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Appraising Time Performance of Higher Education Institutions Building Projects To Achieving Sustainable Development Goal 4

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Abstract: Higher educational institutions (HEIs) worldwide frequently embark on building projects to expand infrastructure, enhance facilities, and accommodate growing student populations. However, time performance has been very poor over the years due to several factors. There is urgent need to improve the time performance of HEIs building projects to achieve Sustainable Development Goals 4. Recognizing the pivotal role of educational infrastructure in advancing inclusive, equitable, and quality education, the paper underscores the need for a strategic alignment of time management practices with the principles of SDG 4. This study aimed at identifying factors influencing project duration and the impact of time performance on HEI projects. It employed a sequential explanatory mixed-methods research design in Edo State, Nigeria. Twenty projects were selected, and their time performance was assessed to draw inferences for this research. Face-to-face interviews were conducted among 12 professionals in the physical planning department that showed interest in participating in the study and were interviewed. The result revealed that the time performance of tertiary educational building projects is very poor, as most projects extend beyond the initial construction time. The causes of this time overrun were attributed to payment delay, lack of planning, and bureaucracy involved in the approval of payments by client. It is therefore recommended that adequate planning and stakeholders management be encouraged to improve the time performance of HEI buildings.

Keywords: buildings, Edo State, Nigeria, tertiary education, time performance.

1 INTRODUCTION

The Construction industry is one of the most relevant sectors of the economy as it contributes to the growth of the economy (Ojo, 2012). The construction of higher educational buildings is a crucial aspect of infrastructure development in Nigeria, given the growing demand for quality education. However, the timely completion of these projects has been a persistent challenge in the country (Idowu et al., 2022). After significant financial mobilization, there have been grave concerns raised about construction projects that have not been completed in various parts of the nation (Idowu & Aligamhe, 2023). Due to poor management practices, Nigeria frequently experiences failed and abandoned projects. Time is another important parameter because it is expected of contractors to complete the project within agreed-upon timelines and budgets (Anuja & Parag, 2015). Successful construction projects require effective time management. Project delays, cost overruns, and disputes can result from poor time performance.

Ineffective time management in the construction industry can lead to significant financial losses, legal issues, and reputational harm. Aghimien et al. (2018) studied the performance of selected funding schemes used in delivering educational buildings in Nigeria and found that educational buildings delivered through TETFund interventions generally performed poorly in terms of timeliness. Construction duration has long been considered one of the benchmarks for evaluating a project's performance (Ogunsemi & Jagboro, 2006). Higher Educational Institutions (HEIs) requires crucial facilities that support appropriate and long-term academic administration goals. They comprise the spaces and facilities that support teaching and learning as well as the residence halls where students can meet their housing needs (Akuete, Nduka & Ogundipe, 2022). The HEI plays a critical role in recruiting students in addition to fostering an environment that is appropriate and conducive to teaching, learning, and innovation. Over time, the number of students attending higher education institutions has increased dramatically, placing an excessive demand on the physical infrastructure to accommodate both staff and students.

In a similar vein, Saeed and Kayani (2019) believed that the comfort, safety, and academic success of students are influenced by physical facilities. According to Musa and Ahmad (2012), adequate physical facilities that meet the necessary standards are also essential for effective learning and teaching. These facilities include classrooms, lecture halls, labs, workshops, ICT centers, studios, libraries, hostels, health centers, and office spaces, among others. HEIs worldwide frequently embark on ambitious building projects to expand infrastructure, enhance facilities, and accommodate growing student populations (Aboulnaga & Moustafa, 2016). The physical and academic infrastructure of Nigeria's public higher education institutions has deteriorated over a number of years as a result of a lack of funding for their construction and renovation (Isa & Yusoff, 2015).

Construction of educational buildings faces delays due to various reasons such as funding issues, bureaucratic hurdles, regulatory complexities, or unexpected challenges during the construction phase. Delays in construction projects can hinder timely access to educational facilities, impacting the provision of quality education. Insufficient funding or budgetary constraints can lead to delays or compromises in the construction quality of educational buildings. Educational buildings serve as community assets beyond academic purposes and completing them on time allows communities to benefit from shared resources, educational programs, and facilities that can uplift the community's overall quality of life. Also, encouraging better collaboration and coordination among stakeholders involved in the construction process can streamline decision-making and enhance construction efficiency.

2 LITERATURE REVIEW

Time Performance Overview

The Construction industry plays a major role in national development. The performance of the construction industry, like that of all economically productive sectors, is greatly influenced by several factors. Fatoye (2012) revealed that most construction projects are completed according to clients' specifications, but rarely within the planned completion period. According to research conducted by Idowu et al. (2022), time performance of HEI's buildings is attributed to the funding system (financier) of the project. The funding systems were classified under TETFund, Internally Generated Revenue (IGR) and Private financed. Poor performance in construction has been a recurring theme in the nation and educational structures are not exempt from this unfavorable circumstance. HEI projects are either abandoned or are finished above budget, and beyond time schedule (Oyedele, 2013). Since it has been established that buildings are essential in the delivery of quality education, these institutions' subpar project deliveries frequently have an impact on the standard of the education being provided.

According to Le-Hoai et al. (2008) study on delays and cost overruns in Vietnam construction projects in comparison to those in other chosen countries, time overrun is a significant issue as projects extend beyond the initial time schedule. Al-Momani (2000) discovered that out of 130 public projects evaluated in Jordan,

106 (82%) experienced time overrun. According to Frimpong et al. (2003), 33 (70%) out of 47 projects in Ghana were delivered late. Amu and Adesanya (2011) found that only 24 out of 3,407 projects in southwest Nigeria were finished in the allotted time. 1517 were abandoned, and the rest were delayed. Late project completion may prevent clients from receiving the advantages or profits that their projects are likely to produce through use within the predetermined period and this could put them at economic or financial risk (Aghimien & Aigbavboa, 2018).

The timely completion of construction projects is a fundamental requirement however, projects are rarely finished on time. The most frequent, expensive, complex, and dangerous issue with construction projects is generally acknowledged to be construction delay (Oscar Akotey et.al, 2013). Due to the paramount importance of time for both the owner and the contractor, it frequently becomes the subject of disagreements and claims that result in legal action (Ogunsemi & Jagboro, 2006). Time overrun can be caused by a number of factors. Every construction project experiences delays, though how big they are varying greatly from project to project.

Fugar and Agyakwah-Baah (2010) also investigated the reasons behind delays in Ghanaian building construction projects. They discovered 32 potential delays and further divided them into nine main groups. They are underpayment of certificates, delay in honoring certificates, underestimation of project costs and complexity, difficulty in obtaining bank credit, lack of supervision, underestimation of project completion times by contractors, lack of materials, and lack of professional management. Tumi et al. (2009) conducted research on Libyan construction project delays. They concluded that inadequate planning was the main cause, followed by ineffective communication, a lack of materials, poor design, and financial issues. Dorcas and Olukayode (2022) identified inaccurate evaluation of projects time/duration, risk and uncertainty associated with projects and complexity of works as the main cause of delay (time overrun) in construction projects. Alwi and Hampson (2003) had a similar study on the causes of delays in building construction projects. The delay factors were grouped into six major groups. The results showed that the top five most important delay causes were: slow decision making, which was ranked the highest, followed by design changes, poor distribution of labour, inappropriate construction methods, and poor coordination among project participants.

Sustainable Development goals

Although various sectors and organizations may have defined sustainable development differently, the idea should be applied to a variety of other fields and sectors. While maintaining socioeconomic growth, sustainable development seeks to lessen the damaging effects of human activity on the environment. Sustainable development, rather than being an end goal, should be viewed as a process that can be used to address global challenges in order to create a sustainable society (Robinson, 2004).

The UN General Assembly approved the Sustainable Development Goals (SDGs) in September 2015. A vast array of social, economic, and environmental issues are covered by their 169 targets and 17 goals. Academic knowledge and collaboration between parties in different fields are crucial to solving this global challenge. The 2030 Agenda for Sustainable Development, which was adopted by all UN Member States in 2015, provides a shared blueprint for peace and prosperity for people and the planet now and in the future. The 17 Sustainable Development Goals (SDGs) are at the heart of it, and they are an urgent call to action by all countries, developed and developing, in a global partnership. They recognize that eradicating poverty and other deprivations must be combined with strategies to improve health and education, reduce inequality, and stimulate economic growth – all while addressing climate change and working to protect our oceans and forests. The Paris Agreement (COP21) saw 193 countries adopt the United Nations Sustainable Development Goals (SDGs), which address the urgent problems of sustainability from an economic, social, and environmental perspective (Fei et. al, 2021).

The SDGs are the culmination of decades of effort by countries and the UN, including the UN Department of Economic and Social Affairs. The SDGs are relevant to many facets of society, including the building industry. Restructuring the construction industry is necessary to achieve the SDGs' definition of global

sustainability (Wieser, 2019). The construction industry has a new chance to shift its emphasis from the environmental aspect of sustainability with the implementation of the Sustainable Development Goals (Goubran, 2019). Integration of social, economic, and environmental factors into project delivery processes, standards, and practices could lead to the recognition of construction project delivery and its management as sustainable (Silvius, 2017). Goal 4 of the 2030 Agenda for Sustainable Development (SDG 4) is to guarantee high-quality, inclusive education for all. Acknowledging education as a vital catalyst for sustainable development, this paper investigates the essential elements and obstacles linked to Sustainable Development Goal 4.

The SDG 4 centered mainly on ensuring inclusive and equitable quality education and promoting lifelong learning opportunities for all. The SDG 4 is targeted at has 10 targets namely, universal free primary and secondary education, early childhood development and universal pre-primary education, equal access to technical/vocational and higher education, relevant skills for decent work, gender equality and inclusion, universal youth literacy, education for sustainable development and global citizenship, effective learning environments, scholarships, qualified teachers, and educators (Wieser et al., 2019). To achieve all these, there is need for necessary infrastructures that will make learning easy. Ensuring that those projects are constructed timely is also of key importance as this will facilitate achievement of the SDG goals.

The time performance of higher educational buildings can significantly contribute to advancing Goal 4 of the United Nations Sustainable Development Goals (SDGs), which aims to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all (Ofori, 2023). Efficient construction processes for higher educational buildings ensure timely completion and availability of necessary infrastructure. Meeting construction timelines ensures that educational institutions are established or expanded on schedule, enabling timely access to educational facilities for students, educators, and staff (Fei et al, 2021). Quick and efficient construction of educational buildings helps in expanding educational infrastructure, making quality education more accessible to a larger population. This aligns with Goal 4's objective of ensuring equitable access to education for all, irrespective of geographic location or socio-economic background. Efficient construction time performance of higher educational buildings contributes significantly to achieving Goal 4 by expediting the availability of educational infrastructure, promoting quality learning environments, ensuring equitable access to education, and minimizing disruptions to educational activities. It plays a crucial role in supporting the broader goal of providing inclusive and equitable quality education for all.

3 RESEARCH METHODOLOGY

This paper seeks to assess the time performance of HEIs building projects with a view to achieving inclusive and quality education. To achieve the aim of the research, the research employed the use of qualitative research approach where archival information was sourced from selected completed projects with a follow up interview of personnels in the physical planning department involved in those projects. These methods acted as supplements to each other which made the data collection more comprehensive, meaningful, and valid. Twenty (20) completed projects executed in HEIs in Edo State Nigeria in the years 2010 to 2019 were selected to access information about their time performance. Archival information about completed projects maintained by the institution’s physical planning division and the project consultants were used to source data. The interview section was designed to identify the causes of poor time performance on the projects. Twelve (12) professionals were selected for interview because of their wealth of experience in the institution and on the projects. The results were presented and analyzed using percentile and mean score.

The target population for this study was in two major categories. The first category was the major stakeholders involved in construction projects in HEIs, i.e. client (Physical planning unit), consultants and the contractors. The second was the construction projects, which had already been completed within the study area. To have a defined sample size the list of all practicing professionals and contractors involved in selected projects constituted the population for the questionnaire. Between June 2020 and early August 2020, the interviews were conducted, and saturation was achieved. Before the interviews, invitation letters

were sent to the 12 interviewees who indicated interest and were interviewed. This is in line with the research conducted by Ebekozien and Aigbavboa (2021) which engaged 12 subject experts for the interview. The interviewees were considered well-informed as they were all at managerial level and the least year of experience is 11 years.

4 FINDINGS AND DISCUSSION

The target population for this study was in two major categories. The first category was the major stakeholders involved in construction projects in HEIs, i.e. client. This section presents the result of the investigation of time performance of higher educational institutions building projects. The demographic information of interview respondents is presented below.

Table 1: Characteristics of Respondents for Interview

Category	Classification	Frequency	Percentage
Current Position	Director	2	16.67
of Respondents	Chief Quantity Surveyor	2	16.67
	Senior Quantity Surveyor	2	16.67
	Project Architect	2	16.67
	Chief Engineer	2	16.67
	Project Manager	2	16.67
	TOTAL	**12**	**100.00**
Years of	11 - 15 years	4	33.33
Experience	16 - 20 years	2	16.67
	Above 20 years	6	50.00
	TOTAL	**12**	**100.00**
Highest	HND	2	16.67
Academic	B.Sc/ B.Tech/ PGD	8	66.66
Qualification	Msc/M.Tech	2	16.67
	TOTAL	**12**	**100.00**
Professional Membership	Corporate	10	83.33
	Fellow	2	16.67
	Total	**12**	**100.00**
Number of Projects handled	Above 20 projects	12	100
	TOTAL	**6**	**100.00**

The target population Table 1 showed the background information of respondents for the interview. The professionals contacted for interview were senior professionals involved in the projects (Director, Chief Quantity Surveyor, Senior Quantity Surveyor, Project Architect, Chief Engineer, and Project Manager). All of them have above 10 years' experience in the industry and are also professionals in the field, which indicates that they are knowledgeable on the subject matter. They all have adequate academic and professional qualifications to give expert opinions on the subject matter. Selecting 12 interview respondents is justified by the need for in-depth insights, theoretical saturation, representativeness, and practical manageability. For this paper, snowball and purposive sampling techniques were adopted and assist to achieve representativeness. The purposeful selected the major participants, followed by snowball sampling to achieve good saturation and representation (Teddlie & Tashakkori, 2010).

The factors responsible for poor time performance in HEI buildings as identified by the respondents in the interview were ranked based on their responses. At least, 4 factors were listed by each respondent and later collated. Poor project brief, payment delay, interference of management in payment matters, inadequate information on the project and bureaucracy were more significant factors affecting payment delay in project as it is common in most of the interviewee while inadequate design, poor site management, lack of cost control measures was ranking least. These factors were later collated and ranked by the respondents. This is presented in Table 2 below.

Table 2: Causes of poor time performance in HEI building projects

Identified causes	Mean score	Rank
Bureaucracy involved in approval	4.57	1
Delay in honouring payment	4.44	2
Inadequate communication among project stakeholders	4.42	3
Design complexity	4.30	4
Poor site management	4.28	5
Budget constraint	4.28	5
Lack of cost control measures	4.24	7
Chage orders	4.20	8
Unforeseen site conditions	4.20	8
Inclement weather	4.10	10
Shortage of labour/workforce	4.06	11
Contractor's poor project planning	3.98	12
Slow decision making	3.92	13
Underestimation of project cost	3.86	14
Weak regulation and control	3.80	15
Corruption	3.72	16
Non-performance of subcontractors and nominated suppliers	3.68	17
Unstable government policies	3.64	18
Conflict among parties	3.60	19
Risk and uncertainty associated with projects	3.56	20

From the table 2, causes of time overrun in HEI building projects were identified and it reveals that bureaucracy involved in approval ranked first with a mean score of 4.57 followed by delay in honouring payment, inadequate communication among project stakeholders and design complexity with mean scores of 4.44, 4.42 and 4.30 respectively. Ranking least are non-performance of subcontractors and nominated suppliers, unstable government policies, conflict among parties and risk and uncertainty associated with projects with mean scores of 3.68, 3.64, 3.60 and 3.56 respectively.

Time Performance of HEI building projects

Table 3: Case Study Project Information

Project	Project Financier	Initial Duration (Months)	Final Duration (Months)	Percentage time overrun
A	TETFUND	9	24	166.67%
B	TETFUND	9	18	100%
C	TETFUND	8	12	50%
D	TETFUND	12	16	33.33%
E	TETFUND	12	18	50%
F	TETFUND	10	15	50%
G	TETFUND	6	11	83.33%
H	TETFUND	8	14	75%
I	TETFUND	12	26	116.67%
J	TETFUND	7	12	71.43%
K	IGR	6	12	100%
L	IGR	10	18	80%
M	IGR	12	36	200%
N	IGR	6	10	66.67%
O	IGR	4	8	100%
P	PRIVATE	8	10	25%
Q	PRIVATE	6	12	100%
R	PRIVATE	3	6	100%
S	PRIVATE	8	20	150%
T	PRIVATE	12	24	100%

Twenty projects in Edo state were chosen for the case study. 20 projects were selected to give a holistic approach to the time performance of the project. The projects were limited to the years 2010 – 2019 as there was a serious improvement in infrastructural projects in HEIs building during these periods. Out of the twenty projects, 10 were funded by TETFund, 5 through internal generated revenue (IGR), and 5 were gifts from the private sector. The type of project financier also influences the time performance of the projects. TETFund projects do not allow for flexibility or variation in the contract, so changes must be repackaged as a separate contract, which requires more time to approve. It takes a long time to do this, which makes projects run longer than expected and results in time overrun. From the table, it is observed that the time performance of projects is generally poor as all the projects experienced time overrun. 9 out of the 20 selected projects experienced a percentage time overrun above 100% which indicates that it is a serious occurrence that needs attention. If this is not addressed urgently can lead to infrastructural decadence in our HEIs.

Poor time performance and project abandonment are problems that most IGR projects encounter. Most IGR delays were brought on by the lack of funding for the project, a change in power, improper planning, and other factors. The privately financed project is made up of bank-assisted projects and private individual projects, both of which run over budget and into additional time due to payment delays. The result of this research is in alignment with the research conducted Frimpong et. al (2003); Dorcas & Olukayode (2022) which revealed that the time performance of construction projects is poor as most projects rarely meet up with the time schedule. Al-Momani (2000) discovered that out of 130 public projects evaluated in Jordan, 106 (82%) experienced time overrun. Also, Frimpong et al. (2003), 70% of the projects assessed experienced time overrun. The selected projects all experienced time overrun as all the projects extend beyond the initial contract duration.

5 CONCLUSION AND RECOMMENDATION

The success and competitiveness of educational institutions depend on the timely completion of buildings for higher education institutions. Results revealed that the time performance of HEI buildings are generally poor and there is need for more proactive measures to be put in place to address this menace. Delays and the consequences they cause can be reduced by being aware of the variables that affect time performance and putting effective strategies into practice. To further the goals of SDG 4, it highlights the useful consequences of evaluating time performance in higher education building projects. It also raises questions about how these tactics might be applied in various international contexts and offers directions for further study and cooperation in this important area. Enhancing the time performance of constructing HEI buildings stems from recognizing the multifaceted positive impacts on education, society, and sustainable development. Prioritizing timely completion aligns with the core principles of providing quality education for all, fostering equitable access, and nurturing the next generation of informed, empowered individuals ready to contribute to a better world. Higher education institutions can make sure that their facilities meet the changing needs of students, faculty, and researchers by putting a priority on efficient planning, collaborative teamwork, and innovative construction techniques.

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References

Aboulnaga, M., & Moustafa, M. 2016. Sustainability of higher educational buildings. *Renewable Energy and Environmental Sustainability*, 1, 28. https://doi.org/10.1051/rees/2016016

Aghimien, D., & Aigbavboa, C. 2018. *Performance of selected funding schemes used in delivering educational buildings in Nigeria*. In Proceedings of the International Conference on Industrial Engineering and Operations Management held in Washington DC, USA (pp. 108-119).

Akuete, E, Nduka, D.O, Ogundipe, K.E. 2022. Maintenance Feedback Mechanisms and Limiting Factors of Post-Occupancy Evaluation in Student Residents of Higher Education Institutions in Nigeria. *Journal of Construction in Developing Countries*. 27(2)

Al-Momani, A. H. 2000. Construction delay: a quantitative analysis. *International journal of project management,* 18(1), 51-59.

Alwi, S. and Hampson, K. 2003. *Identifying the Important causes of delays in building construction projects*. Proc. 9th East Asia-Pacific Conference on Structural Engineering and Construction, 1-6, Bali, Indonesia

Amu, O. O., & Adesanya, D. A. 2011. Mathematical expressions for explaining project delays in South Western Nigeria. *Singapore Journal of Scientific Research*, 1(1), 59-67.

Anuja, R., & Parag, M. 2015. Effective Techniques in Cost Optimization of Construction Project. *International Journal of Research in Engineering and Technology (IJRET)*, 4, 2319-1163.

Dorcas, O. A. B., & Oluwakayode, O. J. (2020). Critical factors responsible for time overruns in Nigeria building construction industry. *Int. J. Mech. Civ. Eng*, 4, 22-33.

Ebekozien, A. and Aigbavboa, C. 2021, "Covid-19 recovery for the Nigerian construction sites: the role of the fourth industrial revolution technologies", *Sustainable Cities and Society*, Vol. 69, pp. 1-10, doi: 10.1016/j.scs.2021.102803.

Fatoye, E.O. 2012. *Contributing factors of delay in the Nigerian construction industry: A comparative analysis with other selected countries In: Laryea, S., Agyepong, S.A., Leiringer, R. and Hughes, W. (Eds)*. A paper Presented at the 4th West Africa Built Environment Research (WABER) Conference Held on 24-26 Julyi, Abuja, Nigeria, 575-587.

Fei, W., Opoku, A., Agyekum, K., Oppon, J. A., Ahmed, V., Chen, C., & Lok, K. L. 2021. The critical role of the construction industry in achieving the sustainable development goals (SDGs): Delivering projects for the common good. *Sustainability*, 13(16), 9112.

Fei, W.; Opoku, A., Agyekum, K., Oppon, J.A., Ahmed, V., Chen, C., Lok, K.L. (2021). The Critical Role of the Construction Industry in Achieving the Sustainable Development Goals (SDGs): Delivering Projects for the Common Good. *Sustainability*. 13, 9112. https://doi.org/10.3390/su13169112

Frimpong, Y., Oluwoye, J., Crawford, L 2003 'Causes of delay and cost overruns in construction of ground water projects in developing countries: Ghana as a case study', *International Journal of Project Management*, 21, 321-326

Fugar, F. D., & Agyakwah-Baah, A. B. 2010. Delays in building construction projects in Ghana. *Australasian Journal of Construction Economics and Building*, 10(1/2), 128-141.

Goubran, S. (2019). On the Role of Construction in Achieving the SDGs. Journal of Sustain. Research. 1, e190020.

Idowu A.O, Simon-Eigbe B.O, & Eshiemokhai T.I. 2022. Impact of Payment Delay on Public Building Projects in Edo State, Nigeria. *Nigerian Research Journal of Engineering and Environmental Sciences*, 7(1), p. https://doi.org/10.5281/zenodo.6725444

Idowu, A. O., & Aligamhe, V. I. 2023. Effect of Payment delay on Time performance of Construction Projects in Edo State, Nigeria. *IOSR Journal of Mechanical and Civil Engineering (IOSR-JMCE),* 20(2), PP. https://doi.org/10.9790/1684-2002010106

Isa, A., & Yusoff, Z. 2015. State of physical facilities of higher education institutions in Nigeria. *International Journal of Scientific and Research Publications*, 5(4), 1-5.

Le-Hoai, L., Lee, Y. D., & Lee, J. Y. 2008. Delay and cost overruns in Vietnam large construction projects: A comparison with other selected countries. *KSCE journal of civil engineering*, 12, 367-377.

Musa, MF. and Ahmad, Z. 2012. Higher Education Physical Assets and Facilities. *Procedia-Social and Behavioral Sciences, Bangkok*, Thailand, 50: 472-478.

Ofori, G. 2023. Get Construction Project Performance Parameters Right to Attain Sustainable Development Goals. *Sustainability,* 15(18), 13360.

Ogunsemi, D. R., & Jagboro, G. O. 2006. Time-cost model for building projects in Nigeria. *Construction management and economics*, 24(3), 253-258.

Ojo, G.K. 2012. Project characteristics influence on risk associated with construction clients' cash flow prediction. *Journal of Research in International Business and Management* (ISSN: 2251-0028) 2(5) 142-150.

Oscar Akotey, J., Sackey, F. G., Amoah, L., & Frimpong Manso, R. 2013. The financial performance of life insurance companies in Ghana. *The journal of Risk finance,* 14(3), 286-302.

Oyedele, L. O. 2013. Avoiding performance failure payment deductions in PFI/PPP projects: model of critical success factors. *Journal of Performance of Constructed Facilities,* 27(3), 283-294.

Robinson, J. 2004. Squaring the circle? Some thoughts on the idea of sustainable development. *Ecol. Econ*, 48, 369–384.

Saeed, N. and Kayani, A.I. 2019. A study to Investigate the Importance of Physical Facilities to Improve Teaching Learning Process at College Level in Tehsil Kotli Azad Kashmir. *Asian Journal of Contemporary Education,* 3(1): 1-14.

Silvius, G. 2017. Sustainability as a new school of thought in project management. *Journal of Cleaner Production*. 166, 1479–1493

Tumi, S. A. H., Omran, A., & Pakir, A. H. K. 2009. *Causes of delay in construction industry in Libya*. In The International Conference on Economics and Administration (pp. 265-272).

Wieser, A. A., Scherz, M., Maier, S., Passer, A., & Kreiner, H. 2019. *Implementation of Sustainable Development Goals in construction industry-a systemic consideration of synergies and trade-offs*. In IOP Conference Series: Earth and Environmental Science. 323, 1, p. 012177). IOP Publishing.

Teddlie, C. and Tashakkori, A., 2003. Major issues and controversies in the use of mixed methods in the social and behavioral sciences. *Handbook of mixed methods in social and behavioral research*, 1(1), pp.13-50.