<b>Dennis N.G.A.K. Tesha</b>	School of Architecture Construction Economics and Management(SACEM), Department of Building Economics, Ardhi University (ARU), P.O Box 35176, Dar-Es-Salaam, Tanzania
<b>Justine J. Teyanga</b>	School of Architecture Construction Economics and Management(SACEM), Department of Interior Design, Ardhi University (ARU), P.O Box 35176, Dar-Es-Salaam, Tanzania.
<b>Gullamabbas H. Mufaddal</b>	School of Architecture Construction Economics and Management(SACEM), Department of Interior Design, Ardhi University (ARU), P.O Box 35176, Dar-Es-Salaam, Tanzania.
<b>Mary S.N. Sylvanus</b>	School of Architecture Construction Economics and Management(SACEM), Department of Building Economics, Ardhi University (ARU), P.O Box 35176, Dar-Es-Salaam, Tanzania.

**ABSTRACT**

The construction industry is complex in nature, as it contains a number of project team members like the client, consultants, contractors, stakeholders, shareholders, and regulators who are responsible in overseeing the performance and time schedule of any building project. The study objective on factors affecting performance and time schedule for Multi-Unit Residential Buildings, (MURBs) construction projects in Dar-Es-Salaam, Tanzania, was to explore factors affecting performance and time schedule for MURBs construction in Dar-Es-Salaam, Tanzania. To documents and analyze factors that drives positively and negatively, the performance and time schedules for MURBs construction projects respectively, as well as to comment on mitigation measures that can improve performance and time schedule of MURBs construction projects. This study was designed to obtain views from MURBs project stakeholders, regarding their perception on factors that affects MURBs projects. Purposive sampling was adopted using a sample of 50 MURBs stakeholders from NSSF, NHC TBA, PPF, WHC, etc. Data were collected through structured questionnaire and literature review, and analyzed using Microsoft Excel while using tables presentation. 50 questionnaires were distributed to Quantity Surveyor, Architects, and Engineers in which 46 were returned. The finding reveals that 12 factors affect performance and time schedule for MURBs construction projects in Dar-Es-Salaam, Tanzania positively and negatively, in terms of cost, time and quality. The result showed that late payment, under estimation, inadequate planning and communication, lack of competent project manager, scope change, design change, conformance to the specification were the most factors affecting MURBs performance. Furthermore, it was found that late completion and late payments influence cost overrun, which eventually raise disputes and claims and sometimes arbitration. Moreover, some mitigation measures like ensuring proper planning of work, clear information and communication channels, clear information and hiring skilled labor and committed leadership and management were found to be of great help in addressing MURBs construction performance if well implemented. The study recommends the management structure of MURBs construction project to resemble the one in Australia, hence helping the Tanzanian construction industry, specifically the MURBs stakeholders.

**INTRODUCTION**

Memon, Abdul-Rahman, Abdul-Azis,(2012) asserts that; time schedule and cost performance are the fundamental criteria for success of any project. Moreover, they insist that; performance within the building construction industry largely depends on the time schedule for the work. While stakeholders in the construction industry are the performer of the project with the role of ensuring performance is achieved thereby making use of available resources such as time and money; Meredith & Mantel,(2009), defines schedule as the conversion of a project action plan into an operating timetable. As such, it serves as the basis for monitoring and controlling project activity and, taken together with the plan and budget, is probably the major tool for the management of projects.

Additionally, in a project environment, the scheduling function is more important than it would be in an ongoing operation, because projects lack the continuity of day-to-day operations, and often present much more complex problems of coordination. Indeed, project scheduling is so important that a detailed schedule is sometimes a customer-specified requirement. The common feature of scheduling techniques was the reliance on the deterministic expression of time. Deterministic scheduling is based

on the use of average time estimates in determining the duration of activities (Uher,2003); Keeping in mind that; the time schedule is very important to be prepared early as it helps in achieving project performance.

Memon, Abdul-Rahman & Abdul-Azis,(2012) also asserts that; construction industry is one of the highly dynamic sector which plays very important role in the development of country economically, socially, and culturally. Priyanga & Ambika,(2014); Babalola et al,(2015) enlightens that; it is complex in nature because it contains large number of project parties like clients, consultants, contractors, stakeholders (property builders, material supplier, property developer), shareholders and regulators, especially in MURBs. The client plays an active role to make the contract a success in terms of performance and quality of the product itself.

The quality of life of every America relies in part on the products of the U.S. construction industry houses, office building, factories, shopping centers, hospitals, airport, universities, refineries, roads, bridges, power plants, water and sewer lines, and other infrastructures. Construction products, building and infrastructure provide shelter, water and power.

The construction industry itself is a major generator of jobs and contributes an important component of the gross domestic product (GDP). In 2007, almost 11 million people, about 8% of the total U.S. workforce, worked in construction. The value of the buildings and infrastructure that they constructed was estimated to be \$1.16 trillion. The construction industry accounted for \$611 billion, or 4.4% of the GDP, more than many other industries, the construction's portion of the GDP would increase to 10% if the equipment, furnishings, and energy required to complete buildings were included. Construction productivity will affect the outcomes of national efforts to renew existing infrastructure systems; to build new infrastructure for power from renewable resources; to develop high-performance "green" buildings; and to remain competitive in the global market (NRC,2009).

In Sub-Saharan Africa, although the industry faces more challenges like lack of skilled labor, the construction industry is growing stronger as individual company performs well and public infrastructure commitment is higher. Capital expenditure increased by 11.7% since 2011, new construction work increases only by 3.5%, whereas plants, machinery and equipment purchase are increased by 55%. In addition to increase new project, average salary within a construction company increases so as to retain potential skills available for the company. Construction industries in South Africa have agreed to consider factors like integrations of risk and performance management in order to avoid negative event. To date the investment in construction as a percentage of GDP had increased to 8.6% compared to 7.7% the previous year.

Moreover, the investment in construction has increased by 17% each year e.g. in South Africa. The construction industry in Nigeria is the very important sector since contribute a lot in the national economy, According to Nigeria's National Bureau of Statistics, the construction industry since 2010 has enjoyed a real growth rate of 13% and the contribution of real estate sector to the GDP has grown on an average of 17.5% between 2010 and 2013. The major source of capital formation in the construction sector that can spur growth and development in Nigeria is from the public sector, with the traditional approach in the procurement process of funding through annual capital budgetary provision. This large involvement of government participation with the level of construction industry was due to minimal private involvement in capital formation.

However, activities in the construction industry are carried out on a project basis and could be within an organization or part of a programmed. The PMI defined a project as "a temporary endeavor undertaken to create a unique product, service or result. The product, in the context of the construction industry, may be a building, services installation or other infrastructural project. Hence the relevant mix of professionals is often assembled together with the aim of achieving this goal. Additionally, Good management is required to ensure that there is good sharing of knowledge and skills. The performance of Nigerian construction industry is low due to poor workmanship, bitter relationship among stakeholders and also the traditional procurement route, which imposes all risk to the Architects as a result the contractors are less care when executing work on site.

The construction industry in Tanzania is the fundamental economic sector that transforms other resources into constructed physical structure; it involves planning, designing, procurement, construction process, maintenance and repair. The industry comprises of many organization and stakeholders like Quantity surveyor, Architects etc. the government is involved as a client. Poor performance of the construction industry in Tanzania has detrimental effects to the development of construction industry; in Tanzania there is construction policy, which aims at providing support to local contractors. Construction industry is of great importance to the economic growth (Hillebrandt,1992), of any country due to several interacting factors like the scale of construction industry, in Tanzania construction industry includes

real estate, transport, infrastructure and other civil works like water supply. In Tanzania construction sector contribute to 12.5% of GDP in 2014 with USD 6 Billion, while in 2008 accounts to 8.8% to GDP.

Additionally, the growth rate of the Tanzanian construction sector is 17.6% in 2015 according to Tanzania national bureau of statistics (NBS). Tanzania real estate, Tanzania water supply and Tanzania transport infrastructure contribute 3.7%, 0.5% and to GDP respectively. The construction industries play vital roles in Tanzanian economy growth. Another important factor is employment; the industry employs about 1.5 Million people where others are employed indirectly with materials and component, therefore the industries accounts about 4.5% of the employed labor force. Also, the government is the major employer of the construction industries, it attempts to suggest that it uses the industries as an economic regulator, the industry if damaged with the stop-go nature of the activities, and the government effectively turn the tap on or off in order to regulate economic performance. A construction industry produces goods, which are investment in nature

### 1.1. Problem Statement

The performance and time schedule for MURBs can be affected by several factors; time, cost and quality. Given the fact that in MURBs construction projects, units are sold before construction work on site begin or during execution of work on site Elzinga,(2008); the project performer has to make sure that, they have ability to deliver the project on time and within the budget in order to ensure the project performance, and maintain conflicts avoidance. In some developing countries, it is very difficult to achieve performance in terms of time and cost where by many projects end up being affected by time and cost overrun. Additionally, selling residential units before their construction work is finished may lead to conflicts due to different accounting, financial difficulties, hence causing delays that can cost the client directly, as well as becoming disadvantageous to the customer due to the product being delivered late. Moreover, late delivery intervenes with users' plans, e.g. paying unplanned rent, and it is a breach of contract which may result one party being sued by the default party. At this point, the performer can never consider quality issues, as they are out of time, their priority is on finishing the work, hence failing in achieving the performance objective in terms of time and cost.

Hence; this study focuses on exploring factors that affect performance and time schedule for multi-unit residential building constructions, through documenting factors that drive positively the performance and time schedules for multi-unit residential building construction; analyzing factors that drives to negative performance and time schedules for multi-unit residential building construction; and commenting on mitigation measures to be taken so as to improve performance and time schedule in Dar-Es-Salaam, Tanzania. According to Zainun,(2015); time management is very important in construction projects in order to avoid problems like extension of time. In order to achieve performance and time schedule in multi-unit residential building construction; it is very important to prepare a time schedule in the very preliminary stage of construction works. This ensures smooth mobilization of works. The study will provide knowledge on factors that affects performance and time schedules for multi-unit residential building construction, which will help stakeholders to understand the correlation between performance and time schedules, hence; helping them on properly scheduling to diminish the problem on time and cost overrun, which eventually results low quality building.

### LITERATURE REVIEW

The Literature review, as defined by Kombo & Tromp,(2006) and Kumar,(2011) principles, basically dwells on findings from past research works, books, journals, and seminar papers; and it provides a review of existing studies related to factors that affect performance and time schedule for multi-unit residential building constructions, detailing; introductory definition of Performance;

Experiences from Developed Countries like Australia, United Kingdom(UK), Experiences from Developing Countries like Ghana, China.

### 2.1. Performance

Akomah & Jackson,(2016) define performance as the display of skills and knowledge in achieving and fulfilling organizational objects and clients' requirements. In MURBs construction performance is vital to ensure that project is delivered on time, and as far as this title of factors affecting performance and time schedule for MURBs construction is concerned, the performance is considered to involve quality, cost, time and people. People mean all stakeholders in construction of MURBs. In other words, there is no performance without the performer. The major aim of this performer is to make sure that the project achieves performance in terms of time, cost, and quality there by making follow up to the time schedule for the work prepared by the contractor. By so doing will place the firm in good position.

Moreover, Goffman,(1956) in Akomah & Jackson,(2016) defines performance as all the activities of a given participant on a given occasion, which serves to influence in any way any of the other participants. Besides, Akomah & Jackson,(2016) insists that; performance is not a one-man show, but the collective efforts of all within an organization (that is, the effort of management, skilled and unskilled workforce). Hence, they conclude that; it is the display of skill and knowledge in achieving and fulfilling organizational objectives and clients' requirements. Identifying and eliminating the factors that cause poor project outcomes can assure performance. Thus, project managers need a better understanding of critical success/failure factors and how to measure them (Babu,2015).

Also, Babu,(2015) asserts that; performance can be assured by eliminating factors that cause poor performance and encouraging factors that influence MURBs performance, these factors that affect performance are like technical tasks, project schedule, client consultation, troubleshooting, competence of project manager, top management support, and project mission. All these factors if well managed results in a better product outcome, therefore project manager has to be competent enough to organize his working team, and through motivation to make them ready to work day or night so as to achieve project performance of MURBs otherwise weak project manager will result to poor performance of MURBs.

However, MURBs project performance requires creating a well-planned project schedule, the project schedule is the tool that communicates information about works needed to be performed, which materials and labor of the organization will be used to perform the task and reasonable time in which the task needs to be performed, the schedule should reflect all works content concerning delivering projects on time. Project scheduling is very important in order to have smooth mobilization of works on site, to make it easy for a project manager to supervise monthly and weekly schedule should be developed from the master schedule, this will help much to recognize any delay earlier and set out the solution as fast as possible. Therefore, the time schedule is the collection of techniques used to present and develop schedules, which shows when works will be performed

### 2.2. Project Performance

Project performance is measured by quality, quantity, time and cost. Additionally, multi-unit residential buildings refers to singular building with several dwellings within it such as apartment, a mixed usage building such as residential flats above a commercial warehouse or two or more dwelling that are connected by part walls. The majority of a multi-unit building are owned through cross lease title but can be held in a number of different ownership arrangement. Can be owned by cooperate or single owner.

### 2.3. Multiunit Residential Buildings (MURBs)

The multi-unit residential buildings are homes that are turned into two or more units. They can be rowed house style or multiple floors

with different sizes; they are mostly for commercial purpose. MURBs allows a high density of dwelling for single people. Multi-unit residential projects have stand-alone parking structure and other amenities including fitness centers (Walker,1995).

Also, MURBs have significant environmental impact, annually accounting for 40% of primary energy use in the United States and 40% of the U.S. greenhouse gas emission linked to global climate change. Each year, new MURBs construction projects in this country account for 30% of the raw materials and 25% of the water used, and for 30% of the materials placed in landfills (NRC,2009).

### 2.4. Experiences from Developed Countries

Developed countries or industrialized countries consist of national whose average income per capita is generally higher as well as the level of education and standard infrastructure. In this study Australia and United Kingdom were selected as a case study to explore relevant literature on MURBs.

#### 2.4.1. Case Study #01: Australia

Australia is the most urbanized country in the world, opting for higher density living with apartment and townhouse about 1/3 of all new houses constructed. In five years to come growth of new MURBs is expected to increase specifically in areas of northern new south wales, Queensland, Western Australia and central Victoria due to scarcity of home in these areas; the increase growth of MURBs in Australia is motivated by the growing trend of most Australian to seek density living instead of tradition single unit house. There are numerous types and construction styles of MURBs like high rise apartment with unit stacked horizontally and vertically to low-rise villa style, each type has its own unique features, challenges and opportunity however they all involve the number of individual property owners (FMA, 2012).

Additionally, these individual property owners' shares decision making regarding management, maintenance and operation of the common property, the following are the distinguishing characteristics of MURBs from the other type of building like commercial and office facilities

- It is someone's home (every hour in a day)
- Different types of emotions are involved, and
- Different priorities

In Australia MURBs consumes more energy than other type of housing this is due to the fact that most MURBs were not designed to consume low carbon dioxide economy. Also improving energy efficiency and management is one of the key auctions in order to reduce electricity and greenhouse gas emission (FMA,2012).

**Strata (Cooperative) Legislation:—** the strata title system is convenient to several dissimilar property development types (e.g. townhouses, commercial offices, factories, retail shops and warehouses) as it offers a framework for the unique ownership and cooperative administration of a building. It has become an increasingly popular method of land development and ownership in Australia. Owner's corporations or bodies corporate are shaped to manage and maintain the common or shared property produced when properties are strata-titled or subdivided. All lot owners automatically become a member of the Owners Corporation or body corporate and it's better for them to know their responsibility under the law. There is currently no national monitoring government body to guide the development of strata legislation, and as a result strata legislation is complex, with terminology and specific requirements vary across jurisdictions.

#### The Multi-Unit Residential Stakeholders in Australia

**The Property Developer:—** Generally, the developer is the initial owner of the property, however most MURBs developers do not uphold ownership of the property throughout its operational life. The asset is passed to a Strata Scheme (or a sole building owner if the property is not Strata titled). As lots sell each new purchaser

becomes a member of an Owners Corporation (OC) with the developer's ownership gradually reducing until all lots are sold. During the transition of ownership, liability for building workmanship may be passed to the developer's contractors and/or transferred to the OC under contract, and the Strata Scheme may carry additional risk associated with the management of defects and liabilities. Developer the owner may negotiate.

**The Owners Corporation or Body Corporate (OC):**— All lots/unit owners in strata schemes automatically become members of the OC and in doing so; take on responsibility for all decision-making affecting the OC. An Owners Corporation is a legal entity. Eventually, the collective decision making of the OC forms the overall direction of the facilities management and safeguarding, and the decisions made can vary considerably between OCs. An OC has a right to delegation of powers and functions to its committee, by giving them the power to make a majority of the decisions on behalf of the OC.

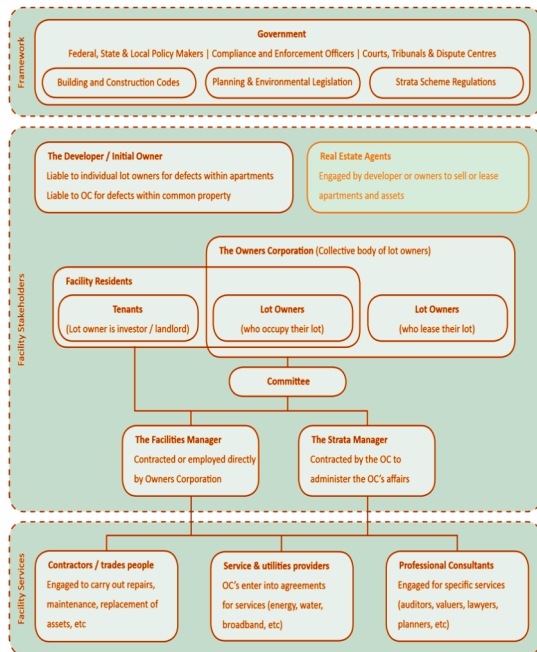


Fig #2.01: Relationship among stakeholders in MURBs project.

Source: Facilities Management Associations (FMA), (2012).

**The Committee:**— is made up of members of an OC elected at an annual general meeting. They have the authority to act on behalf of the other owners in the safeguarding and management of common areas and shared services through a collective decision-making process. They may also distribute responsibility for running administrative and financial aspects of the property.

**The Strata Manager:**— In smaller facilities, the strata manager they work as facilities manager. Strata Manager works under direction of the OC committee to manage and administer the property. Also create a safe and suitable environment for the residents. Includes Accounting, budgeting and financial reporting, invoicing and collecting levies and service charges, contract management, communication with property stakeholders, enforcement of rules, insurance of notices, order and certificates, meeting preparation and general secretarial tasks.

**The Facilities (Building) Manager:**— organizes, controls and coordinates the strategic and operational management of buildings and facilities in order to ensure the proper and efficient operation of all physical aspects, creating and sustaining safe and productive environments for residents. It is important to note there is currently no minimum industry standards required in order to provide FM services in Australia. OCs must be watchful ensuring

those they engage to provide an external facilities management service have the skills, knowledge, attributes and experience.

**The Resident Manager:**— can be a company or individual, and typically conducts services for an agreed period, living, owning and working from within a lot in the complex, with their fee paid from owner levies. In some cases, the property developer sells Resident Manager's rights in advance.

**The Residents:**— are those individuals who live within a given multi-unit residential building and constitute its local community.

**Service Providers:**— there are various specialist service providers who may be engaged by the OC or facilities Manager to support any Maintenance or major project (including long term maintenance contracts). Such providers may include auditors, architect, asbestos surveyor, building traders (plumbing, electrical etc.), energy and environmental consultants, interior designers, insurers, lawyers, planners, quantity surveyors and valuers. As with any arrangement, the decision ultimately rests with the OC and it is important to insure those being employed are adequately trained and competent to provide the necessary services, (FMA,2012)

According to Walker & Vine,(1997) a little is known about the construction time performance, the study of CTP and MURBs conducted by the construction industry institute of Australia (CIIA) whereby the following factors were found to affect CTP.

- Relationship between builders and sub-contractors
- Degree of experience and expertise, and the size of the project.
- The builders' current workload and resource availability
- Procurement methods

The research data was extracted from a survey of 30 completed MURBs projects, the project aimed for investigation was carried out during 1991 to 1996, and represent 22% of MURBs. The respondent from this study were drawn from senior management team representative as they were considered to be the most qualified person to judge the impact of auction and altitude. The subjective and objective data were analyzed to establish factors that affect CTP.

- Lack of the construction team knowledge about the building system and knowledge of building regulation.
- They were forced to go tradition procurement contract to accept the client view of reasonable construction time.
- Lack of construction team advice.

**2.4.2 Case Study #02: United Kingdom (U.K.)**

In the United Kingdom (U.K.) during the early 1995, tall building existed in the United Kingdom (U.K.) and were mainly for office building only, time came were high residential building was regarded as its over this was due to the factors that they were seemed appropriate for office building only and they were no more used as a residential building. Yet there are clear signs for the revival of these types of MURBs in United Kingdom (U.K.). The output of new tall residential building has increased again and former office building as well as failed housing tower blocks has been converted to successful residential building.

Tall building are more significant to the countries since promote economies of scale in construction and procurement, efficient land use (more space at ground level at similar density), and potential for CHP technology, due to this advantage of high rise building, in London plan the official policy was provided, the policy reads as the mayor will promote the development of tall building were they create attractive landmarks enhancing London's characters, help to provide the coherent location for economic clusters or act as the catalyst for generation and were they are also acceptable in terms of design and impact on their surroundings should not impose unsubstantiated borough-wide height restrictions, (Kunze,2005).

Engineers in the United Kingdom(U.K.) were shocked concerning the United Kingdom(U.K.) growth been affected by the poor construction performance. This poor performance reduces UK economy by 0.5% during 2011 as well as it also interfere with profitability of organization particularly as profit margin goes low at an average of 2.5% as well as the profit of the industry in general was subjected to fluctuations; this is due to the fact that the United Kingdom(U.K.) construction industry faces several problems concerning construction industry some of these problems are like competitive tendering procedures, over specification, late payment, cost overrun, late completion, changes of the design during construction, time constraint, absenteeism of labor (Proverbs, Holt & Cheok,2000).

Moreover, excessive over time, low plant utilization, inexperienced management and supervision, and poor quality/workmanship is also problems facing the industry. However about 69 clients in UK are blaming the contractor to be the main cause of poor performance in any way of the above-mentioned points. Clients are as well affected and dissatisfied with the level of services provided and with the quality of the end product. Due to this fact and by knowing that little is known about factors that affect performance and time schedule, a deep study will be conducted in order to confirm whether the mentioned above points contribute to failure of MURBs project to be finished on time (Proverbs, Holt & Cheok, 2000).

However, the above challenges which causes cost and time overrun in United Kingdom (U.K.) construction industry, Olawale, MCIOB & Ming,(2010) make a survey study to fill the gap and he managed to identify several mitigation measures for the inhibiting factors like design change, inaccurate evaluation of project time, complexity and non-performance of subcontractors. Some of the mitigation measures that can be used to overcome the problems of cost and time overrun are divided into four groups i.e. preventive measures, which are like to ensure that project, are designed at a great detail at the outset and to identify the projects risk before the projects starts. Also, there is predictive measure like using a 3D modeling to test how the plan will look like, there is corrective measures aiming at bringing the situation back and lastly is organizational measures.

**2.5.Experiences from Developing Countries**

A developing country is a nation with lower standard of living, underdeveloped industrial base and lower GDP per capita. There are two developing countries selected as case study in this research study. China due to its good international relation with Tanzanian government i.e. economically and socially and Ghana is also selected. Therefore, from these two countries will explore knowledge concerning MURBs.

**2.5.1. Case Study #01: Ghana**

Expert In construction industry makes some effort to cope with the increasing population; MURBs may as well become a new normal type of building e.g. tall building. To be carried a tall building should be 75 feet or more by height. Some years ago, there were very few residential buildings. As these cities grow, the need for high-rise building increases as well, up to now there are more than 30 floors with some going up to 100 floors. They are advantageous as they save for power, prestige, wealth and success. The arrival of new construction technology and growing population stimulate the need of MURBs e.g. high-rise apartment (Asiedeu, 2012).

In addition, these apartments decorate the urban landscape and costs an average of us 100,000 for one or two bedrooms. Most of these apartments are sold even before they reach completion. High-density living becomes more prominent in Ghana in 10 years back. However, MURBs are becoming more popular day to day, due to the development of construction technology, in the past the functional use of the MURBs e.g. tall building was limited to a commercial office building, but nowadays can be used as residential, mixed use and hotel tower Hollister & Wood (2012). A

tall building requires a different system for fire alarm as well as electrical system; if the contractor does not plan the wiring of each system properly no amount of programing will rectify that mistake.

Moreover, apartments are the most representative residential type in the city areas, since the late 1990s apartment has been developed in full scale. The studies regarding energy consumption in high-rise apartment buildings are most biased to the total amount of energy consumed; on the other hand, reported that there is no difference between the energy consumption of different types of MURBs, two models were established that is general apartment model and high rise mixed use residential building model. In Ghana about 96.9% residents of MURBs were satisfied by using high rise building unlike 3.1% residents who are not satisfied of these high-rise buildings, this higher percentage of satisfaction of Ghanaian shows that most Ghanaian population like this type of building.

However, in any construction project achieving quality is the ultimate objectives of all stakeholders, it's as well the clients/consultant, contractor and financier totality feature or characteristics of production process that reflect capacity and ability to satisfy the stated needs. In developing country like Ghana poor productivity is the major concern, PQP of construction industry is as well facilitated by poor managerial skills, lack of technical and professional staff and poor skilled and unskilled labor Amoah (2011). Quality performance is the management tools, which aim at giving necessary information to identify quality improvement opportunity; the PMI explains that quality performance is the circulation of achievements.

Literally, PQP has greater impact in construction industry like reducing employment rate, influencing the completion time of the projects, examples of factors which affects cost and quality of construction are lack of management commitment to continual quality improvement, lack of management leadership, poor planning and control techniques, high number of competitors, poor financial control on site, resource wastage on site, high level of competition, lack of onsite project manager/ clerk of works, inadequate project team capability, poor information and communication channels, fraudulent practices and kickbacks, lack of coordination between designer and contractor. In addition, once you improve quality performance you as well increase clients' satisfactions, also makes an improvement in the reputation by the contractor and competitiveness in the market.

**2.5.1. Case Study #02: China**

China is among the developing country with a bit larger population, although the country's economy grows faster, it's regarded as developing country due to high population. This high population stimulates the construction of MURBs like apartments, hotel and residential units. MURBs can be constructed using different materials let say wood, steel, concrete etc. depending on the nature of the environment and the clients' requirements. The university of Beijing (BJUT) to develop the life cycle inventory of applicable building materials conducted the study, the aim of this study was to comprehensive analyses the environmental burden and impacts of three types of MURBs one to be built in CFC, second in SFC and a third one to be at WFC their life cycle and material embedded in each phase.

Additionally; all the above effort is done in order to know which material has a great effect to the environment and how can we reduce environmental burden. The building materials used in three buildings were classified as steel, concrete and glass. The wider applied life cycle assessment tools; multiuser was used to build up different models. Such as embedded materials, building, constructing and building use to three types building. Finally, based on the results of the LCA for three types of building and the Chinese characterization factors of mineral depletion and heavy metal in water the Eco indicator 99 completely complied with ISO 14404.the total energy consumption is the biggest for SFS followed by CFC and smallest with WCF. However, for the

developing country LCA can help to establish benchmark of evaluating eco production and improving eco consumption, in china LCA and related application have become hot spot in academic sides since 1990's where the great deal of work was started under the support of the government.

**METHODOLOGY**

The methodology and research design used in this study adopted a descriptive design and case study survey, in which apart from literature review; instruments like questionnaire and interview were used by approaching various MURBs stakeholders. The unit of analysis, based on the MURB stakeholders and projects in Dar-Es-Salaam, Tanzania. The case study was employed because it can bring an understanding of a complex issue or object, and extend experience or add strength to what is already known through previous research, and it emphasize detailed contextual analysis of a limited number of events or conditions and their relationships. Also, the study used both qualitative and quantitative approach, which made it easier in determining the intended objectives, samples and design of the study, as well as ranking the factors affecting performance and time schedule for multi-unit residential building constructions projects.

**3.1. Data Collection Methods**

Generally, both primary and secondary data collection, were done using multiple sources of evidence. Questionnaire survey was used to collect primary data from government institution dealing with construction of MURBs like NSSF, NHC, TBA, PPF, WHC, etc. in which the respondents answered the questions on their own, (Trueman,2015). Some of the questions were close ended and others were open ended to the respondent to attest their own opinion, and give more information. Furthermore, secondary data concerning the influencing factors affecting performance and time schedule for multi-unit residential building constructions projects was collected from literature review via published and unpublished books, journals, articles and papers. All respondents had different years of experience in the construction industry.

**3.2. Questionnaire Design**

In this study, the questionnaires were prepared in accordance with research objectives. The questionnaire was divided into three parts which covered for both MURBs like Architects, Quantity Surveyors, Engineers, Building Contractors, etc. Clients like NSSF, NHC, TBA, PPF, WHC, etc. Consultants, and Building Contractors; first part requested on general information about respondent, second and third part, covered the factors influencing timed completion of multi unit residential building construction projects; causes for multi-unit residential building construction project delay; factors influencing multi-unit residential building construction quality performance, and cost performance; as well as mitigation measures taken ensuring multi-unit residential building construction projects performance. Through a quantitative approach, data used were acquired with a questionnaire survey, in which the closed ended questionnaire was compiled based on the refined list above, after a pilot study. Closed-ended questions were used as they are very convenient for collecting factual data and are simpler to analyze because the range of potential answers is limited, Alinaitwe & Ayesiga,(2013). However, open ended questions were also incorporated to get further opinions from respondents. The pilot study was carried out to mark better the quality of the questionnaire and improve reliability of the questions.

Through using 4 and 5-point likert scale, and by using Kothari,(2004), writings in scaling; the respondents (clients, engineers, quantity surveyors, building contractors, and architects ) were asked to respond to each of the statements in terms of several degrees. The ratings used were depending on the data needed, whereby; Strongly Agree(SA)=5, Agree(A)=4, Average(AV)=3, Disagree(D)=2, Strongly Disagree (SD)=1 were used on documenting on the factors influencing timed completion of multi-unit residential building construction projects; analyzing factors influencing multi-unit residential building construction quality and cost performance negatively; as well as commenting on mitigation measures taken ensuring multi-unit residential

building construction projects performance. This type of scale has been found to be acceptable in other construction management research.

**3.3. Data Collection**

Multiple sources of evidence were used to collect data. Literature was reviewed to document on the factors influencing timed completion of multi-unit residential building construction projects; factors influencing multi-unit residential building construction quality and cost performance negatively; as well as mitigation measures taken ensuring multi-unit residential building construction projects performance. Questionnaires survey was used to collect primary data from MURBs stakeholders (clients like NSSF, NHC, TBA, PPF, WHC etc., engineers, quantity surveyors, building contractors, and architects). The questions were on seeking the factors that drives positively and negatively the performance and time schedules for multi-unit residential building construction; how these factors hinder performance and time schedule for multi-unit residential building construction; and mitigation measures that can be taken to improve performance and time schedule for multi-unit residential building construction. Out of 50 distributed questionnaires, 46 questionnaires were filled and returned. And they were found to be valid, complete, and used for further analysis

**Table #3.01;** Distribution and Attained Questionnaire Responses

SN	Respondents	Percentage Contribution (%)	Question Distributed	Questionnaire Returned	Percentage of Success (%)
01.	Quantity Surveyors	42	20	20	100
02.	Architects	29	15	13	87
03.	Engineers	29	15	13	87
	TOTAL	100	50	46	92

**Source:** Author,(2018).

Moreover, the study adopted purposive sampling technique, in order to obtain reliable and valid information as per the study objectives, in relation to (Creswell,2004) writings, when collecting data from MURBs stakeholders (clients like NSSF, NHC, TBA, PPF, WHC etc., engineers, quantity surveyors, building contractors, and architects) who were the unit of analysis. The study used a total number of 80 samples size, with contribution of 10 from NSSF, 29 from NHC, 21 from TBA, 11 from PPF, 10 from WHC, hence making a total number of the study population N = 50, as seen below:-

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

Where:- n = Total Number of Sample Size

N = Total Number of Study Population

e = Level of Accuracy = 8.5%

$$N = \frac{80}{1 + 80 (0.085)^2} = 50.69708492$$

**Total Number of Study Population, (N)= 50.**

NSSF:	10	X	50	=	06	
	80					
NHC:	29	X	50	=	18	
	80					
TBA:	21	X	50	=	13	
	80					
PPF:	11	X	50	=	07	
	80					
WHC:	10	X	50	=	06	
	80					
				N	=	50

**3.4. Experience and Demographic Characteristics of the Respondent**

The respondents involve in the survey have all been exposed to various types of MURBs construction projects, and their demography is as summarized in Table#3.02

**Table #3.02;** Respondents Demographic Characteristics

SN.	Gender	Frequency	Percentages (%)
01.	Female	13	28.3
02.	Male	33	71.7
	TOTAL	46	100

Source: Author,(2018).

The questionnaire was set to ask about age, experience of the respondent in their professional field, and whether they're registered or not in order to have a fair analysis on the data collected. All respondents had different years of experience in the construction industry as seen in Table #3.03, which indicates that most of respondents are familiar with management of building projects, within a group.

**Table #3.03;** Respondents Experience

	Experie nce in Years	Quantity Surveyors (Qs.)	Archit ects	Engineers	TNR	Percentage of Contribution (%)
01.	01-10	8	2	2	12	26.1
02.	11-20	5	6	4	15	32.6
03.	21-30	1	1	2	4	8.7
04.	31-40	5	2	4	11	23.9
05.	41-50	1	2	1	4	8.7

Source: Author,(2018)

**RESULTS, ANALYSIS, AND DISCUSSION**

Main parameters used for investigation in this study included; factors influencing timed completion of multi-unit residential building construction projects negatively and positively; and factors influencing multi-unit residential building construction quality and cost performance negatively and positively. These paved the way to provide probable recommendations on the mitigation measures that can be taken to ensure multi-unit residential building construction projects performance. Data collected, analyzed and presented using Microsoft word Tables, in order to get more accurate computation that mapped out a pattern or relationship between measured or comparable variables. The study adopted descriptive statistical method which were broken down into measures of central tendency, e.g. cumulative mean score, frequency of occurrence to analyze the data based on the research questions depending on how the respondents responded to the questionnaires.

$$\text{Cumulative Mean Score} = \frac{\sum(FX S)}{N}$$

Where;-S=Number of respondent on the particular rank,  
F=Frequency of response for each score  
N=Total Number of Respondents for each factor

Mean comparison table was used to rank the results by taking into account the average scores and the mean average.

**Table #4.01:** Mean Comparison Table

SN.	Mean	Ranking	Colour
01.	4.1 - 5.0	High	Green
02.	3.0 - 4.0	Medium	Yellow
03.	Below 3	Low	Red

Source: Author,(2018).

Moreover, research study divided these factors into three groups, i.e. time related factors; quality related factors; and cost related

factors. Among all these factors only the factors with average mean of 3.50 and above were discussed. The primary aim of this study was to analyze the factors that affect performance and time schedule for MURBs construction positively and negatively, whereby to achieve the study aim a structured questionnaire-based survey was adopted as a means of data collections

**4.1. Factors Influencing the Performance of MURBs Construction Projects, Positively.**

**Table #4.02;** Time related factors with positive influence on the performance and time schedule for MURBs construction projects.

SN.	Time Related Factors with Positive Influence	F	%	F	%	F	%	F	%	F	%	TNR	Mean	Rank
01.	Competent project manager	26	57	16	35	4	9	0	0	0	0	46	4.48	1.5
02.	Good supervision	26	57	17	37	2	4	1	2	0	0	46	4.48	1.5
03.	Resource management	20	43	15	33	8	17	3	7	0	0	46	4.13	5
04.	Compliance with statutory obligation	7	15	13	28	12	26	5	11	9	20	46	3.08	13
05.	Efficient communication	18	39	18	39	2	4	8	17	0	0	46	4.00	7
06.	Workers motivation	21	46	14	30	9	20	2	4	0	0	46	4.17	4
07.	Available source of finance	20	43	19	41	5	11	2	4	0	0	46	4.24	3
08.	Availability of resource	19	41	18	39	4	9	4	9	1	2	46	4.09	6
09.	Plant utilization	9	20	10	22	20	43	2	4	5	11	46	3.35	11
10.	Timely release of fund	10	22	25	54	6	13	1	2	4	9	46	3.78	8
11.	Involving managerial level in decision making	9	20	15	33	17	37	1	2	4	9	46	3.52	10
12.	Good workmanship	20	43	19	41	6	13	1	2	0	0	46	4.26	2
13.	Sequence of works according to schedule	10	22	20	43	10	22	6	13	0	0	46	3.74	9
14.	Reasonable contract duration	7	15	14	30	14	30	7	15	4	9	46	3.29	12

Source: Author,(2018)

The results from Table #4.02 indicates the highly influential factors with mean score between 4.1 and 5.0; which includes good supervision, resource management, competent project manager, good workmanship, available source of finance, availability of resource, and worker motivation. Factors with mean score between 3.1 and 4.0 were considered moderate factors, and they include efficient communications, timely release of fund, compliance with statutory obligation, plant utilization, involving a managerial level in decision-making, sequence of work according to schedule and reasonable contract duration.

**Competence of Project Manager:**— has a mean score of 4.48, making it the most influential factor for the timed completion of works. Its variables includes technical and administrative skills, with the characteristics of project manager being their commitment, competence, experience and authority. Chua et al,(1999) writing, reports that; competent project manager makes use of available technology in preparing schedules, transfer of

information among team members and easy mobilization of on-site resources to smoothen the execution process, hence greatly influencing time performance.

**Good Supervision:**— is another influencing factor with a mean score of 4.48. Basically, the project manager is involved in order to organize and supervise the works. Cheung et al,(2004) reports that; good supervision is essential in making the project stakeholders to work as a team, hence the manager has to be creative enough to induce a team work spirit, play with laborers mind or the knowledge in order to make them willing to perform work at the highest quality, without treating them harshly, which accelerate the speed of work on the site, leading to on time delivery of MURBs project.

**Good Workmanship:**— the results revealed that; quality workmanship will minimize time wasted for reworks as a result work executed according to the schedule to minimize time overrun. Memon, Abdul-Rahman, Abdul-Azis,(2012) is defined time overrun as the late completion of works as compared to the planned schedule or contract schedule, that occurs when the progress of a contract falls behind its scheduled program. It may be caused by any party to the contract and may be a direct result of one or more circumstances. This results was also confirmed by the mean score of 4.26.

**Available Source of Finance:**— it revealed its influence on timed completion of MURBs, by having a mean score of 4.22. Basically, for the project to be completed on time there must be enough source of fund e.g. loans from banks. The contractor has to select good banking institution with minimum qualification and procedure on loans securing.

**Workers Motivation:**— ranked the fourth with a mean score of 4.17, confirmed Iyer & Jha, (2005) writings that; motivation for workers induces willingness to perform the work, even if extra time will be needed, workers will be ready to work harder to finish the task, as they know after a tough moment there will be a good time. Good project managers will soften supervision through motivating workers, also this factors have been used much and found helpful in time management issues.

**Resource Management:**— the resource can be laborers or materials required in a given project, management of resource is vital in order to avoid projects time overrun in any construction sites, hence its mean score of 4.13. Resource management is achieved through the purchase of required materials for the work at a right time. Also, it involves hiring of reasonable number of unskilled laborers and skilled laborers, this number could be easily managed and supervised to ensure efficient utilization for the works.

**Availability of Resources:**— with a mean score of 4.09, the findings reveal that; laborers and materials are very important in order to ensure the smooth execution of on-site works, missing one content either material or laborers has a significant effect to the construction process, and may result to time overrun, therefore with available resources actors in MURBs construction projects will be able to speed up rate of execution of works to ensure timed completion of works. Saraf,(2013), insists that; unavailability of resources is one of critical factors affecting the project performance.

**Efficient Communication:**— ranked seventh with a mean score of 4.00, the study revealed that; it can be achieved through provision of appropriate network and necessary data to all key actors in the project during its implementation. Communication in MURBs is among client, consultant and contractor, this can be well done through consultation and active listening to all impacted parties. However, Babu, (2012) supports that; in order to deliver the project on time there should be an easy flow of information among the construction team members. This is also confirmed by Nghiem et al,(2015) writings.

**Timely Release of Fund:**— has mean score of 3.7.8, in which findings revealed that; this influencing factor, ensure time performance because on-time fund release means on-time certificate payment, which assist the contractor to finance the MURBs project. Timely release of funds, highly determines the completion date of the project, because availability of fund ensures smooth on-site construction work progress.

**Sequence of Work According to Schedule:**— is another influencing factor with mean score 3.74, in which the contractor is required to develop monthly schedule, from the master schedule, and eventually weekly schedule, which usually assists in evaluating the project time performance by comparing with the base schedule. Furthermore, it is helpful in monitoring, controlling, updating schedule and recognizing delay. But again, it helps in recognizing delay toward the end of the week, which may help the building contractor in sorting out construction queries as early as possible, unlike relaying in monthly schedule in which contractor can recognize toward the end of the month.

**Involving Managerial Level in Decision-Making:**— with a mean score 3.52, results revealed that; this influencing factor facilitate on time completion of work, thereby involving contract parties in case of any query they may opt for negotiation or mediation, hence making sure that they do not interfere with the construction work time schedule, thus causing unnecessary delay.

**Table #4.03;** Quality related factors with positive influence on the performance and time schedule for MURBs construction projects

SN.	Quality Related Factors with Positive Influence	F	%	F	%	F	%	F	%	F	%	TNR	Mean	Rank
01.	Conformance to specification	20	43	20	43	4	9	2	4	0	0	46	4.26	1
02.	Availability of personnel with high experience and skills	15	33	23	50	6	13	2	4	0	0	46	4.11	2
03.	Quality of equipment and raw materials in project	7	15	15	33	20	43	2	4	2	4	46	3.50	8
04.	Participation of managerial level in decision making	8	17	15	33	18	39	3	7	2	4	46	3.52	7
05.	Sequence of works according to schedule	4	9	16	35	20	43	3	7	3	7	46	3.33	10
06.	Availability of resource	10	22	18	39	12	26	5	11	1	2	46	3.67	6
07.	Quality assessment system in the organization	14	30	17	37	14	30	1	2	0	0	46	3.96	5
08.	Quality training and meeting	5	11	15	33	21	46	2	4	3	7	46	3.37	9
09.	Number of new project in a year	3	7	5	11	14	30	17	37	7	15	46	2.56	12
10.	Timely release of fund	16	35	21	46	6	13	2	4	1	2	46	4.07	3.5
11.	Project complexity	4	9	9	20	11	24	12	26	10	22	46	2.67	11
12.	Workers motivation	15	33	20	43	10	22	1	2	0	0	46	4.07	3.5



13.	Improved communication channels	16	35	21	46	6	13	1	2	2	4	46	4.04	4
-----	---------------------------------	----	----	----	----	---	----	---	---	---	---	----	------	---

Source: Author,(2018)

The results from Table #4.03 indicates the highly influential factors with mean score between 4.1 and 5.0; which include conformance to specification, motivation of workers, availability of personnel with high experience and skills, and timely release of fund. Factors with the mean score between 3.1 up to 4.0 were considered moderate factors they include improved communication channels, quality assessment system in the organization, availability of resource, participation of managerial level decision making, quality equipment's and raw materials in projects, sequence of work according to schedule, and quality training and meeting. However, project complexity and number of new projects in a year was considered low, hence did not influence good performance.

**Conformance to Specification:**— findings revealed that; the contractor, subcontractor and nominated supplier are required to perform their duties carefully, and willingly as per specification provided in the contract document, otherwise they have to consult the respective person so as to ensure that quality is achieved. This is revealed in its mean score of 4.26, ranked at number one.

**Availability of Personnel with High Experience and Skills:**— with mean score of 4.11, the findings revealed that; availability of personnel with high experience as far as quality is concerned, in order to enhance good quality project to MURBs, project managers have to select highly experienced and skilled personnel with ethics and moral. These experienced, competent and skilled stakeholders must have the ability to mobilize the work force; as well as the ability to sort out problems, which results to high quality performance.

**Workers Motivation:**— results revealed that; worker motivation determines the quality of the MURBs project by having a mean score of 4.07. Iyer & Jha,(2005) insists that; motivation for workers induces willingness to do certain activities with great care, in which workers will be ready to work harder making sure that quality performance is achieved. Good project managers always soften supervision through motivating workers, while Priyanga & Ambika,(2014); asserts that; lack of motivation may compromise quality.

**Timely Release of Fund:**— has a mean score of 4.07, in which findings revealed that; in financing the MURBs construction projects, the fund may be used to pay laborers and purchasing required building materials. When laborers are paid on time, their morally in terms of performance increases, hence carefully execution of construction work activities. Fund facilitates quality performance as they ensure resource availability when needed, Priyanga & Ambika,(2014).

**Improved Communication Channels:**— came up with the mean score 4.04, in which results showed that; it has great impacts on quality of MURBs construction projects, as it facilitate easy flow of information and instructions among team members (e.g. consultants, building contractors, clerk of work, site foremen,), when they visit the sites and during site and technical meetings. The system ensures the instructions or information given travels faster, so that improvement or change in construction methods may be made to meet the clients or building codes requirements, satisfactions and quality performance.

**Quality Assessment System in the Organization**— findings revealed that; it is somehow achieved, through structural; architectural; mechanical & electrical (M&E); and external works. Some are subjected to laboratory test, site inspection of works and non-destructive testing to check whether they are designed to attain quality. This influential factor with mean score of 3.96, has a

significant important, because it measures the ability and strength of the structure carrying the building load.

**Availability of Resources:**— with a mean score of 3.67, findings revealed that; laborers and materials are essential during execution of works. Scarcity of resource may contribute to failure of quality performance, as a result the contractor may be forced to use equally approved materials, Priyanga & Ambika,(2014).

**Participation of Managerial Level in Decision-Making:**— has a means score of 3.52, in which findings showed that; top management support is essential in achieving the desired quality, via setting policy on how to achieve quality; resource control; and human resource training, (Iyer & Jha, 2006).

**Quality of Equipment and Raw Materials in Project:**— with a mean score of 3.50, the study found that; quality equipment's, plants or tools contributes in achieving quality, whereby the equipment like concrete mixer and poker vibrator must be effective to mix and vibrate the casted concrete well so as to avoid voids; the crane used to transport the mixed concrete has to move faster so as to pour concrete not at big intervals to ensure uniformity of the casted concrete, hence enhancing quality (Cheung et al,2004; Priyanga & Ambika,2014).

**Table #4.04:** Cost related factors with positive influence on the performance and time schedule for MURBs construction projects

SN.	Cost Related Factors with Positive Influence	F	%	F	%	F	%	F	%	F	%	TNR	Mean	Rank
01.	Competent project manager	20	43	18	39	7	15	1	2	0	0	46	4.23	3
02.	Availability of resource	22	49	18	39	6	13	0	0	0	0	46	4.35	1
03.	Use of experienced Sub-Contractors and suppliers	15	33	15	33	14	30	2	4	0	0	46	3.93	6
04.	Quality workmanship	18	39	15	33	10	22	1	2	2	4	46	4.00	4
05.	Complete and proper design at the right time	22	48	15	33	9	20	0	0	0	0	46	4.28	2
06.	Proper material procurements	14	30	18	39	5	11	7	15	2	4	46	3.76	8
07.	Allocation of sufficient time and money in design phase	18	39	13	28	12	26	1	2	2	4	46	3.96	5
08.	Plant utilization	10	22	8	17	17	37	7	15	4	9	46	3.28	10
09.	Efficient communication channels	16	35	15	33	11	24	2	4	2	4	46	3.89	7.5
10.	Proper project planning and scheduling	17	37	13	28	10	22	6	13	0	0	46	3.89	7.5
11.	Progressive site meeting	11	24	14	30	13	28	4	9	4	9	46	3.52	9

Source: Author,(2018)

The results from Table #4.04 indicates the highly influential factors with mean score between 4.1 and 5.0; which includes availability of resource, complete and proper design at the right time and competent project manager. Factors with the mean score between 3.1 and 4.0 were considered moderate factors which include proper project planning and scheduling, use of experienced sub-contractor and supplier, efficient communication channels, proper material procurement, progressive site meeting, plant utilization, allocation of sufficient time and money in design phase, and

quality workmanship.

**Resources Availability:**— scored a mean score of 4.35, in which the results revealed that; when enough resource are available i.e. labor or materials, they speeds up construction activities has no time is wasted due to lack of materials or shortage of labor. Hence this facilitate timed completion of work and eventually avoids cost overrun (Iyer & Jha, 2005).

**Complete and Proper Design at the Right Time:**— the respondents revealed that; most consultant finishes designing on time, which gives a room for other procurement process to be conducted in order to obtain eligible main contractor. Immediately after signing the contract, the contractor begins to execute the works on site, hence smoothening the activities which end up ensuring cost performance, unlike other project that begin while design is on progress. This factor has a mean score of 4.28.

**Project Manager's Competent:**— has a mean score of 4.23, in which the findings revealed that; competent project manager should have ability to maintain the project cost. Cost performance is achieved through controlling and organizing laborers both skilled and unskilled, to perform their duties on time, and with great care that can avoid poor works which may result to reworks, thus ensuring cost budgeting, Priyanga & Ambika,(2014).

**Quality Workmanship:**— with a mean score of 4.00, the study showed that; MURBs project achieves high quality workmanship due to the competent of the project manager and resource availability.

**Allocation of Sufficient Time and Money in the Design Phase:**— came up with the mean score of 3.96, in which the results showed that; allocation of sufficient time and money in designing phase, influence cost performance for MURBs construction projects. To avoid budget overrun, the design phase has to be provided with a sufficient amount of money and time, to carry out the work, which facilitates proper, completed design giving a room for another tendering process, and construction to proceed. Completed design allow fluent work execution on site, due to availability of all detailed drawing which ensures construction cost performance for MURBs construction project is attained.

**Use of Experienced Sub-Contractors and Suppliers:**— results revealed that; their selection for provision of various construction works and building materials is one of the most important aspects in ensuring successful cost performance of MURBs construction project, because experienced contractors and suppliers are familiar with the market price and quality product and they can handle the procurement of material Thomas,(2006). Again, sub-contractor in the construction industry work under pressure due to limited time and cost, as a result, they decide to be closer to supplier, experienced contractor can ensure cost budgeting (Errasti,2007). Akomah & Jackson,(2016) insists that; the performance of a contractor is very critical to the success of any building construction project. This is revealed in its mean score of 3.93.

**Proper Project Planning and Scheduling:**— with a mean score of 3.89, findings revealed that; in making sure that cost performance is achieved, different software program are used by a consultant and contractor for planning and scheduling, e.g. Microsoft project which is implemented to enable the contractor to schedule, monitor, updates and control work program, (Chan & Kumaraswamy,2002).

**Efficient Communication Channels:**— the study findings indicates that; efficient communication channels can contribute to cost achievements, through provision of appropriate network and necessary data to all key actors in the project during its implementation. Communication in MURBs may be among client, consultant or contractor; and is well done through consultation, and active listening to all impacted parties. Even Priyanga & Ambika,(2014); Babu (2015) agrees that; in order to ensure cost performance, efficient communication channels are very

important. This has a mean score of 3.89

**Progressive Site Meeting:**— results showed that; the mean score of 3.52 is indicates how site meeting aims at improving quality of work and financial matters, because having weekly meeting helps to monitor, control and updating weekly schedule. These meeting are accompanied by site inspection which gives a room for poor work to be identified early and rectified, before the contractor proceed with further stages. Again, the current position of the project is also discussed basing from the master schedule, if it happens contractor is behind the schedule, the consultant team may provide a way forward to fix the issue aiming to avoid time overrun which has been reported as major problems globally, by Omoregie & Radford,(2006) and Apolot et al,(2011) in Memon, Abdul-Rahman, Abdul-Azis,(2012), and may result to cost overruns.

**4.2. Factors Influencing the Performance of MURBs Construction Projects, Negatively.**

**Table #4.05;** Cost related factors with negative influence on the performance and time schedule for MURBs construction projects

SN.	Cost Related Factors with Negative Influence	F	%	F	%	F	%	F	%	F	%	T	N	R	Mean	Rank
01.	Design error	20	43	13	28	3	7	8	17	2	4	46	3.89	3		
02.	Change of Scope	25	54	12	26	7	15	1	2	1	2	46	4.28	2		
03.	Inappropriate and inadequate procurements	3	7	5	11	13	28	17	38	8	17	46	2.52	12		
04.	Complexity nature of the project	18	39	12	26	8	17	4	9	4	9	46	3.78	4		
05.	Insufficient funding	15	33	13	28	7	15	6	13	5	10	46	3.58	5		
06.	Wrong choice of banker	0	0	4	9	11	24	17	38	14	30	46	2.11	15		
07.	Improper equipment selection and faulty equipment.	5	10	5	10	14	30	14	30	8	17	46	2.67	11		
08.	Material shortage	2	4	5	10	7	15	19	41	13	28	46	2.39	13		
09.	Absenteeism of labor	0	0	7	15	15	33	10	22	14	30	46	2.21	14		
10.	Poor management and supervision	11	24	12	26	10	22	7	15	6	13	46	3.33	6		
11.	Poor workmanship	7	15	11	24	13	28	8	17	7	15	46	3.06	8		
12.	Low plant utilization	7	15	6	13	11	24	14	30	8	17	46	2.78	10		
13.	Over specification	5	11	10	22	15	33	13	28	3	7	46	3.03	9		
14.	Under estimation	9	20	13	28	11	24	9	20	4	9	46	3.30	7		
15.	Late payments	27	57	16	35	3	7	0	0	0	0	46	4.52	1		

Source: Author,(2018)

The results from Table #4.07 indicates the highly influential factors with mean score between 4.1 and 5.0 which includes; late payments and change of scope. Factors with the mean score between 3.1 up to 4.0 were considered moderate factors they include design error, complex nature of the projects, insufficient fund, poor management and supervision, under estimation, poor workmanship and over specification.

**Late Payments:**— has a mean score of 4.52 in which the study found that; most MURBs construction project delay due to late payment of certificates, which slows on-site project work

execution, leading the contractor into financial difficulties hence hindering construction progress. Mansfield (1994), also reports on the same in Nigeria that; its construction industry faces the same challenge on time overrun and financial arrangement for payments which results to delay of various types of project. Even studies by Wiguna, & Scott,(2005); Babalola et al,(2015); Adams,(2008) in Akomah & Jackson,(2016) reports on how delay in regular payment of certificate is a major issue affecting contractors' performance.

**Change of Scope:**— finding revealed that; most of the time, it is caused by client's interference and change in instruction via additional works, or slightly design change, or re-measurement during MURBs construction, hence influencing time overrun. Studies by Assaf & Al-Hejji, (2006); Babalola et al,(2015) underlines how this challenge is a global phenomenon with examples from Indonesia and Saudi Arabia. In order to avoid the time overrun, the construction industries in the respective countries decided that; before agreeing to alter the scope, the contract parties have to be informed, and time increase for the added work has to be estimated before deciding for additional change on the scope of work. This factor has a mean score of 4.28.

**Design Error:**— happens because design team start to design and draw without making a visiting the site for site analysis; and discrepancies between the various construction drawings and specifications, ending up causing problem when the construction begins, which results to delay on site activities, as per Wiguna, & Scott,(2005); Saraf,(2013); Babalola et al,(2015); & Nghiem et al,(2015). With its mean score of 3.89, Olawale & Sun,(2010) exemplify that; in the United Kingdom (UK), design error in due to the design change, difficulties in design management, general decline in production of detailed design caused by increased usage of design and build procurement methods, and lack of detailed specifications.

**Complexity Nature of the Project:**— with a mean score of 3.78, the findings reveal that; MURBs are complex because sometimes construction begin while design is in progress, and if the contractor has a good project execution speed, there could be delay while waiting for the missing drawings and details. These processes of constructing and designing lowers speed of work and cause time overrun argues Ugwu & Haupt,(2007). Again, in the United Kingdom (UK), the same problem exists due to the different stage of projects, most complex projects are not clear till you embark on them therefore in order to mitigate these challenges, they insisted those projects to be broken into manageable chunk and provide adequate planning so as overcoming time overrun (Olawale & Sun, 2010; Saraf,(2013).

**Table #4.06;** Quality related factors with negative influence on the performance and time schedule for MURBs construction projects

SN.	Quality Related Factors with Negative Influence	F	%	F	%	F	%	F	%	F	%	TNR	Mean	Rank
01.	Poor management of sub-contractor	15	33	19	41	6	13	5	11	1	2	46	3.91	1
02.	Unrealistic short time contract period	7	15	4	9	16	35	13	28	6	13	46	2.85	8
03.	Inadequate planning and communication	16	35	17	37	7	15	2	4	4	9	46	3.85	2
04.	Lack of skills	2	4	6	13	13	28	17	35	8	17	46	2.50	12
05.	Complexity nature of the project	9	20	7	15	14	30	14	30	2	4	46	3.15	7
06.	Heavy workload	6	13	5	11	15	33	9	20	11	24	46	2.70	10

07.	Unavailability of personnel with good experience and qualification	5	11	8	17	11	24	14	30	8	17	46	2.74	9
08.	Poor labor productivity	10	22	7	15	15	33	10	22	4	9	46	3.20	6
09.	Lack of ethical and professional staffs	10	22	8	17	18	39	6	13	4	9	46	3.30	5
10.	Lack of management commitment to continue quality improvement	12	26	14	30	17	35	3	7	0	0	46	3.76	3
11.	High level of competitors	4	9	6	13	14	30	12	26	10	22	46	2.60	11
12.	Lack of on-site clerk of work	13	28	9	20	18	39	5	11	1	2	46	3.60	4

Source: Author,(2018)The results from Table #4.06 indicates the factors with the mean score between 3.1 and 4.0 which are considered moderate, and they includes; poor management of subcontractor, inadequate planning and communication, lack of management commitment to continue value improvements, lack of onsite clerk of work, lack of ethical and professional staffs, complex nature of the project, and poor labor productivity.

**Poor Management of Sub-Contractor:**— with the mean score of 3.91, the study revealed that; sub-contractors are not part of the contract hence, the contractor has to provide maximum supervision to ensure quality performance, according to specification, unfortunately this is not practiced. Most MURBs construction projects fail to achieve quality performance because of poor leadership skills, which result to poor management of sub-contractor with poor results, e.g. leakage for plumbing and electrical system failures (Le-Hoai et al, 2008).

**Inadequate Planning and Communication:**— the study revealed that; communication is the major tool for quality improvement for construction stakeholders to work as a team. During construction of work on-site, both parties to a contract have power to make sure that quality is achieved, though it becomes challenging to many construction sites due to poor communication system, (Sambasivan, 2007; Saraf,(2013). This factor has a mean score of 3.85.

**Lack of On-site Clerk of Work:**— the finding revealed that; clerk of work has the major role on ensuring quality performance, as a consultant representative who represents the client, and is in charge of clients' satisfaction. But due to lack of on-site clerk of works, contractors tend to change specification in order to serves money and maximize their profit. Akomah & Jackson,(2016) adds that; lack of site management skills; lack of experienced cutting-edge skilled manpower also causes contractor's failure in terms of performance. This factor has a mean score of 3.60.

**Table #4.07;** Time related factors with negative influence on the performance and time schedule for MURBs construction projects

SN.	Time Related Factors with Negative Influence	F	%	F	%	F	%	F	%	F	%	TNR	Mean	Rank
01.	Poor project management	16	35	18	39	4	9	4	9	4	9	46	3.82	5.5
02.	Unexpected ground condition	20	43	12	26	9	20	5	11	0	0	46	4.03	4
03.	Shortage of construction material	3	7	5	11	11	24	16	35	11	24	46	2.41	11
04.	Under estimation	26	57	15	33	3	7	2	4	0	0	46	4.41	1

05.	Delay of completion time and payments.	24	52	13	28	9	20	0	0	0	0	0	46	4.32	2
06.	Design error	16	35	14	30	11	24	2	4	3	7	46	3.82	5.5	
07.	Inflation	8	17	5	11	9	20	14	30	10	22	46	2.71	9	
08.	Scope change	20	43	15	33	9	20	2	4	0	0	46	4.15	3	
09.	Poor communication channels	11	24	13	28	12	26	6	13	3	7	46	3.44	7	
10.	Poor plant utilization	4	9	5	10	13	28	18	39	6	13	46	2.63	10	
11.	Complexity nature of the project	11	24	4	9	8	17	11	24	13	28	46	2.82	8	
12.	Lack of technical and professional staffs.	0	0	6	13	13	28	18	39	9	20	46	2.35	12	
13.	Absenteeism of labor	0	0	2	4	16	35	19	41	10	22	46	2.26	13	
14.	Poor workmanship	14	30	17	37	8	17	4	9	3	7	46	3.76	6	

**Source:** Author,(2018)The results from Table #4.09 indicate the highly influential factors with mean score between 4.1 and 5.0 which includes; under-estimation, delay of completion time and payments, and scope change. Factors with the mean score between 3.1 up to 4.0 were considered moderate factors they include unexpected ground condition, poor project management, design error, poor workmanship, and poor communication channels.

**Under-Estimation:**— with a mean score of 4.41, results showed that; most project suffers under estimation, because most contractors tend to estimate low, even without visiting the site in order to win the tender. The same result is also shared by Elenga, Louzolo-Kimbembe & Pettang, (2014) that; MURBs projects in South Africa are also facing the same. The problem is also revealed in Cameroon, whereby cost estimation become the major factor that can determine cost overrun by 22%, when estimation is the baseline for forecasting economic viability of the projects, specifically inadequate material estimation, Wiguna, & Scott,(2005).

**Delay of Completion Time and Payments:**— findings revealed that; it contributes to cost overruns, due to clients delay in certificate payment, which end up affecting the speed of MURBs construction work on-site, in which the contractor may fail to purchase building materials, together with payment of casual labor. This situation may accelerate the extension of time that; automatically increases cost of security, water for the work, electricity and laborers. Sunjka & Jacob,(2013) accounts that; delay also happens in MURBs projects with poor cash flow projection in the implementation plan. Moreover, (Chua et al.,1999; Puspasari,2005, Ogunsemi,2006; Yaman,2007; Cheng et al.,2009; & Cheng et al.,2011) in Babalola et al,(2015) stresses that; successful building construction projects are those projects finished on time, within budget, in accordance with specifications and to stakeholders' satisfaction. This factor has a mean score of 4.32.

**Scope Change:**— came up with a mean score of 4.15, in which the study revealed that; when the size of the work increases it has cost implications. MURBs construction projects stakeholders reports and writing by Wiguna, & Scott,(2005); the size of the work tend to increase due to design change and clients instructions. These changes result to cost of reworks and additional works, therefore consultants are required to pay more attention during designing, in order to make sure that they presents well the client requirements to avoid any error with cost implications,(Olawale & Sun,2010).

**Unexpected Ground Condition:**— came up with a mean score of 4.03, in which the results showed that; happens when site visit has been done carefully and obtain some physical details but due

to lack of technology e.g. equipment's to check the underground condition, the consultants fails to study the underground condition, and as a result during the construction, the team may come to realization on the presence of underground rock, which costs much to break it apart. Again, this is a global phenomenon as it also affects cost performance of construction projects in United Kingdom, Vaardini, Karthiyayini & Ezlilmathi (2016).

**Poor Project Management:**— findings revealed that; this affects quality, and it may lead to reworks. Poor work may rise up construction cost through materials and payment of laborers. The problems is also confirmed by Le-Hoai et al,(2008), who enlightens that; in developing country, it is severe and sometimes the cost overrun exceeds 100% of target cost, due to lack of project management techniques, as per Babalola et al,(2015); Akomah & Jackson,(2016). This factor has a mean score of 3.82.

**Design Error:**— with the mean score of 3.82, the study showed that; in MURBs projects this kind of error, may occur and may be recognized at any time during construction of works on site. Any error which may occur in designing has cost implications, as it may lead to demolition and re-construction of a certain part. A study by Olawale,(2010) in United Kingdom, also discovered how design errors accelerates frequent design changes, which affects construction budget as well as time performance.

**Poor Workmanship:**— results showed that; poor workmanship is due to poor supervision, lack technology, unplanned change in design, poor specification and details, and it leads to cost of reworks, and cost overrun. The same result was also observed by Enshassi, Al-Najjar & Kumaraswamy, (2009) in Gazza strip, where it revealed serious cost implications.

**4.3 Mitigation Measures to be taken to improve performance of MURBs:—**

**Table #4.08;** Mitigation Measures on improving the performance and time schedule of MURBs construction projects

SN.	Mitigation Measures on Improving the Performance and time Schedule of MURBs Construction Projects	F	%	F	%	F	%	F	%	T	Mean	Rank
01.	Proper planning of work	23	19	4	1	0	46	4.46	1			
02.	Committd leadership and management.	20	19	7	0	0	46	4.28	2			
03.	Clear information and Communication channels.	20	16	10	0	0	46	4.21	3			
04.	Focus on client's needs.	16	16	12	2	0	46	4.00	4			
05.	Frequent coordination between the parties.	13	16	11	6	0	46	3.78	5			
06.	Proper emphasis on past experience.	12	13	12	7	2	46	3.57	6			
07.	Hire skilled labor.	6	14	16	9	1	46	3.33	7			
08.	Frequent progress meeting	5	13	14	7	7	46	3.04	8			

**Source:** Author,(2018)

**Proper Planning of Work:**— has a mean score of 4.46, in which findings revealed that; it important to have proper planning of work, whereby the project manager must keep up with the technological advancement by adopting new computer based approaches, which can assist in monitoring, organizing and

allocation of resources during execution of work on site, including making sure that everybody involved in the construction team is assigned to a particular task, hence avoiding several problems which affects performance of MURBs construction project. The same is also reflected in Babalola et al,(2015) writing, which insists on proper project planning efforts and organizing skills of the team leader, or project manager. Babu,(2015) asserts that; project is a complex, non-routine, one-time effort limited by time, budget and resource and performance specifications designed to meet customer needs. Furthermore Babu,(2015) specifically enlightens that; a construction project is completed through a combination of many events and interactions, planned or unplanned, over the life of a facility, with changing participants and processes in a constantly changing environment.

**Committed Leadership and Management:**— the study revealed that; if client, contractor and consultant is well trained, and happen to know the criteria for a good leader, they have to be committed and ready to provide supervision to the fullest, which can help much to control wastage of resource and time. This is also reflected in Memon, Abdul-Rahman, Abdul-Azis,(2012) writings that; where there is good management, there is likely to be quality, cost and time performance, hence mitigating the causes cost and time overrun. This factor has a mean score of 4.28.

**Clear Information and Communication Channels:**— with a mean score of 4.21, results showed that; there should be clear information and communication channels, which will assist easy flow of information from among project members. Easy flow of information minimize the cost of re-work which happens during execution of work, and by so doing contractor, client and consultant achieves MURBs project's objective goal.

**Focus on Clients Need:**— finding uncovered that; consultant during designing stage, have to ensure that project is designed to a great detail so as to minimize design errors which can lead to design changes, by clearly presenting well the clients' requirement, and by providing good supervision. Moreover, the contractor should build as per specification, to avoid the cost of re-works due to non-conformance as well as to maintain company profile. Writings by Olawale,(2010), also insists on the same, which helps in maintaining good reputation among project team members and highly achievement on value for money for the various types of MURBs projects, hence avoiding cost and time overrun. This factor has a mean score of 4.00.

**Frequent Coordination Between the Parties:**— came up with the mean score of 3.78, with findings revealing the importance of team work among stakeholder in order to address value for money for the projects, via constant consultation amongst the team, communicating on any changes likely to occurs, as quickly as possible, which reduces a number of disputes and claims in MURBs projects.

**Proper Emphasis on Past Experience:**— results revealed that; during the procurement process, consultant must be very careful with the profile of the contractor, as the contractor who lack experience in larger projects are likely to fail in achieving value for money, apart from other problems relating to performance and cost overrun.

**CONCLUSION AND RECOMMENDATION**

**5.1. Conclusion**

In exploring factors that affect performance and time schedule for multi-unit residential building constructions in Dar-Es-Salaam, the data collected revealed that; MURBs project does not achieve performance in term of cost and time, they only achieve quality performance. This conclusion was drawn from the research findings which revealed the following below:-

- Out of 46 respondents, 26 agreed that MURBs achieve quality performance, 17 did not agree, and 3 agreed to both sides that sometime the quality performance is achieved, and sometimes not. Therefore, MURBs project in Dar-Es-Salaam, Tanzania do

achieve quality performance.

- Also, out of 46 respondents, 23 agreed that MURBs fails to achieve time performance, 13 agreed that; they achieve to build within the contract period, and 10 were supporting that, some building projects achieve time performance and sometimes do not. Therefore, MURBs project in Dar-Es-Salaam, Tanzania were affected by time overrun.
- Lastly, out of 46 respondents, 29 agreed that; MURBs fail to achieve cost performance, 12 agreed that they achieve to build within the contract budget, and 5 were supporting that some achieve time performance and sometimes do not. Therefore, MURBs project in Dar-Es-Salaam, Tanzania were affected by cost overrun, just like the Malaysian construction industry, in astudy by Memon, Abdul-Rahman, Abdul-Azis,2012, making cost overruns a common phenomenon in the construction industry.

**5.2. Recommendation**

The following point can be recommended in order to deal with the factor causing delays and cost overrun in building project

- The contractor should employ a reasonable number of skilled labor, e.g. technician to achieve good progress, avoids the poor quality or workmanship, and help supervising unskilled laborers on site. Abdul-Rahman,(1995), affirms that; the act reduces cost of rectifying non-conformance works and double handling. Moreover, they are advised to have a Quantity Surveyor in their projects, for successfully control costs, and improve performance of MURBs projects.
- Contractors should be more interested in conformance to project specification to overcome disputes, time, and cost performance problems. Quality materials should be of a greater interest for contractors in order to improve cost, time, and quality performance. This can be done by applying quality training and meetings that are necessary for performing an improvement.
- Project managers in cooperation with contractor should make sure that, they conduct several meetings, in order to influence easy feedback mechanism of any matter raised, unlike writing letter to the top management whereby it takes time for the latter to get into the respective person and to get the response back through that chain takes, therefore through a weekly meeting small issue will be discussed and conclusion be made right there, this will saves time used to wait feedback from top management. On the other hand, these meeting will encourage quality performance of MURBs construction.
- Contractors should perform their activities properly to improve productivity which helps improvisation of construction projects.
- The unit tittle acts give power to MURBs project developers to sale the units found within the same building to different customers; thus, an arrangement should be made for maintenance works.
- Proper motivation and safety systems should be established for improving the productivity performance of construction projects, and lastly; they are counseled to minimize waste rates through project implementation for improving cost.

**REFERENCES**

[1] Abdul-Rahman, H (1995); The Cost of Non-Conformance During High Way Projects; A Case Study, Journal of Construction Management and Economics, Vol. (13), (01).

[2] Akomah B.B. & Jackson E.N, (2016); Factors Affecting the Performance of Contractors on Building Construction Projects: Central Region, Ghana. In the International Journal of Innovative Research & Development, (IJIRD), Vol. (5)(10), Page 151-158, ISSN 2278-0211.

[3] Assaf, S & Al-Hejji,(2006); Causes of Delay in Larger Construction Projects, In the International Journal of Project Management, Vol.(24)(4), Published By Elsevier, Pg. 349-357

[4] Asiedeu, R, A (2012); The Performance of High-rise Building in Ghana Perspective of the Occupant; Construction Project in Southern and Central Regions of Peninsular Malaysia, In the International Journals of Advances in Applied Science (IAAS), Vol.(1)(1),

[5] Babalola I.H, Oluwatuyi O.E, Lawal A, & Elkanah, A (2015); Factors Influencing the Performance of Construction Projects in Akure, Nigeria. International Journal of Civil Engineering, Construction and Estate Management (IJCECEM), Vol.(3),(4), Published by European Centre for Research Training and Development United Kingdom (U.K), Page 57 to 67, (www.eajournals.org).

[6] Babu, S.S,(2015); Critical Success Factors Influencing Performance of Construction

Project, International Journal of Innovative Research In Science, Engineering and Technology, (IJIRSET), Volume #04, Issue #05. ISSN(Online) : 2319-8753 ISSN: 2347-6710.

[7] Creswell, J.W. (2014); Research Design (Qualitative, Quantitative & Mixed Methods Approaches), Published SAGE Publication INC, ([https://ucalgary.ca/paed/files/paed/2003\\_creswell\\_a-framework-for-design.pdf](https://ucalgary.ca/paed/files/paed/2003_creswell_a-framework-for-design.pdf)), 2nd Edition, 26 Pages. ISBN: 0761924418, ISBN: 0761924426.

[8] Elzinga, D. (2008); Urban BIPV in the New Residential Construction Industry Facilities Management Association of Australia LTD, 2012, Multi-Units Residential Building.

[9] Enshassi, A.J, Al-Najjar & Kumaraswamy, M, (2009); Delay and Cost Overrun in Construction Projects in Gazza Strip J, Residential Project in Kuwait, In the Journal of Construction Management and Economics, Vol.(23),(1).

[10] Hillebrandt, P.M, (2000); Economic Theory and the Construction Industry, ISBN: 9780230372481, ISBN: 9780333774793, DOI: 10.1057/9780230372481, 3rd Edition, Published By Palgrave Macmillan, London, United Kingdom (UK), 224 Pages.

[11] Hollister, N & Wood, A (2012); Skyscraper completion reaches new high for the fifth year running, In the Indian Concrete Journal, Volume #86, Issue(3), Page 39 to 42.

[12] Iyer, K.C & Jha K.N,(2005); Factors Affecting Cost Performance, In the International Journal of Management, Volume #23, Issue(5).

[13] Jha K.N. & Iyer, K.C. (2006); Critical Factors Affecting Quality Performance in Construction Projects. In the Journal of Total Quality Management, Vol.(17),(9), Page 1155 to 1170, Published By Routledge (Taylor & Francis Group). 1478-3363 DOI: 10.1080=14783360600750444.

[14] Kombo, D.S. & Tromp, L.A, (2006); Proposal and Thesis Writing; an Introduction; 2nd Reprint; Published By Paulines Publications Africa; Nairobi, Kenya, Vol(5), Page 814-830.

[15] Kothari, C.R, (2004); Research Methodology: Methods and Techniques, 2nd Revised Edition, New Age International (P) Limited Publishers, New Delhi, India.

[16] Kumar, R (2011); Research Methodology a Step-By-Step Guide for Beginners, 3rd Edition, Published by SAGE publication INC. 366 Pages, ISBN: 978-1-84920-300-5, ISBN: 978-1-84920-301-2(pbk). ([http://www.sociology.kpi.ua/wp-content/uploads/2014/06/Ranjit\\_Kumar-Research\\_Methodology\\_A\\_Step-by-Step\\_G.pdf](http://www.sociology.kpi.ua/wp-content/uploads/2014/06/Ranjit_Kumar-Research_Methodology_A_Step-by-Step_G.pdf))

[17] Kunze J, (2005); The Revival of High Rise Living in the UK and Issues of Cost and Revenue in Relation to Height, Published Master Thesis in European Property Development and Planning, The Bartlett, University College London, (<http://discovery.ucl.ac.uk/2647/1/2647.pdf>), 59 Pages.

[18] Ling F.Y.Y, Low, S.P, Wang, S.Q. & Lim, H.H,(2009); Key Project Management Practicing Affecting Singaporean Firms Project Performance in China, In the International Journal of Project Management, Volume #27, Issue(1), Page 59-71 (<http://dx.doi.org/10.1016/j.jiproman.2007.10.004>).

[19] Le-Hoai, L, Young D.L, & Jun Y.L, (2008); Delay and Cost Overrun in Vietnam, Large Construction Projects; A Comparison with Other Selected Countries, Journal of Engineering Volume #12, Issue(6).

[20] Makuka M.J, Aigbavboa, C, & Thwala, W.D, (2014); A Theoretical Review of the Causes and Effects of Construction Projects Cost and Schedule Overruns. Published by International Conference on Emerging Trends In Computer and Image Processing, Pattaya (Thailand).

[21] Memon, A.H, Abdul-Rahman I, Abdul-Azis, A.A,(2012); Time and Cost Performance in Construction Projects in Southern and Central Regions of Peninsular Malaysia. In The International Journal of Advances in Applied Sciences (IJAA), Volume #01, Issue #01, Page 45 to 52. ISSN: 2252-8814.

[22] Musingi, R.(2007); Challenges Facing Contracting Industry; the Experience, Published By New Age International (P) LTD.

[23] Nghiem, D.T, Van, L.T, Viet, N.T, & Nghia, N.H, (2015); Conceptual Model of Critical Factors Affecting Performance of Construction Sites in Vietnam, in the ARPN Journal of Science and Technology, Vol.(05),(01), (<http://www.ejournalofscience.org>) ISSN 22257217, Page 42-49.

[24] Olawale Y.A & Sun M, (2010); Cost and Time Control of Construction Projects, Inhibiting Factors and Mitigation Measures In Practices; In the Journal of Construction Management and Economics Vol.(28),(5), Page 509 to 526, ([http://publications.aston.ac.uk/15566/2/Cost\\_and\\_time\\_control\\_inhibiting\\_factors\\_and\\_mitigating\\_measures.pdf](http://publications.aston.ac.uk/15566/2/Cost_and_time_control_inhibiting_factors_and_mitigating_measures.pdf)).

[25] Priyanga, V & Ambika M.E.D, (2014); Study on Factors Influencing Construction Process Performance, International Journal of Advanced Research in Civil, Structural, Environmental and Infrastructure Engineering and Developing, Vol.(2),(2), Published By ISR Journals and Publication, ISSN\_NO: 2320723X, Page 85-89.

[26] Proverbs, D.G, Holt, G.D, & Cheok, H.Y, (2000); Construction Industry Problems, the View of UK Construction Directors. In, Akintoye, A (Ed.), 16th Annual ARCOM Conference, 6-8 September 2000, Glasgow Caledonian University, Association of Researchers in Construction Management, Vol.(1), Page 73-81, ([http://www.arcom.ac.uk/-docs/proceedings/ar2000-073-081\\_Proverbs\\_Holt\\_and\\_Cheok.pdf](http://www.arcom.ac.uk/-docs/proceedings/ar2000-073-081_Proverbs_Holt_and_Cheok.pdf)).

[27] Sambasivan, M, & Soon, Y.W, (2007); Causes and Effects of Delay in Malaysia Construction Industry, In the International Journal of Projects Managements, Volume #25, Issue(1), Page 517-526. Published by Elsevier, (<https://doi.org/10.1016/j.jiproman.2006.11.007>).

[28] Samson, M, & Lema, N.M, (2005); Development of Construction Contractor Performance Measurement Framework. Department of Construction Technology and Management, University of Dar, Tanzania.

[29] Singh, Y.K, (2006); Fundamental of Research Methodology and Statistics, Published by New Age International Publisher LTD, New Delhi, Indian, ISBN:978-81-224-2418-8, 323 Pages.

[30] Saraf, D.D. (2013); Study of Factors Affecting Performance of Construction Project. In the International Journal of Science and Research (IJSR), Vol.(4)(5), ISSN (Online): 2319-7064, Paper ID: SUB154426, Page 1339 to 1341.

[31] Trueman, C. (2015); Structured Questionnaire, History of Learning Site, (<https://www.historylearningsite.co.uk/sociology/research-methods-in-sociology/structured-questionnaires/>).

[32] Ugwu, O.O, & Haupt, T.C, (2007); Key Performance Indicator and Assessment Methods for Infrastructure Sustainability -A South African Construction Industry Perspective, In the Journal of Building and Environment, Vol.(42), Published by Elsevier, Page 665-680.

[33] Uher, T.E, (2003); Programming and Scheduling Technique, Published by University of New South Wales (UNSW) Press LTD. ISBN: 0-86840-725-9, 295 Pages.

[34] Vaardini U.S, Karthiyayini S, & Ezhilmathi P, (2016); Study in Cost Overrun in Construction Projects, In the international Journal of Applied Engineering Volume #11, Issue (3), Published by Research India Publications, ([https://www.researchgate.net/profile/sindhuvaaardini/publication/303459769\\_study\\_on\\_cost\\_overruns\\_in\\_construction\\_projects\\_-\\_a\\_review/links/574431df08ae9ace841b4bac/study-on-cost-overruns-in-construction-projects-a-review.pdf](https://www.researchgate.net/profile/sindhuvaaardini/publication/303459769_study_on_cost_overruns_in_construction_projects_-_a_review/links/574431df08ae9ace841b4bac/study-on-cost-overruns-in-construction-projects-a-review.pdf)). ISSN: 0973-4562, Page 356 to 363.

[35] Walker, D.H.T & Vines, M.W, (1997); Construction Time Performance in Multi-Unit Residential Construction: Insight into the Role of Procurement Methods. In: Stephenson, P (Ed.), 13th Annual ARCOM Conference, 15-17 September 1997, King's College, Cambridge. Association of Researchers in Construction Management, Volume #01, Page 93 to 101. ([http://www.arcom.ac.uk/-docs/proceedings/ar1997-093-101\\_Walker\\_and\\_Vines.pdf](http://www.arcom.ac.uk/-docs/proceedings/ar1997-093-101_Walker_and_Vines.pdf)).

[36] Wiguna, I.P.A, & Scott, S. (2005); Nature of the Critical Risk Factors Affecting Project Performance in Indonesian Building Contracts. In: Khosrowshahi, F (Ed.), 21st Annual ARCOM Conference, From 07 to 09 September 2005, SOAS, University of London. Association of Researchers in Construction Management, Volume #01, Page 225 to 235.