



**SCHOOL OF ENVIRONMENTAL TECHNOLOGY,
FEDERAL UNIVERSITY OF TECHNOLOGY
MINNA, NIGER STATE, NIGERIA**

SETIC 2020

INTERNATIONAL CONFERENCE

BOOK OF ABSTRACT

MAIN THEME:

Sustainable Housing And Land Management

EDITORS IN CHIEF

R. E. Olagunju, B. J. Olawuyi, E. B. Ogunbode



3RD -5TH MAY, 2021



**SCHOOL OF ENVIRONMENTAL TECHNOLOGY COMPLEX,
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*Dean, School of Environmental Technology
Federal University of Technology Minna, Nigeria*

**School of Environmental
Technology International
Conference
(SETIC 2020)**

3RD – 5TH MAY, 2021

**Federal University of Technology
Minna, Niger State, Nigeria**

BOOK OF ABSTRACT

EDITORS IN CHIEF

R. E. Olagunju

B. J. Olawuyi

E. B. Ogunbode

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PREFACE

The School of Environmental Technology International Conference (SETIC 2020) is organised by School of Environmental Technology, Federal University of Technology Minna, Nigeria. In collaboration with Massey University New Zealand, Department of Civil Engineering Faculty of Civil Engineering and Built Environment Universiti Tun Hussein Onn Malaysia, Malaysia Centre For Professional Development and Industrial Project Development School of Professional and Continuing Education (SPACE) UTM-KL Malaysia, Global Academia, Department of Architecture, Faculty of Engineering and Architecture, Istanbul Gelisim University Istanbul Turkey, Sustainable Environmental and Technology (SET) Research Group, Department of Architecture, Universiti Sains Islam. The main theme for this year conference is "SUSTAINABLE HOUSING AND LAND MANAGEMENT". This promotes and encourage innovative and novelty for policy issues for inclusive and sustainable housing, access to finance for housing and land development, sustainable building materials, building cost management, sustainable and resilient cities, geoinformatics for land management, rapid urbanization, sustainable land use and spatial planning, gender issues in access to land.

The responses from participants for this conference are overwhelming, well attended, and successful. The operation mode was Virtual for all participants who choose the oral presentation mode. While, Physical for all poster medium presenters. Our participants are from various Universities and other sector across the globe, from countries like United State for America (USA), Turkey, Malaysia, China, Saudi Arabia, Kenya, New Zealand just to mention a few. Hence, this conference provides a good platform for professionals, academicians and researchers to widen their knowledge and approach on latest advances in research and innovation. Papers presented in this conference cover a wide spectrum of science, engineering and social sciences.

Finally, a note of thanks must go to SETIC 2020 Local Organizing Committee (LOC) for their remarkable dedication in making this conference a success. We hope the event will prove to be an inspiring experience to all committee members and participants.

ACKNOWLEDGEMENTS

The effort put together in achieving the success of SETIC 2020 is predicated on the feat of the first and second edition of School of Environmental Technology International Conference held in 2016 and 2018, respectively. The support and goodwill from Vice-Chancellor of Federal University of Technology, Dean School of Environmental Technology, Dr Dodo Y. A., Dr Moveh S. and many other highly motivated people are highly appreciated.

It is also my privilege and honour to welcome you all, on behalf of the Local Organizing Committee (LOC) to the 3rd edition of the Biennial School of Environmental International Conference (SETIC 2020). This Conference which was earlier schedule for 7th to 11 April, 2020 is holding now (3rd to 5th May, 2021) due to the challenges of COVID-19 Pandemic and the ASUU-FGN crisis which made our public Universities in Nigeria to be closed for about one year. We thank God for keeping us alive to witness the great SETIC2020 event, in an improved form exploiting the new-normal situation posed by the Pandemic for a hybrid (i.e. both physical and virtual) form of Conference participation.

The conference provides an international forum for researchers and professionals in the built environment and allied professions to address fundamental problems, challenges and prospects Sustainable Housing and Land Management. The conference is a platform where recognized best practices, theories and concepts are shared and discussed amongst academics, practitioners and researchers. This 2020 edition of SETIC has listed in the program a Round Table Talk on Housing Affordability beyond COVID-19 with selected Speakers from across the globe available to do justice on the topic of discussion.

Distinguished Conference participants, permit me to warmly welcome our Keynote and Guest Speakers:

- Prof. Ts. Dr. Mohd Hamdan Bin Ahmad, *Deputy Vice Chancellor (Development) Universiti Teknologi Malaysia (UTM)*;
- Assoc. Prof. Dr. James O.B. Rotimi, *Academic Dean Construction, School of Built Environment, College of Sciences, Massey University of New Zealand*;
- Assoc. Prof. Sr. Dr. Sarajul Fikri Mohammed, *General Manager, Centre for Professional Development and Industrial Project Development School of Professional and Continuing Education (SPACE), UTM-KL*;
- Prof. Ts. Dr. Zanail Abidin Akasah, *Visiting Professor on Sustainable Solar Integrated Design Building Design, International Micro Emission University (IMEU)/HIMIN Ltd. China & Senior Research Fellow, The Architects Resourcery, Jos, Nigeria*;
- Ar. Dr. Elina Mohd Husini, *Department of Architecture, Faculty of Engineering & Built Environment, Universiti Sains Islam*;
- Asst. Prof. Dr. Yakubu Aminu Dodo, *Department of Architecture, Faculty of Engineering and Architecture Istanbul Gelisim University, Istanbul Turkey*

and the five Speakers for our Round Table Talk on Housing Affordability Beyond COVID-19

- Dr. Muhammad Mustapha Gambo, *Manager, Policy, Research and Partnerships, Shelter Afrique, Nairobi, Kenya*;
- Prof. Dr. Soumia Mounir, *Department of Architecture Ecole Nationale d'Architecture d'Agadir [The National School of Architecture of Agadir], Morocco*
- Dr. Said Alkali Kori, *General Manager, Projects and Portfolio management, Family Homes Fund, Federal Ministry of Finance, Abuja*;
- Ts. Dr. Sasitharan Nagapan, *Department of Civil Engineering, Faculty of Engineering and Built Environment, Universiti Tun Hussein Onn Malaysia, Malaysia*;
- Dr. Mercy Nguavese Shenge, *AIA Assoc. Historic District Commissioner, City of Rockville, MD, USA*.

for accepting to share from their knowledge, wealth of experience and be available to interact with participants on varied issues on "**Sustaining Housing and Land Management**".

As reflected on the Conference program, the Conference activities will be Virtual for power point presenters to run in four parallel sessions on the Zoon platform while the participants for Poster presentations (mostly Postgraduate students) are expected to have their Posters displayed in the Environmental Complex Building of the Federal University of Technology, Minna. With a total of One Hundred and One (101) articles captured in the Conference Proceedings covering the seven subthemes of the Conference, I have no doubt that we are all in for an impactful experience at SETIC2020 as we brainstorm, exchange ideas, share knowledge and participate in evolving more approach to sustainable housing and land management drives.

I implore us all to enjoy every moment of the deliberations and ensure we maximize the great opportunity offered by the Conference to network for better research and career development as we also make new friends.

I also on behalf of myself and the LOC express our appreciation to the Dean, School of Environmental Technology and the entire Staff of the School for giving us the opportunity to steer the ship for SETIC2020. To the Reviewers and various Committees that served with us, I say thank you for helping us through despite the pressure of work.

Thanks, and God bless you all.

Olawuyi, B.J. (PhD)
Chairman, LOC
SETIC2020

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DECLARATION

PEER REVIEW AND SCIENTIFIC PUBLISHING POLICY STATEMENT

3rd MAY 2021

TO WHOM IT APRIL CONCERN

I wish to state that all the papers published in SETIC 2018 Conference Proceedings have passed through the peer review process which involved an initial review of abstracts, blind review of full papers by minimum of two referees, forwarding of reviewers' comments to authors, submission of revised papers by authors and subsequent evaluation of submitted papers by the Scientific Committee to determine content quality.

It is the policy of the School of Environmental Technology International Conference (SETIC) that for papers to be accepted for inclusion in the conference proceedings it must have undergone the blind review process and passed the academic integrity test. All papers are only published based on the recommendation of the reviewers and the Scientific Committee of SETIC

Babatunde James DLAWUYI
Chairman SETIC 2020
Federal University of Technology, Minna, Nigeria

Papers in the SETIC 2020 Conference Proceedings are published on www.futminna.edu.ng, AND ALSO SELECTED PAPERS WILL BE PUBLISHED IN REPUTABLE JOURNALS



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Prof. Nuhu M. B.	Access to Finance for Housing and Land Development
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Dr. Isah A. D.	Member	Department of Architecture, Federal University of Technology Minna, Nigeria

PROFILE OF KEYNOTE SPEAKERS AND GUEST SPEAKERS

SETIC 2020 organisers wishes to thank our keynote speakers, and Guest speakers for accepting to create time to share from their rich wealth of knowledge and interact with delegates and participants on varied issues being examined at this year's conference. A brief profile of each keynote speaker is provided here, this would allow for future interaction and networking with them.

 <p>Key-Note Speaker I</p>	 <p>KEY-NOTE SPEAKER II</p>	 <p>Key-Note Speaker III</p>
<p>Prof. Ts. Dr. Mohd Hamdan Bin Ahmad <i>Deputy Vice Chancellor (Development)</i> <i>University Teknologi Malaysia</i></p>	<p>Prof. Ts. Dr. Zainal Abidin Akasah <i>(Visiting Professor)</i> <i>Sustainable Solar Integrated Building Design</i> <i>International Micro-Emission University (IMEU)/NIMW</i> <i>Ltd China & Senior Research Fellow The Architects</i> <i>Renouancey, Jos Nigeria</i></p>	<p>Associate Prof. Dr. James O.B. Rotimi, <i>Academic Dean Construction, School of</i> <i>Built Environment, College of Sciences,</i> <i>Massey University of New Zealand.</i></p>
 <p>Key-Note Speaker IV</p>	 <p>Guest Speaker I</p>	 <p>Guest Speaker II</p>
<p>Assoc. Prof. Sr. Dr. Sarajul Fikri Mohamed <i>General Manager, Centre for Professional Development</i> <i>and Industrial Project Development School of</i> <i>Professional and Continuing Education (SPACE)</i> <i>UTM-KL, Malaysia</i></p>	<p>Asst. Prof. Dr. Yakubu Aminu Dodo <i>GREM, MyCREST MAARCHES</i> <i>Istanbul Gelism University, Istanbul Turkey</i></p>	<p>Ar. Dr. Elina Mohd Husini <i>Department of Architecture Faculty of</i> <i>Engineering & Built Environment,</i> <i>Universiti Sains Islam Malaysia</i></p>

ROUND TABLE PANEL SPEAKERS

Round Table Talk
On Housing Affordability Beyond Covid-19

Main Theme

**SUSTAINABLE HOUSING
AND LAND MANAGEMENT**



Dr. Muhammad Mustapha Gambo
*Manager: Policy, Research and Partnerships,
Shelter Afrique, Nairobi, Kenya.*



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*GREM, MyCREST MAARICHES
Istanbul Gelisim University, Istanbul Turkey
Moderator*

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A. POLICY ISSUES FOR INCLUSIVE AND SUSTAINABLE HOUSING

1. Methodological Approaches to The Socio-Cultural Studies in Residential Estates

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Abstract:

In recent times, researchers in culture and housing designs have been venturing into studies which seek to apply the people’s culture and way of life in the design of their residences. This is because contemporary urban design is a borrowed concept which does not fit with the local needs of the people. They use methods for obtaining information and opinions (data) on decisions, policies, and strategies thereby involving the community and participants in all aspect of the research processes. Thus, the application of such effective methods should therefore be documented as the standard for new researchers who plan to embark on such academic undertakings; the gap which this study plans to fill. Hence, the aim of this study is to explore the methods and approaches essential for such socio-cultural studies in residential housing estates. The study puts in place the approaches for socio-cultural evaluation that takes into account local expectations.

Keywords: Housing, Socio-cultural, Methodological, Residential estate.



2. A Critique of the Trusteeship Position of the Governor in the Land Use Act

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Abstract:

The trusteeship policy of the Land Use Act, 1978 (‘the Act’) is contained in section 1 of the Act which vests all land in the territory of each state in the Governor to hold in trust for the benefit of Nigerians. The policy is intended to achieve certain objectives which include: to secure for all Nigerians right of access to land for building, industrial, housing, and agricultural purposes, to enable government control the use to which land can be put in all parts of Nigeria thereby facilitating physical planning and development of infrastructure. However, the exact import of section 1 of the Act has been a subject of divergent interpretations. Thus, the nature of the trusteeship position of the Governor is shrouded in controversy. This paper employs the doctrinal method of research to critique the import of the concept of trust created under section 1 of the Act, and the objective is to determine whether the Governor is a trustee in relation to the land that are vested in him. The paper reveals that the Governor is a trustee in a special sense in respect of the land in his state. Therefore, it is suggested that the Governor should exercise his powers in a fair and just manner in accordance with the principles of trusteeship. More so, the Act should be amended to enable citizens to hold the Governor as trustee to account for exercise of his powers.

Keywords: Land, Trusteeship, Trust, trustee, Governor.



3. E-Procurement Implementation in the Public Construction Sector in Nigeria: A Review

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Abstract:

E-procurement is seen as one of the essential tools that could be used by government for public procurement in an attempt to reduce the menace of corruption in the procurement processes. Anecdotal evidence has proved that about 75% of corrupt practices in Nigeria are procurement based. This study therefore, intend to explore the barriers to the implementation of e-procurement in the Nigerian construction sector using a desktop research approach. The approach provides the researcher opportunity to obtain basic information from the literature search that can serve as foundation for future research. However, it was revealed that E-procurement implementation has begun in Nigeria, but the lack of empirical research has hindered a clear framework for the adoption as expected and what is required in the public sector goes beyond the present practice. The current practices of e-procurement in the construction is at formative stage, hence more efforts are required for the implementation to yield the desire results. The paper thus concludes that unavailability of services, investment cost, technical know-how, electricity supply, internet diffusion and cyber-security are some of the factors affecting implementation of e-procurement in the country.

Keywords: Construction, E-procurement, Implementation, Nigeria, Public Sector.



4. Assessment of the Prospects and Challenges of E-Procurement Practices on Construction Project Delivery in Abuja, Nigeria.
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Abstract

Over the years, companies trading in the construction sector have sought to deliver quality projects and improve efficiency and effectiveness in their operations and services to stakeholders. The utilisation of e-procurement in other industrial sectors like manufacturing and retail has, for some time, been widespread, but to date is considered a relatively new phenomenon in construction. However, what e-procurement strives to achieve is far from new. This paper therefore assessed the extent to which e-procurement systems is practiced in Abuja, Nigeria, it examined the prospects of e-procurement practices and the challenges of e-procurement practices. The methodology of study involved survey approach in which 100 structured questionnaires were administered to the professionals in the construction industry. Data obtained were analysed using the frequency, percentage and mean ranking. The findings showed that E-payment is the most practiced e-procurement system by construction professionals in Abuja, Nigeria. The results of the industry survey have also identified eleven e-procurement prospects in which elimination of direct human interaction on bidding, internal efficiency increase, productivity improvement, improved effectiveness of purchasing process and reduced paperwork were top ranked. Also, e-procurement systems have technical problems, clients' lack of experience, lack of experts for system vendors and customers' lack of trust for the e-procurement systems were the top ranked challenges. The findings from the study have indicated that e-procurement systems and applications are still in their infancy stage and construction professionals are currently experiencing development issues, which can be expected with the implementation of new technologies and change initiatives. The study also recommended that organizations and Nigerian government should pay more attention to spread the knowledge about electronic procurement systems, related processes and procedures to reach new level of success toward the e-business, organizations for both public and private sectors should be responsible for the development of more efficient systems and fully integrated solutions for e-procurement and the ICT developers' companies should do more customizations for the electronic procurement integrations, especially for construction industry by integrating the systems to the related industrial systems such as BIM, and other financial systems.

Keywords: E-procurement, E-sourcing, E-invoicing, E-purchasing, E-payment



5. An Assessment of Users’ Satisfaction with the Adequacy of Security Measures in Mixed-use Buildings in Abuja

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Abstract:

The question of security of life and property has been a global concern since time immemorial with terrorism, insurgency and crime being some the most prominent threats to life and property. Nigeria as a nation has not been left out of this global issue. In recent times different parts of the country, including the Federal Capital Territory (FCT) Abuja, have come under severe attacks which have led to the loss of lives and property. This has made it necessary for every stakeholder- including the built environment professionals - to make necessary contributions to the security of life and property. Sustainable passive and active security measures need to be put in place in order for the built environment to be adequately braced up to mitigate security challenges. Passive security incorporates design techniques and elements that have been deliberately put in place to mitigate or avert the effects of security threats to the built environment. This research aims at assessing the adequacy of security measures in mixed-use buildings in Abuja, from the users’ perspective. This was done via post occupancy evaluation with the aid of questionnaires, the data was analyzed and from the results it was discovered that users were relatively satisfied with the current level of security.

Keywords: User Satisfaction, Security, Mixed-use Building, Post-occupancy Evaluation.



6. Allocation of Emerging Risks of E-Communication in Public Private Partnership Projects in Nigeria

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Abstract:

The use of various forms of Public Private Partnerships (PPPs) in delivering public infrastructures has been increasing. There are several researches on PPP and e-communication, and the risks associated with them. However, previous studies on e-communications in PPP projects has shown that there are emerging risks but have failed to clearly allocate these risks factors to various parties in PPP projects. This paper access the risk allocation preference for emerging e-communication risks in PPP projects as that will assist in completing the risk management framework. Data was collected using questionnaires. Respondents' preferences of allocation between the public and private sectors were established. Construction professionals are the respondents. A sample frame of 2,287 was obtained and a sample size of 329 was determined. Data was analysed using descriptive statistics. The respondents risk allocation preferences showed that eleven (11) risk factors (which include: Failure of the system of communication used, problems of coding and decoding by sender and recipient, Overhasty, ill-considered and unclear messages generated) could be shared between the public sector and the private sector and eight (8) (which include: Using substandard gadgets, tempering or copying of company's websites, risk of creating libel) risk factors are assigned to the private sector as none of the risk factors are assigned to the public sector alone. The study concluded that risks are best shared between parties.

Keywords: Public Private Partnership, E-communication, Risk allocation, Nigeria.



7. Mechanism for Building Standards: Towards an Effective Building Control Practice in the Federal Capital Territory (fct), abuja.

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Abstract:

Despite the establishment and operations of development control departments across Nigeria, the nation's Building assets has been plagued with quality deficit that exposes users of such buildings and the public to vulnerability to hazards and disasters resulting from building failures, thus the need for effective building control practice that would ensure construction standard. This study assesses the developmental control practices with the view of proposing a mechanism for an improved building standard in the Federal Capital Territory (FCT). This exploratory research adopted a pragmatic approach through mixed methodology design. This was done through administration of questionnaires survey and an interview of relevant stakeholders to the research context. The findings show that of all the constructs considered under the study, three (3) of which comprises of; improved institutional framework, increased enforcement and compliance level, and elimination of perceived challenges that constantly hindered the attainment of control department objectives were found to be critical for an improved developmental control towards an improved quality infrastructures in the study area. Therefore, a mechanism for developmental building control practices (MDBC) was developed. It is recommended that the MDBC be put into practice for the benefits of the built-environmental.

Keywords: Building standards, Development control, Federal capital territory, Mechanism



8. Assessment of Facility Management Practices in Selected Public Health Care Facilities in Niger State

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Abstract

Facility Management (FM) is still in its infancy but growing due to the country's rising profile as one of the fastest growing entities in the emerging market economies. It is on this basis that the present study assesses the facility management practices in selected Public health care facilities in Niger State. A mixed research survey design was adopted with the administration of questionnaires and interview to the health workers, works and maintenance officers (service providers) as well as end-users and visitors in Zone 'B', geographical zone of Niger State. A total of four hundred and fifty (450) questionnaires were administered (50 questionnaires to each Local Government under Zone B Niger, State, Nigeria) and interview were conducted with (9) in charge medical officers and (9) maintenance officers across the zone. The research data were analysed manually in tabular form using descriptive statistical procedures while the interview responses were analysed using content analysis. The outcome of the findings revealed that Outsourcing Facility Management and In-House (FM) are the two major types of FM adopted in the public healthcare facilities. Also improved funding, manpower in the works unit, waste management, contract and contractor management among others are the indicators for effective FM practices. The challenges facing the FM practices are unveiled to be corruption, insufficient funding, poor maintenance culture, problem of policy implementation, low technical knowhow. Finally measures recommended for improved FM practices are the adoption for effective are fitness for purpose/ functionality, ease of usage, benchmarking, building simulation/building forecasting, risk management in building facilities and building maintenance should be put in place by the government to encourage the uptake and adoption of FM practices in the healthcare facilities. Furthermore, there should be rigorous enlightenment program on FM practice by government to improve healthcare standard and save lives.

Keyword: Facilities Management Practices, Public Healthcare, Building, Outsourced Managing Contractor, Outsourced Managing Agent.



9. Evaluation of the Roles of Niger State Housing Corporation under Public-Private Partnership as Strategy for Public Housing Delivery in Niger State

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Abstract

Public Private Partnership (PPP) as a strategy for public housing delivery in Niger state was introduced by the administration of Ibrahim Babaginda Aliyu in 2007 and it was used for all the seven housing estates embarked upon by the administration from 2007 to 2015 and Niger State Housing Corporation (NSHC) is the only legally recognized public housing development agency, with PPP achieving 0.91% over a period of 8years, this paper examines the role of the agency under the PPP arrangement. Focused interview (FI) was used to obtain data from principal officers of the Corporation such as the General Manager, Directors of Estates, Administration and Planning. Estate officers in charge of the estates and some of the contractors that participated in the execution of contracts were interviewed. Descriptive statistics was used to analyze the data obtained. The study discovered that the law that established the agency is obsolete, inadequate and incapable of accommodating the peculiarities of PPP, it was discovered also that there was no PPP regulatory law, thus, the agency could not function professionally in accordance to international best practices and this contributes to the woeful performance of 0.91% of PPP. The study recommends amongst others for the setting up a body of professionals to put PPP regulatory law in place in accordance to literature and international best practices.

Key words: Public Private Partnership, Niger State Housing Corporation, PPP Regulatory Law, Public Housing Delivery, International Best Practices



10. Evaluation of Shear Bond Strength of Geopolymer Mortar Containing Cassava Peel Ash and Metakaolin

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Abstract:

The cement industry has been recorded to have contributed immensely to the high global carbon dioxide emissions the word is contesting with today. This has made researchers to looked for other sustainable substitutes. One of the possibility substitutes is geopolymer mortar, which has no cement content in it. Geopolymer mortar can be produced using agricultural and industrial wastes like cassava peel ash (CPA), rice husk ash (RHA), metakaolin (MK), fly ash (FA), and many more. Geopolymer have been proven recently to be the way of converting agricultural, thermal and industrial waste into construction repair materials. When comparing Ordinary Portland Cement (OPC) mortar with geopolymer mortar, geopolymer mortar is considered as a highly eco-friendly product. This paper evaluates the compressive and shear bond strength properties of geopolymer mortar manufactured using Cassava Peel Ash (CPA) and Metakaolin (MK). Sodium silicate (Na_2SiO_3) and 9 molar concentration of sodium hydroxide (NaOH) solution were used as alkaline activator. The mass ratios of sodium silicate to sodium hydroxide (NS: NH) and the binder to fine aggregate (B: A) were fixed to 2.5 and 0.4 respectively. The compressive strength of the synthesized GPM were determined at 3, 7 and 28-days. The compressive strength at 28 days curing was 46.5 N/mm^2 . Results revealed that 50% replacement of MK with CPA made with 9M concentration of NaoH enhanced the compressive strength of the mortar while 100% CPA content in the mortar demonstrated the highest shear bond strength value. The grooved surface improved the bonding strength. The bond strength results have proven that the surface texture must be considered in determining the bond strength. It is concluded that geopolymer mortar incorporating 100 percent metakaolin could be used in the construction industry with the almost negligible amount of environmental problems.

Keywords: Geopolymer; Binder; Metakaolin; Cassava Peel Ash; compressive strength; bond strength.

11. Strategies for Disputes Reduction in the Nigerian Construction Process

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Abstract

Dispute has been observed as a common phenomenon in the construction process and has constituted several problems to project actors and the construction industry. Therefore, this research was conducted to find out the causes of disputes and to develop strategies that can be adopted by construction stakeholders to prevent its frequent occurrence in the construction process. To achieve this aim, a mixed methods research design was adopted in the study. The approach was adopted for robust data collection in the study. In the mixed methods, oral interview and questionnaire were the instrument used for data collection. The oral interview was first conducted with 16 construction stakeholders in five selected firms in Abuja. The data obtained in the interview study was analyzed through content analysis. The findings from the interview exercise served as basis for preparation of questionnaire that was later administered to some randomly selected construction firms in the study context. The data obtained from the questionnaire study was analyzed through descriptive statistics. The findings from the study show that lack of understanding and agreement on the type of contract, contractual payment, breach of contract, and differing site condition are the main causes of disputes in Nigerian construction process. The study concluded that adequate knowledge of contractual document before the start of a project, bringing up contract conditions that are fair to all parties and maintaining a good relationship between the clients, professionals and workers are the strategies that can be adopted to overcome disputes in construction projects.

Keywords: Actors, Construction, Disputes, Framework, Projects.



12. ASSESSMENT OF ENERGY CONSERVATION MEASURES IN THE DESIGN OF POSTGRADUATE STUDENT HOSTELS IN NORTHERN NIGERIAN UNIVERSITIES

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Abstract:

The environment today is facing challenges as a result of urbanization and has led to the depletion of available resources such as; water, land, air and energy which has in turn changed into an artificial living environment. The rate of energy being consumed in student hostels is daily on the increase with the advancement in technology and student enrolment. The study identified and assessed the designs of postgraduate student hostel buildings, focusing mainly on the energy conservation design measures that were adopted in the designs. The survey adopted a qualitative research method where a scheduled checklist was used to collect data from the selected case studies. Findings from the survey suggests that, mostly owing to trending technologies in design and maintenance, most postgraduate student hostel designs have shaded away from the use of passive design measures and are now focused on achieving aesthetics. The study concludes that passive design measures have not been efficiently utilized in the designs of most postgraduate hostels. As such, the incorporation of energy conservation measures should be made mandatory at design level prior to the approval of any student hostel building plan. This can further reduce the demand for mechanical power which at the moment is inadequate to attain thermal comfort of the occupants.

Keywords: Energy, Conservation, Postgraduate, Hostel and Design.



13. A Review of Housing Potentials in Curbing Pandemic: A Post Covid-19 Analysis

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Abstract:

The coronavirus (COVID-19) outbreak, declared a global pandemic by the WHO, has become the most trending subject of the year, wreaking havoc on the economy and affecting many individuals' lives companies in a variety of sectors, capital markets, and supply chains. All capital investments have benefits and drawbacks. However, without a reference to pandemics in the unforeseeable plan, the announcement of a pandemic by WHO followed the immediate termination and delays of many housing projects worldwide. But how does COVID-19 affect the housing industry, and are owners and contractors prepared to deal with the outbreak's fallout? This study has reviewed the impact of past pandemics on housing sectors and how they overcame the challenges posed to the housing project. The study also investigates the correlation between past pandemic with present COVID-19 to identify the building sectors and suggest the possible solution to overcome such challenges.

Keywords: Covid-19 Pandemic, Housing Pandemic, Construction Housing Covid -19



B. ACCESS TO FINANCE FOR HOUSING AND LAND MANAGEMENT

1. Energy Pricing and Poverty in Sokoto City, North West Nigeria: A Lesion in Green House Gas Reduction

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Abstract:

Energy policies and reforms have been pursued differently by societies on the basis of spatial and socio-economic peculiarities. Nigeria’s response in this regard manifests through different intervention strategies at different scales. A number of these strategies are aimed at promotion of relatively less violent sources of energy. This paper examined the nexus between climate change mitigation and adaptation efforts on one hand, and energy as well as income poverty on the other. Using the end-use method, monthly electrical energy consumption for average household in the city of Sokoto was established under the Business as Usual (BaU) and ideal scenarios, assuming a 30-day month. The results indicated an average consumption of 137.7 kWh and 303kWh for BaU and ideal scenarios respectively. The percentile method was used to disaggregate the income classes. The lowest expenditure (i.e. for income class in the lower percentile) even under the BaU scenario was found to be 12.85%. The use of LPG for cooking was found to have improved in the city from 0.2% in 2010 to 17.5% in 2019. By implication, even on the basis of the BaU scenario for electricity supply in Sokoto, the average established cost by far exceeds the World Bank’s upper limit of 3.8% for low income households in developing countries. Also, even though Income poverty and Energy poverty are two different things, they are still related as highlighted previously by other researchers. In the context of Sokoto city, almost all income poor households tend to be energy poor (which is a general case in most developing countries), as the lowest proportion of income spent on electricity for low income households stood at 12.85% which more than tripled the threshold value. However, about 50% of the energy poor households are not income poor. This of course constitute a lesion for successful efforts in reducing greenhouse gas emissions.

Keywords: Energy, Sustainability, Poverty, Pricing, Climate change, Environment



2. Assessment of the Determinants of Risk Management Capabilities and Commitments in Public Private Partnerships Projects

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Abstract:

Risk allocation in PPP is claimed to be capability driven. This is because the party possessing the best capability of management with respect to a particular risk has the best opportunity to reduce the likelihood and control of the consequences of the risk if it materializes. Also, it has been stressed that risk management commitment is an important factor to consider when allocating risk in PPP. The research is aimed at assessing the determinants of risk management capabilities and commitments of PPP. This was achieved by identifying the project determinants of risk management capabilities and commitments of construction organizations and assessing the level of importance of those determinants for a successful risk allocation. The research adopted a quantitative approach with questionnaires distributed in Abuja, Nigeria. Mean was used for assessing the capability and commitment determinants. The research found that eleven (11) RM capability determinants and three (3) RM commitment determinants which were assessed for all the five (5) risk allocation strategies and the most important of them were sorted out. The research recommends that careful implementation of the findings of this research will improve successful achievement of PPP projects in Nigeria, and that level of influence of organisational risk management capability and commitment against risk allocation strategy could also be checked as this research has identified the various capability and commitment determinants.

Keywords: Risk, PPP, capabilities, commitment, determinants.



3. Conceptual Framework for an Effective Management of Public-Private Partnership Infrastructure Project Stakeholders to Minimise Project Failure in North Central, Nigeria.

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Abstract:

Public- Private Partnership (PPP) brings together the Private sector managerial expertise and Public sector regulatory and supervisory capacity in the provision of public infrastructure projects. Several problems have been encountered on PPP initiatives in Nigeria, especially in the North Central region where many PPP infrastructure projects have experienced challenges and failures as a result of stakeholder’s opposition and disagreements arising from the neglect of stakeholders’ interest. Previous research have developed frameworks and models for managing project stakeholders in conventional procurement system which is unsuitable for managing the challenges of stakeholders in PPP infrastructure projects. As such, identification and management of stakeholders in PPPs is crucial to the success of PPP projects. Hence, there is need to develop a conceptual framework upon which an effective strategy to minimise PPP infrastructure projects failure through effective stakeholder’s management amidst well designed institutional and regulatory framework and a conducive investment climate. This research intends to bridge the gap in the literature by providing an operational strategy to minimise failure of PPP infrastructure projects through effective management of PPP project stakeholders in North Central region of Nigeria. This strategy could be applied to minimise PPP infrastructure failure in developing countries.

Keywords: Conceptual Framework, Failure, Nigeria, Public-Private Partnership Infrastructure projects, Stakeholders.



4. Cost of Implementing Health and Safety Measures in Construction Projects in Abuja, Nigeria

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Abstract:

The high rates of construction accidents as well as increase in construction cost due to accidents have been an issue of concern. The cost of health and safety during forecasting the construction cost is given little or no emphasis. This has become a threat to both contractors and their clients and has also posed great challenges in project executions with its multiplying effect on incurring additional cost in completing the project, and as such certain contractors and sub-contractors pay little or no attention in implementing health and safety measures. Hence, the aim of this study is to determine the cost of implementing health and safety measures in construction projects. The study is a criterion – based study, in which certain criteria were outline for the selection of the construction firms. The study largely derives quantitative measure in order to determine the cost of implementing health and safety measures on construction projects. Quantity surveyors with vast knowledge of health and safety in the construction firms were considered for this research. Correlation analysis was conducted in order to determine the relationship between cost of implementing health and safety measures and cost of construction projects and the result was found to be significant ($P < 0.005$). This relationship was modelled using simple linear regression and from the model the result shows that the cost of implementing of health and safety measures have little or no effect on the total cost of construction project. The findings recommend the need for contractors to implement an effective and efficient health and safety cost management system in the Nigeria construction industry, as this will help them in achieving an improvement on construction site safety performance.

Keywords: Accidents, Cost, Health, Safety, Measures.



5. Assessment of Factors Influencing the Various Procurement Methods in the Delivery of Commercial Building Projects in Abuja, Nigeria

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Abstract:

Selecting an appropriate project procurement method is a complex decision-making process. The decision to select the appropriate procurement method to implement a construction project is crucial as it invariably affect project performance and delivery. Procurement of infrastructure project is facing a global challenge with the case of developing nations being of unique interest. This study assesses the factors influencing procurement methods in the delivery of commercial building projects in Abuja, Nigeria. The study considered five (5) procurement methods and nineteen (19) factors relating to the Nigerian Construction industry. The study adopted the quantitative survey research approach and data were collected with the aid of a well-structured questionnaire administered to 130 respondents of which and 95 were returned. Collected data were analysed using Relative Importance Index (RII). The study revealed that out of the nineteen factors considered, four (4) were found to be very important which are Project Completion at Estimated Cost, Cash flow and Funding Arrangement, Financial Capability of Client and Expected Performance of Project with RII of 0.91, 0.90, 0.89 and 0.80 respectively. While the fifteen (15) others were of less importance with RII ranging from 0.79 (Size of Project) to 0.61(Quality Certification) and a general average RII of 0.76. This study revealed that all factors influencing the procurement methods in commercial project delivery are important, with varying levels of importance where some have higher RII than others This indicates that these factors seem to determine the procurement method that will be employed for a commercial project.

Keywords: Construction, projects, Procurement, Factors, Delivery.



6. Assessment of Procurement Risks in FIRS Building Construction Projects in Nigeria

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Abstract:

The procurement system practiced by the FIRS is constantly challenged with the problems of fraudulent practices, inefficiencies, lack of transparency, professionalism, and non-adherence to procurement code of ethics. This study assessed the procurement related risks in FIRS building construction projects in Nigeria with a view to minimising the problems of fraudulent practices. The study adopted a quantitative approach using structured questionnaires, which were randomly distributed to clients, procurement officers, contractors and consultants of FIRS building projects. The collected data was analysed using percentile, frequencies and Relative Importance Index. The study categorised risks in FIRS procurement into five major groups and found the important risks factors under each group. The top risks factors under ‘Fraud’ were: Kick back, shadow vendors, changes in the bids after formal receipt, suspicion about conflict of interest, and conspiracy amongst bidders. The top risks factors under ‘transparency problems’ were: dishonesty and lack of openness of staff to bidders, non-adherence to award criteria, and improper advertisement of proposal requests. The top risks under ‘competitiveness problems’ were: lack of competition among tenderers and limited issuance of eligibility forms. On the overall, the top procurement related risks were: Kick back, lack of cost-effective tenders among the bidders, shadow vendors, changes in the bids after formal receipt, and suspicion about conflict of interest. It is recommended that a system of checks and balances is put in place in FIRS project to forestall the inherent corruption. Also, contractors and consultants with integrity should be engaged in FIRS projects.

Keywords: Public building, Procurement Risk, Risk management, and FIRS



7. ASSESSMENT OF THE ADOPTION OF BUILDING INFORMATION MODELLING (BIM) IN THE NIGERIAN CONSTRUCTION INDUSTRY

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ABSTRACT

Despite the use of BIM being an indicator of the maturity of a nation’s construction industry as well as conferring several benefits on project stakeholders, researchers have noted that awareness of BIM among Nigerian construction professionals is low. This study aimed to assess the adoption of BIM on projects carried out by construction firms in the Nigerian Construction Industry (NCI). The study adopted a quantitative research design that was based the use of questionnaires. A convenience sample of relevant professionals in construction firms who could be accessed through an online survey was built up through a snowballing approach, which eventually yielded a total of 52 professionals. The data gathered from this sample through a questionnaire survey was analysed using descriptive statistical method (Mean Item Score and Standard Deviation) and the results were presented using tables and charts. The study found that BIM awareness and acceptance are at a medium level; only ‘AutoCAD’ BIM software enjoyed a ‘High’ frequency of use in the NCI. BIM adoption had a noticeable impact in four reviewed aspects of project performance; ‘Greater control’, ‘Improved collaboration’, ‘Conflict resolution’, and ‘Reduction in labour’. The study concluded that BIM use in the NCI is still at a rudimentary level, although great potential for improvement exists, if the right environment (political, legislative, contractual, and technical) is provided. It was recommended that the Federal and State governments should devise an Implementation Strategy Plan for BIM; in addition, Clients could subsidise BIM costs through Preliminaries items on high-value construction contracts.

Keywords: adoption, Building Information Modelling, construction, technology.



C. SUSTAINABLE BUILDING MATERIALS

1. Sustainable Building Material for Green Building Construction and Conservation

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Abstract

Materials are the building's essential components. The building structural capacity is accountable for chemical, physical and mechanical properties of materials as well as an acceptable model. Therefore, green building design will start with the choice and use of environmentally friendly materials with similar or better features than conventional building materials. Construction materials are typically chosen by practical, technological and financial requirements. Nonetheless, with sustainability as a crucial issue in recent decades, the construction sector, directly or indirectly causing a significant portion of the annual environmental degradation, should assume the duty to contribute to sustainable development by seeking more environmentally friendly building and design methods. Among the approaches in new material uses, recycling and reuse, sustainable product development or green resource usage, careful selection of environmentally friendly sustainable building materials can be the fastest way for developers to start incorporating sustainable design concepts into buildings. Globally, the research community has undertaken significant efforts to explore alternative sustainable building materials and low-tech technologies, resulting in a more sustainable and accessible construction that meets today's comfort requirements. To achieve this goal, adopting green building materials is a good alternative. Therefore, in a nation's sustainable development, choice of building materials with minimal environmental burdens is useful. This paper reviews research works with the aim of illustrating how sustainable building material can help reduce the impact of environmental degradation and create healthy buildings that can be sustainable for both the occupant and our climate.

Keywords: Sustainable Building, Sustainable Materials, Green Building, Construction Industry.



2. Comparative Compressive Strengths of Concrete Using Wood Ash and Cow Bone Ash as Partial Replacement for Cement

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Abstract

The cost of cement for building construction has been a concern for developers these days, hence a comparative study of cow bone ash and wood ash as partial replacement for cement in building construction was undertaken. Chemical analysis test on wood ash and cow bone ash, bulk density test, specific gravity test, sieve analysis, slump test and compacting factor test of the freshly prepared mix were conducted to determine the suitability of the materials for concrete making. Mix ratio of 1:2:4 was adopted and replacement level 0, 5, 10, 15, and 20 percentages of cement by wood ash and cow bone ash were used. 150mm×150mm×150mm cubes were cast, cured and crushed at 7days and 28days. Thus, the compressive strength of concrete cubes whose cement has been partially replaced with wood ash and cow bone ash subjected to exactly the same conditions such as burning, curing, compaction and mixes was determined. The results indicated that cow bone ash and wood ash are slightly pozzolanic. Compressive strength of wood ash/Ordinary Portland Cement (OPC) concrete increases with age at curing, and decreases as the percentage of wood ash/OPC concrete increases, and similarly for cow bone ash/OPC concrete, indicating that the strength of concrete increases with the age of curing. However, it was found out that the compressive strength of cow bone ash/OPC concrete was more than that of Wood ash/OPC concrete. It is therefore recommended that cow bone ash would better partially replace cement in construction industry where higher strength is required.

Key words: Concrete, Cement, Cow bone ash, Compressive strength, Wood ash.



3. Assessing Some Mechanical Properties of Reinforcement Bars Made from Recycled Metals as A Panacea to Sustainable Use of Reinforcement as Building Material

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Abstract:

Recycling has been identified as one of the ways of attaining a sustainable supply of building materials. However, the use of substandard materials has been linked with substandard structures that often lead to building collapse. Against this backdrop, this paper aim at assessing the mechanical properties of reinforcement bars produced from recycled metals with a view of attaining sustainability in its use as a building material. The research adopted a quantitative research approach where a total of 24 high yield reinforcement bars made from recycled metals of sizes 20mm, 16mm, 12mm and 10mm diameter were subjected to tensile test using 500 KN capacity tensile testing machine. Veneer calliper was used to ascertain diameter of the bars. Result obtained was used to determine ultimate tensile strength, yield stress and percentage elongation. Findings reveals that the reinforcement bars diameter are lower than that expected, have yield stress lower than 460 N/mm² as required by BS4449-1997, and lower than that of newly drawn reinforcement. The result further shows that the material is ductile because all the samples have a percentage elongation more than the allowable. The study recommends use of reinforcement made from recycles metals only for light construction works, and effort to be made in improving quality of reinforcement made from recycled metals

Keywords: Construction, Recycling, Reinforcement, Strength, Sustainability,



4. Optimizing the compressive strength of binary mixtures of laterite-sand cement mortar

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Abstract:

The use of conventional cement-sand material for the production of mortar for permanent ferro-cement formworks and bedding & jointing sandcrete block walls has been in use as traditional material. An attempt to substitute partially, with binary mixtures of laterite to introduce both cement and plastic bonds as a property of the composite material is proposed to reduce the cost of cement, the binder. A methodology for specification writing procedure using a computational approach is introduced using the Central Composite Design mixture experimental design (CCD). The properties of the composite material were investigated and found to satisfy basic NIS standards. It enabled lower cement contents with corresponding higher minimum compressive strength to be achieved, which is well above the minimum requirement of 2.8 N/mm² NIS standards, thus making the replacements suitable for permanent ferro-cement and bedding & jointing masonry works.

Keywords: mortar, binary, compressive, bedding and jointing



5. Assessment of Lean Techniques for Building Materials Waste Minimisation in Abuja, Nigeria

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Abstract:

Lean construction techniques have been known globally as a production system with a high capacity of waste minimisation. However, studies revealed a sub-optimal understanding of the construction professionals on the relevant lean techniques for building material waste minimisation in Nigeria. Thus, this paper assessed lean techniques for material waste minimisation in building projects in Abuja, Nigeria. The study adopted a survey design approach using quantitative data. Data was purposively collected using well-structured questionnaire administered to 320 construction practitioners (project managers, contractors, heads of waste management departments, and consultants) of 80-active building construction sites that are practicing lean within Abuja. A total of 189 questionnaires were retrieved from the 320 distributed. The collected data was analysed using frequencies, percentages and Relative Importance Index (RII). The study found that lean techniques relevant to the pre-construction stage of building projects are: visual management; waste disposal management; and space utilisation management, with average RII values of 0.78. It was also found that the most important lean techniques relevant to the construction stage of building materials waste minimisation are: optimise value/value identification, good supply chain management, and visual management. Based on these findings it was concluded that the lean techniques assessed in this paper are relevant in building material waste minimisation. Adoption and implementation of the lean techniques would translate into a drastic reduction in the quantity of material waste generation in building construction projects in Nigeria.

Keywords: Building projects, Lean techniques, Material waste, Minimisation



6. Evaluation of the Significance of Timber as A Source of Sustainable Building Material in Owerri, Nigeria

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Abstract:

In Nigeria, timber as sustainable building material is found in large quantities and varieties. As a construction material, it has come to drive the advancement of the construction process. Based on various purposes of timber utilization in building projects, timber usage in building can be classified as structural, functional and decorative/aesthetics. It possesses qualities that have made it a material of choice in millennia. The study highlights the importance of timber as a sustainable building material for residential buildings. The study was carried out in Owerri, the capital city of Imo State and a qualitative research method was adopted which involves the professionals in the construction industry who are currently involved in construction projects. A Total of 250 structured questionnaires were administered using the stratified random sampling methods, whereby 240 questionnaires were returned. The data collected was analyzed using descriptive methods. The result shows that 69.3% of all the sampled professionals strongly agree that timber is very valuable and a sustainable building material for residential building. The study recommends timber as an essential building material that is very versatile, renewable and can be useful in all building types. Therefore, the use of timber should be highly encouraged in the building industry to maintain its functionality and durability in building industry.

Keywords: Aesthetics, Construction, Residential buildings, Sustainable material, Timber



7. Evaluation of the Compressive Strength of Concrete Using Bush Gravel as Coarse Aggregates Partially Replaced with Broken Bricks

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Abstract:

Concrete is the most used building material in the construction industry. In recent years, concrete production has become more expensive due to the increase in demand for it, which has led to a rise in the cost of concrete production. This has compelled the construction industry to find alternatives to concrete production. In this study, the compressive strength of concrete is evaluated when bush gravel, as coarse aggregate, is partially replaced with broken bricks which have acceptable properties comparable to a normal concrete. The absolute volume method was used in determining the values of water/cement ratio, aggregate/cement ratio and the relative proportions of aggregates of various sizes. Mix ratio of 1:2:4 and water/cement ratio of 0.45% were used. The compressive strength observed after 7 days was 15.29, 14.39, 14.68, 14.55, 14.22, 13.41 and 10.75N/mm², while compressive strength after 14 days was 18.46, 16.12, 15.38, 15.23, 14.87, 14.82 and 13.67N/mm², compressive strength after 21 days was 20.45, 19.94, 19.63, 19.41, 19.26, 17.78, and 14.81N/mm², and finally after 28 days, the compressive strength was 23.63, 21.85, 20.30, 19.29, 18.26, 18.22 and 16.45N/mm² all for 0, 10, 20, 30, 40, 50, and 60% replacements of broken bricks respectively. These results clearly show that the compressive strength of concrete increases as the curing ages increases and both bush gravel and broken bricks can be used as coarse aggregates for structural concrete when structural coarse aggregates are hard to find, and where high strength of concrete is not needed.

Keywords: Concrete, Coarse aggregates, Compressive strength, Bush gravel, Broken bricks.



8. Influence of Magnesium Sulphate on the Compressive Strength of Internal Cured (IC) Rice Husk Ash based High Performance Concrete

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Abstract

The incorporation of superabsorbent polymers (SAP) and pre-saturated lightweight aggregate (LWA) as internal curing agents (IC) have been proven to be more effective and acceptable in autogenous shrinkage and self-dessication mitigation. However, the incorporation of the internal water reservoirs (SAP & LWA) increases the porosity of the concrete matrix which can injure the strength and durability properties of the HPC. This paper explores the use of the two IC agents as internal curing agents and the comparative study was investigated on their influence on compressive strength of RHA based high performance concrete in aggressive $MgSO_4$ environment. HPC mixtures of designed C55/67 target minimum cube strength at 28-day were studied. Concrete cubes of 100 mm were cast and cured in both water and $MgSO_4$ solution for 28-day hydration period. The result reveals that the mix with LWA (PHPC₁) is better with the highest residual compressive strength compared to the SAP mixes in terms of $MgSO_4$ resistance but other way round in terms of the compressive strength of specimens cured in water.



9. Influence of Material Waste Management on Construction Project Delivery in Abuja, Nigeria

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Abstract:

Construction Waste Management is an aspect of Sustainable Development, which is fueled by the growing need of man for infrastructural amenities. Improper control of materials during different stages of construction has some influence on construction project delivery. The aim of this study was to assess the influence of materials waste management on construction project delivery in Abuja by identifying the sources of construction material waste, evaluating the influence of materials waste management on construction project delivery and the performance techniques and strategies of reducing construction materials waste in a construction project. Quantitative methodology was used, involving the use of questionnaires to obtain data which was analyzed to obtain the RII. The result revealed that the most influence of materials management on construction project delivery are; time overrun/delay, productivity, cost overrun/increase project cost, environmental impacts, brings contractors to disrepute among others. the results also reveal that the performance of some of the strategies of reducing the effects of materials waste management which are; materials planning method, materials handling, proper planning, monitory, and control of materials, and materials waste control. The researcher recommends the use of these strategies and measures to minimize the influence of materials waste management on construction project delivery



10. An Empirical Approach for Determination of Building Stability Using CORS Data

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ABSTRACT:

The advent of continuously operating reference stations (CORS) in recent times has improved the capacity to obtain the needed data (continuous, reliable and homogenous) for studies on building deformation and earth plate motion. This paper investigates the stability of the building on which the CORS is located in Modibo Adama University of Technology Yola, with a view to monitoring the possibility and rate of deformation of the building upon which the CORS is located. A quantitative research approach has been adopted in this study wherein the station point positions for a 365-day of the year (DOY) period was analyzed for the years 2011 and 2012 using the ordinary least squares (OLS) approach to determine station velocity (motion) and average positional error contribution in 3-D. Raw downloads of Station position and orbit files were post processed using the RTKLib software. The results obtained indicate an average velocity of $\pm 0.00000023\text{m/s}$ and 0.0000002m/s for the years 2011 and 2012 respectively. This reveals a constant and insignificant motion of the FUTY CORS thereby indicating stability of the building upon which the station is hosted. The insignificant motion attributed to some factors such as Eotvos and Earth's rotation therefore do not pose any sign of danger to either the building upon which it is hosted and. It is recommended that similar analysis should be performed on all the CORS across the country to specify that such study might provide preliminary information about the stability of the Nigerian platform but it would not be sufficient to base the entire conclusion on CORS data alone.

Keywords: CORS data, Monitoring, Deformation, Building Stability.



11. Evaluation of Shear Bond Strength of Geopolymer Mortar Containing Cassava Peel Ash and Metakaolin

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Abstract:

The cement industry has been recorded to have contributed immensely to the high global carbon dioxide emissions the world is contesting with today. This has made researchers to look for other sustainable substitutes. One of the possibility substitutes is geopolymer mortar, which has no cement content in it. Geopolymer mortar can be produced using agricultural and industrial wastes like cassava peel ash (CPA), rice husk ash (RHA), metakaolin (MK), fly ash (FA), and many more. Geopolymer have been proven recently to be the way of converting agricultural, thermal and industrial waste into construction repair materials. When comparing Ordinary Portland Cement (OPC) mortar with geopolymer mortar, geopolymer mortar is considered as a highly eco-friendly product. This paper evaluates the compressive and shear bond strength properties of geopolymer mortar manufactured using Cassava Peel Ash (CPA) and Metakaolin (MK). Sodium silicate (Na_2SiO_3) and 9 molar concentration of sodium hydroxide (NaOH) solution were used as alkaline activator. The mass ratios of sodium silicate to sodium hydroxide (NS: NH) and the binder to fine aggregate (B: A) were fixed to 2.5 and 0.4 respectively. The compressive strength of the synthesized GPM were determined at 3, 7 and 28-days. The compressive strength at 28 days curing was 46.5 N/mm^2 . Results revealed that 50% replacement of MK with CPA made with 9M concentration of NaOH enhanced the compressive strength of the mortar while 100% CPA content in the mortar demonstrated the highest shear bond strength value. The grooved surface improved the bonding strength. The bond strength results have proven that the surface texture must be considered in determining the bond strength. It is concluded that geopolymer mortar incorporating 100 percent metakaolin could be used in the construction industry with the almost negligible amount of environmental problems.

Keywords: Geopolymer; Binder; Metakaolin; Cassava Peel Ash; compressive strength; bond strength.



12. Evaluation of Strategies for Implementation of Quality Management Practice in Nigerian Construction

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Abstract

The integration of Quality Management (QM) in project execution by construction industries in Nigeria is still not adequate as major construction process are yet to implement QM. The present study intends to investigate the strategies that can be applied for effective implementation of QM practices in Nigerian construction projects. In order to achieve the aim of the study, a mixed research design methods was adopted. In the mixed research design methods, questionnaire and interview were the instruments used for data collection from construction stakeholders in the study context. A total of 370 questionnaires were administered to architects, engineers, builders and quantity surveyors, out of which total of 157 were returned. 10 professionals were also interviewed in the study. Information gathered are analyzed using descriptive statistics percentage, means score, Relative Importance Index (RII) and content analysis. The findings of the study revealed that there is inadequate implementation of QM among construction firm during execution of projects, which leads to low quality project outcomes. Findings of the study also unveiled that lack of commitment of firms management toward the implementation, difficulty to measure results, misinterpretation for QM requirements amongst construction workers, inadequate quality production and support planning are the challenges facing QM implementation in construction processes in Nigeria. Hence, strategies such as provision of resources for quality management implementation, ensuring procedures and maintenance adopted suit to standard of quality services, overseeing the adequate QM implementation in all sites of operations, ensuring efficient communication link between the various department of the construction firm, ensuring proper auditing, regular and adequate assessment of customer requirements and satisfaction can be adopted for effective implementation of QM in Nigerian construction. The study thereby recommended that building designers, contractors and approving agencies should be reprimanded for defects on building projects and violation of building regulations for QM implementation.

Keyword: Framework, Quality Management, Construction, Implementation.

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13. Utilization of Quarry Dust as Partial Replacement of Sand in Sandcrete Blocks

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Abstract

The research was based on an investigation of the optimum quantity of quarry dust required to replace sand content in sandcrete blocks, which would yield best quality products. The cement was combined with fine aggregates in ratio of 1:8. The percentage replacements of sand by quarry dust were: 0%, 5%, 15%, 25%, 35% and 45% by volume of fine aggregate. Sieve analysis was carried out to classify the sand and quarry dust. Forty-five sandcrete blocks of 150mm × 225mm × 450mm were produced and tested. Compressive strength test and hygric property (porosity and sorptivity) analysis were conducted. From the results, an increase in compressive strength with the increase in quarry dust was observed. The compressive strength reached its optimum values at 15% replacement, and the values are: 2.18, 2.28, and 2.55N/mm² at the age of 7, 14, and 28 respectively. Beyond 15% replacement, increase in quarry dust decreases the compressive strength of the sandcrete blocks. Also, it was observed that, increase in quarry dust decreases porosity and sorptivity.



14. Assessment of Shredded Waste Poly-Ethylene Terephthalate (PET) Bottles Usage as Coarse Aggregate in Lightweight SHA Based Concrete Composite

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Abstract:

In this research report, the use of shredded waste Poly-ethylene Terephthalate (PET) bottle flakes as a lightweight aggregate in concrete was examined. Investigation was carried out on two groups of concrete samples, one made with only granite as coarse aggregate (control) and second made with PET and granite aggregate together as replacement for coarse aggregate. The PET replaced the granite coarse aggregate a varying percentage of 0%, 5%, 10% and 15%. Additionally, Sorghum Husk Ash (SHA) was also used as the replacement of cement on mass basis at the replacement ratio of 10% to reduce the amount of cement used and provide savings. The water–binder (w/b) ratio used in the mixtures were 0.55. The size of shredded PET flakes used in the preparation of concrete mixtures were between 1 and 4 mm. The results of the laboratory study and testing carried out showed that concrete comprising only granite aggregate, concrete containing PET and granite aggregate, and concrete modified with SHA as cement replacement can be drop into structural lightweight concrete category in terms of unit weight and strength properties. Therefore, it was concluded that there is a potential for the use of shredded waste PET as aggregate in the production of structural lightweight concrete. The use of shredded waste PET due to its low unit weight reduces the unit weight of concrete which results in a reduction in the self-weight of a structural concrete member of a building. Reduction in the dead weight of a building will help to reduce the seismic risk of the building since the earthquake forces linearly dependent on the dead-weight. Furthermore, it was also concluded that the use of industrial and agricultural wastes such as PET flakes and SHA in concrete provides some advantages, i.e., reduction in the use of natural resources, disposal of wastes, prevention of environmental pollution, and energy saving.

Keywords: lightweight aggregate, Poly-ethylene Terephthalate (PET), Sorghum Husk Ash (SHA), Strength properties, Unit weight.

15. Characteristics and Properties of Rice Husk Ash Based Fibrous Concrete Manufactured with Waste Metallized Plastic Film Fibre

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Abstract

The promotion of the use of eco-friendly substitutes to cement by several stakeholders in the construction industry are on the increase. This is due to the record portraying the cement and concrete industry as one of the largest producers of greenhouse gas globally. In order to reduce the waste generated globally, industrial and agricultural waste have been reported to enormous potential for reducing global cement reliance. One exciting material that has attained this feasibility is rice husk. The advancement in concrete technology in most recent times tends to deduce the potential means available for the optimum recycling of waste materials in construction practices for the purpose of sustainability in construction. In this article, effect of Waste Metallized Plastic Film (WMPF) fibre on the compressive and tensile properties of Rice Husk Ash (RHA) based Fibrous Concrete (FC). Mixes containing varying percentage of WMPF fibre (0%, 0.5% and 1.0%) were made with and without RHA to produce FC. The laboratory test revealed that the combination of WMPF fibre and RHA decreased the slump values and increased the VeBe time of fresh concrete. Similarly, the inclusion of WMPF fibre, either into CEM I cement or RHA concrete, did not improve the compressive strength. However, the positive interaction amongst the WMPF fibre and RHA lead to higher splitting tensile strength. It was revealed from the tensile test failure mode that WMPF fibre act as bridges across the cracks, which improved the load-transfer capacity of the matrix. The study showed that the utilization of WMPF fibre and RHA in the production of concrete is achievable from both technical and environmental viewpoints.

Keywords: *compressive strength, fibrous concrete, rice husk ash, tensile strength, waste metallized plastic film fibre*



D. BUILDING COST MANAGEMENT

1. Influence of Supervision on Labour Productivity of Finishing Works in Ibadan, Oyo State

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Abstract:

There is the need for continued investigation into construction labour productivity because of its importance in the national economy of a nation. Insufficient training and oversight of construction skilled workers can be directly linked to low productivity. This study assessed the influence of supervision on labour productivity of finishing works in Ibadan, Oyo State. The objectives of the study were to: examine factors affecting effective supervision on construction site, compare the labour productivity of finishing works with supervision and those without supervision, determine the measures put in place by supervisors in ensuring effective labour productivity. The research employed a quantitative approach with the use of personal observation and survey questionnaire. Personal observation was made on 10 construction sites with professional supervision and another 10 site without professional supervision. The research data were collected with the aid of well-structured questionnaires. Also 50 questionnaires were administered to construction project contractors, project managers, supervisors and foremen of small and medium construction firms. The response rate of the questionnaires was 94%. Mean item score (MIS) and T-Test was used to rank the influence of supervision on labour productivity practice in construction workers on a 5-point Likert scale. It was found that the common factor affecting effective supervision on construction site is lack of adequate equipment (MIS = 3.98). It was also found that the key measure for ensuring effective labour productivity is commitment to work (MIS = 3.77) and that there was statistically significant difference between labour productivity of the site with supervision and those without supervision. This findings has led to the conclusion that those site with supervision generate more output than those without supervision with 8% differences. It is recommended that professionals should provide adequate equipment that suit in the work at hand, in order to achieved the organization goal and also improve construction site.

Keywords: supervision, Labuor, productivity, finishes work.



2. Analysis of Stakeholder Management of Construction Project in Abuja, Nigeria

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Abstract:

The structure of the Nigerian construction industry is very complex in nature and consists of a wide range of parties. The aim of this paper is to analyse stakeholder management in construction projects in Abuja, with the view to improve construction projects performance. This study identifies and assesses barriers to stakeholder management in construction projects and determines critical success factors influencing stakeholder management and the delivery of construction projects. The paper employed a qualitative research design approach through semi- structured interviews. 30 construction professionals interviewed were purposively selected based on their experience. Content analysis was used to analyse information gotten from them. The study identified 25 barriers affecting stakeholder management and 14 critical factors influencing successful stakeholder management through interview carried out. The factors and barriers frequency mentioned during the interview were ranked. “Poor knowledge of stakeholder management procedure” and “lack of proper stakeholder management procedures” were the highest mentioned barriers affecting stakeholder management. Effective Communication emerged the highest ranked critical factor for successful stakeholder management. The study concluded that there is need to pay special attention to the above barriers and recommends appropriate strategies one of which is appropriate stakeholder analysis and engagement process within consulting project management firms managing project stakeholders.

Keywords: Construction; stakeholder management; project delivery, qualitative approach.



3. Factors influencing building materials price fluctuation in Abuja, Nigeria.

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Abstract:

The rate of fluctuation claims by contractors on materials prices is alarming. This leads to disputes in most building projects and usually affects the cost, time and even quality performance of building projects. The study examined the factors responsible for material price fluctuations in building construction projects and determines the impact of materials price fluctuation claims on cost performance with view to minimising the resultant effects on contractors. The study adopted a survey design approach using quantitative data. Data were collected through well-structured questionnaire administered to 250 respondents; also archival data on cost of material price fluctuation claims on completed building projects in the study area were obtained. A total of 170 questionnaires were retrieved from 250 distributed along with 23 archival data. The collected data were analysed using percentages, Relative Importance Index (RII) and Pearson Correlation Moment. Result reveals that the major factors responsible for building material price fluctuation are; exchange rate of national currency, cost of transportation, inflation of building materials and cost of energy. The results further indicate that materials price fluctuation claim has a direct correlation with total project cost with a significant level (p value) of 0.01. It is recommended that drastic steps should be taken by Government to stabilize naira exchange rate, reduce cost of energy, production and transportation of building materials, also contractors should have appropriate planning, maintain current information, on time payments of funds and understanding of project requirement.

Keywords: Building materials, projects, fluctuation, price, performance



4. Assessment of the Effect of Materials Procurement Risks Factors on Time, Cost and Quality Performance of Building Projects in Abuja, Nigeria

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ABSTRACT:

The challenges involved in materials procurement in building projects, risks still remain a serious problem requiring urgent attention in the Nigerian building construction industry. This problem could be attributed to little understanding of materials procurement risk management strategies by procurement officers, project managers and contractors who are affecting the performance of building projects. This research assessed the effect of materials procurement risk factors on time, cost and quality performance of building projects in Abuja, Nigeria. The study adopted a survey design approach using quantitative data. Data were collected through well-structured questionnaire administered to 159 respondents who are project managers, contractors, heads of waste management departments, and consultants of 61 active building construction sites that are practicing lean within Abuja using judgemental sampling method. A total of 139 questionnaires were retrieved from 159 distributed. The collected data were analysed using descriptive methods, including frequencies, percentages and Mean Item Score (MIS). The study revealed that the materials procurement risk factors that have high effect on time performance of building project are: inflexible design; new and existing competitors; and unexpected changes in demand with MIS values of 3.99, 3.95, 3.92. It was also found that the materials procurement risk factors that have high effect on cost performance of building project are: inflation; and quality control and assurance with MIS values of 3.99 and 3.90. The research also found that the materials procurement risk factors that have high effect on the quality performance of building project are: differing site condition; and changes in interest rates with MIS values of 3.96 and 3.95. Based on these findings it can be concluded that the building materials procurement risks identified in this paper are relevant in building construction projects. This will help professionals in identifying and taking necessary measures in preventing risks in building construction projects in Nigeria.

Keywords: Materials procurement, Risk, Risk management, and Building construction project



5. Participation of Female Quantity Surveyors in the Nigerian Construction Industry

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Abstract

Female Quantity Surveyors’ participation in the Nigerian construction industry is low, but the reasons for such low participation are not well understood. The study assessed the factors driving, as well as challenges that hinder participation of female Quantity Surveyors (Qs) in the Nigerian construction industry. Data was collected through a self-administered questionnaire survey of 78 male and 110 female Qs in the public and private sector in Abuja. Male respondents were randomly sampled while a census of the female Qs was taken. Analysis of data was carried out using frequency counts, percentile, mean score and T- Test. The most important key motivational factor driving female Qs’ participation is “completion of a construction-related course of study”. On the other hand, “Unsociable work hours” and “denial of professional activity by colleagues due to family commitment” are the two top challenges encountered by female Qs. It was thus recommended that to improve the level of participation of female Quantity Surveyors, the female Qs should be motivated through freedom to exercise and experiment new ideas, discretion to make decisions and take the initiative in their assigned roles.

Keywords: Construction industry, Female, Participation, Quantity Surveyors.



6. Effects of Skill Gap on Labour Productivity on Construction Sites in Abuja

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Abstract

Human resources in many developing countries are of insufficient quantity and quality to encourage high rate of fiscal and infrastructural development. The manpower mostly needed in large quantity in Building construction industry globally and in Nigeria are artisans and skilled labour. This research work aimed to evaluate the effects of skill gap on labour productivity on construction site in Abuja in order to improve their productivity. To achieve this, a quantitative research was carried out via a disseminated 36 structured questionnaires to construction practitioners in Abuja. 30 questionnaires out of 36 sent out were retrieved giving a return rate of 87.71%. The data analysis was carried out descriptively using percentage analysis, mean ranking and RII of the SPSS version 20.0. The results revealed out of the relevant skills needed for construction work, technical skills are the major skill required in construction production process. Also on the effect of skill gap, the study discovered that poor workmanship has the highest effect on construction industry follow by increased in project labour cost which affect the overall budget of the project. The research recommends that necessary trainings such as apprenticeship training and on the – job should come to fore by construction firms and be made important among the other training within construction industry. Also, construction firms should ensure recruitment of workers who are highly skill technically, supervisory wise and have multi skilling. The research concluded that there exist skill gap which affects labour productivity which can be curbed with adequate implementation of the training method from the research outcome and ensuring that the major construction skills are employed from the onset.

Keywords: Effects, Skill gap, Labour, Productivity, construction firms



7. CHALLENGES AND PROSPECTS OF THE USE OF TECHNOLOGY IN THE CONSTRUCTION INDUSTRY IN OGUN STATE, NIGERIA.

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Abstract:

Research has shown that construction is one of the last massive industries to be disrupted and Technology, driven construction forward. Every day, software and hardware devices are innovated to improve the construction industry. Though this was a tough pill to swallow, it has resulted to better collaboration, completing projects within the stipulated time, productivity gains, increased safety at work, and technology for growth. This research assessed the challenges and prospects of the use of technology in Ogun state construction industry. It adopted the descriptive method of data analysis using a well-structured questionnaire which was conducted among construction professionals in Ogun state online using the stratified random sampling technique. The data obtained was analysed using the frequency table to show the mean item score and their ranking and results presented using the bar-chart and pie-chart. The findings of the research shows that the major setbacks in adopting these technologies includes; Poor cash flow for the public sectors, Inadequate capital for the private sectors and poor maintainability while the prospects Technology for growth, better collaboration, Increased safety at work and comfort. As such this research concludes that some construction firms are yet to adopt most of these technologies despite it now being central to the construction industry. It therefore recommends that public sectors should release funds, construction organizations train their workers with these technologies including its maintenance for the growth of our physical environment.

Keywords: Challenges, Construction, Physical environment, Prospects, Technology.



8. Evaluation of Cost Management in Building Maintenance by Contractors

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Abstract:

Cost overrun have been identified as one of the major problem in construction especially in maintenance and remedial works. Identifying factors that influence cost in building is prerequisite to avoiding cost overrun. However, these factors were not determine by previous researches. Against this backdrop, this paper aims at evaluating method of cost management in building maintenance with a view of enhancing cost saving when carrying out building maintenance. The paper adopted quantitative research method. The population of the study comprises of 25 construction companies carrying out different maintenance works in ABU Zaria. A total of 50 questionnaires were sent to contractors, 46 were returned complete and used for the analysis. Data was analysed using descriptive statistics and result was presented in charts and tables. The result revels changes in plan and drawings (mean=4.37), delivery of materials to site on time (Mean= 4.11) are the major factors that influence cost in building maintenance. The study further revels that setting of cost limits through budget (Mean=4.09) and use of economic criteria to determine priority in building maintenance are the major ways of avoiding cost overrun in building maintenance. The study recommends detail design and comprehensive investigation to be carried out before proceeding with maintenance work as a way of avoiding cost overrun.

Keywords: Building, Cost, Contractor, Control, Maintenance, Overrun.



9. Effect of Cash Flow on Contractors’ Performance in Building Construction Projects in Niger State

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Abstract:

Cash flow is the lifeblood of the construction industry; cash is the most important resource for a construction company, because more companies become financially ruined due to lack of fund for supporting their day-to-day activities. However, securing sufficient cash flow at all phases of construction project execution are the most challenging and chronic issues facing contractors. This implies that a study of the effect of cash flow on contractors’ performance is still a gap which needs to be filled in order to link cash flow management with contractor’ performance. Primary data were obtained from the Niger State Ministry of Works, Niger State Housing Corporation and Physical Planning and Development Unit, Federal University of Technology, Minna through a well-structured questionnaire distributed to 58 respondents with a response rate of 89.66%. Relative Importance Index (RII) and Mean Item Score (MIS) were employed for the analysis of data. The study found that improper planning and management is the most important factor affecting contractors’ cash flow (RII = 0.91). Contractor experience was found to be the most important factor affecting contractors’ performance (RII = 0.95). Timely completion of projects was discovered as the most significant effect of cash flow on contractors’ performance (MIS = 4.83). Having appropriate planning was found to be the most effective strategy for improving contractors’ performance. It was thus recommended that contractors’ should always have appropriate plan and understand people’s requirements and needs which will help and go a long way to improve their performance.

Keywords: Building, Cash flow, Construction projects, Contractors’ performance.



10. Assessment of cost control techniques on road construction project delivery in FCT Abuja, Nigeria

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Abstract:

The advancement of technology in the last century has contributed to the increase in the number of complex construction projects that require proactive management. Cost control should be seen as an important management tool that is crucial to the survival of a construction company. This study examining the various cost control techniques used in road construction projects and the effect they have on project delivery. The emphasis here is limited to study the Contractor's point of view. The main concern of the study is to assess the impact of cost control techniques used in road construction projects with a view of project delivery using Inferential Data Analysis. The other focusing areas are to identify cost control techniques used, the challenges of cost control techniques and examine the most effective cost control technique. The preliminary data for this research has been collected through a literature review and well-structured questionnaire survey targeted contractors of Road Construction. This study reveals six commonly used cost control techniques which include Cash Flow Analysis, Valuation of work in Progress, Cost Control, Materials Management, Budgetary Control and Cost Value Reconciliation. The findings further illustrate that the most frequently used cost control techniques in road construction projects was Cash Flow Analysis (CFA). The study concludes that cost control techniques have strong impact on road construction project delivery and lack of knowledge on the use of available tools and technology affect the practice of cost control techniques. It is recommended that Quantity Surveyors should involve in road construction and construction firm should try applying other techniques on projects for better performance

Keywords: Construction, Road, Control, Cost, Techniques.



E. SUSTAINABLE AND RESILIENT CITIES

1. Integration of Passive Energy Efficient Design Elements for Office Complex, Abuja, Nigeria

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Abstract:

Energy necessity of buildings has seen an increase over the past years. Predominantly is the demand for cooling and lighting of buildings. The commercial sector has been identified as one of the major contributors to the immense diminishing of natural resources through the use of artificial energy for cooling and lighting of buildings. The study integrates passive energy efficient design elements to achieve sustainable energy efficient office buildings in Abuja, Nigeria. The research adopted descriptive survey method as it permits for multi-dimensional approach to data collection. Qualitatively, the extent at which passive design elements such as building orientation, courtyard, building form, thermal insulation, and skylight have enhanced energy efficiency was determined. Through stratified random sampling, ten (10) office buildings were selected across the city of Abuja to observe the energy efficient design elements adopted in them. Data was collected through observation schedule and well-structured questionnaire. Data collected was statically analyzed and the result showed that office buildings in Abuja were designed with little consideration for passive design elements as most of the office buildings depend on mechanical means for lighting and cooling. It is recommended that passive design elements should be considered in future office design to reduce energy requirements and the negative effects it might have on the environment.

Keywords: design strategies, Energy efficiency, Office buildings, Passive cooling, and Passive lighting.

2. Liveability of Public Housing in Nigeria: A Study of Residents’ Satisfaction in Some Selected Public Housing Estates in Niger State

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Abstract:

Housing is one of the basic human needs and it is made up of a residential environment comprising the physical structure for shelter, all necessary services, facilities, and equipment including devices needed/desired for the physical and mental health as well as social wellbeing of the residents. Liveability in public housing takes into account the composition of the many qualities that make it a place where people want to live. This study aims at assessing the liveability of housing estates through an evaluation of the residential satisfaction of the public housing environments in the study area. Multi-stage cluster sampling was first employed to select the study locations while random sampling and systematic random sampling techniques were used in the selection of housing estates and units respectively. The main instrument used for data collection was Questionnaire of which a total of 910 copies made up of questions on 74 liveability variables drawn from literature were administered out of which 797 were returned. The socio-economic characteristics of residents was computed using frequencies and percentages while satisfaction rating of variables with the aid of SPSS was computed to determine the users’ evaluation of liveability elements of the environment. The analysis indicated that the housing units were altered from the original design as 73% of the residents have done one change or the other. Also, the lowest dissatisfaction of 2.49 was expressed on the housing estate spatial level while other spatial levels of housing unit (2.88) and housing estate neighbourhood (2.72) were slightly above the 2.5 threshold. The design or upgrade of the housing estates therefore, requires greater attention on the components of Public facilities and Security, Management, Land use & Relationship in housing estates. The research will help public housing providers to understand the occupants’ experience & evaluation thus contributing to achieving liveable housing estates.

Keywords: Liveability, Housing, Residential, Satisfaction, Environment,



3. Assessment of Climate Responsiveness of Public Office Buildings Designs in Selected Tertiary Institutions in Niger State Towards Energy Efficient Buildings in Nigeria.

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Abstract

The building sector had been strongly linked with the global dreaded climate change menace owing to huge energy demand of the sector. Buildings consumed about 40% of the world energy supply and responsible for significant percentages of CO₂ emissions. This scenario has made buildings object of research globally and energy efficiency a major priority. However, climate responsive design has been long identified as effective and economical means of reducing building energy consumption. Thus, most developed nations have explored this medium unlike developing nations including Nigeria. Moreover, offices being high energy consuming buildings, hence reducing their energy use has been a target globally. This study assessed adoption of bio-climatic design strategies office buildings design in tertiary institutions in hot and humid climate of Nigeria. Case study approach was adopted and data were collected via observation checklist from three administrative offices, each from university, polytechnic and college of education in Niger state, Nigeria and results compared with Building Energy Efficiency Guidelines for Nigeria released in 2016. The findings revealed that, critical strategies that impact significantly on energy reduction like orientation, passive measures and Air-tightness of envelope were poorly observed. Therefore, it is recommended that implications of architects' designs on energy demand of buildings should be a major concern. Also, there should be a paradigm shift from the conventional design process to integrated design process (IDP) that encouraged collaborative efforts of other professionals from the beginning of the design process to ensuring planning, design and construction of energy efficient building.



4. The Characteristics of Kaduna Metropolitan Solid Waste Management Practices

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Abstract:

Nigeria is one of world's countries with the largest rates of urbanisation and persistent challenges in solid waste management. Rapid rate of urbanization is associated with problems in urban services delivery, waste management inclusive. This paper examines the characteristics of solid waste management practices in Kaduna metropolis with the view to identifying challenges towards evolving recommendations for improvement. Secondary data were acquired from relevant published and unpublished dissertations, reports from government ministries and agencies, Nigeria Infrastructural Advisory Facility, NIAF and internet sourced materials such as e-books which provided the focus and theoretical basis for the study. Primary data were collected through field survey, observations and face to face interview with officials of KEPA and Private Solid Waste Management Services Provider involved in solid waste management in Kaduna metropolis. The study revealed that the absence of proper planning in conjunction with dearth and verifiable data hinders multi-operational entities in the management of waste, low levels of transparency and accountability, inadequate and restricted service coverage of communities, and inadequate human and technical reports with facts and figures / resources. These findings provided recommendations that would enhance a sustainable framework for improvement of the current management practices. The paper recommended creation of enabling framework for waste management, creating a transparency and accountability unit to check malpractices, initiate modalities for wider coverage and improvement of technical know-how.

Keywords: Solid Waste, Sustainable framework, Integrated, Management, Urbanisation.

Keywords: Office buildings, Bio-climatic design, Energy demand, Energy efficiency, Tertiary Institutions.



5. ASSESSMENT OF CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN (CPTED) IN SHOPPING MALLS IN NIGERIA: A CASE OF CEDDI PLAZA ABUJA, NIGERIA

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Abstract:

Crime Prevention through Environmental Design (CPTED) is a place-based crime strategy. It affirms that, the proper design and efficient use of the built environment can lead to a reduction in the fear and incidence of crime and an improvement in the quality of life. Crime has been a growing social problem in Nigeria, due to rapid urbanization. The challenge for shopping malls is the creation of an environment that is at the same time entertaining and safe. The aim of this study is to assess CPTED principles in shopping malls and how they relate to the perceived safety of users. The study was conducted in Abuja. Data for the study was obtained from case study. The instruments used for the data collection in this study were a structured questionnaire and CPTED Audit. The findings suggest that traditional CPTED principles are being implemented within the design and built form of the study area. The CPTED audit and the personal safety surveys both reported high levels of CPTED features within the environment. Although exploratory, these findings suggest CPTED is identified within the environment in similar ways by a CPTED audit and by citizens in the personal safety survey. CPTED concepts appear to be intact.

Keywords: Crime, Environmental Design, Perception, Shopping Mall.



6. ASSESSMENT OF ECO-FRIENDLY PRINCIPLES IN THE DESIGN OF A 3 STAR HOTEL AT LIFE CAMP IN ABUJA, NIGERIA.

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Abstract:

A hotel facility is tasked with providing affordable comfort and services to customers, thus the need for Eco-friendly practices for it plays a key role limiting numerous factors that lead to global warming which poses a big risk to human habitation. The global task for adjusting building structures to the natural environment is sole to meet the world’s growing needs, and at the same time limit its impacts on the environment. The review article revealed eco-friendly design principles that are applicable in buildings in Nigeria, and that the application of these principles in Nigeria is not holistic unlike the developed parts of the world where eco-friendly buildings designs are well documented, applied and well adapted to. The aim of this study is therefore to assess the Eco-friendly principles in the design of a hotel for its effective application in Nigeria. The methodology adopted includes a desk study of articles related to the study, local Case studies, deducing information regarding eco-friendly and hotel buildings, and field observation to obtain data on some of the selected case studies. The data obtained during the investigation showed that eco-friendly buildings require efficiency in design, choice of material and method of construction. The data was documented, analysed and presented in tables, plates, charts, and figures. The research established that there are eco-friendly design principles applicable to building architecture in Nigeria, which is efficient.

Keywords: Eco-Friendly, Hotel design, Sustainability, Environment.



7. CLIMATE CHANGE ADAPTATION AND SUSTAINABLE ECO-FRIENDLY URBAN MASS TRANSIT DEVELOPMENT IN ABUJA, NIGERIA

Dukiya, J.J.

Abstract:

In the present century, there has been increasing global pressure on governments to implement policies to incentivize reductions in CO₂ emissions in view of the devastating effects of the global climate change. Researches generally have established the fact that the automobile sector generates more than 50% of the atmospheric carbon concentration. It has also become obvious that FCC-Abuja Nigeria is merely a replica of Lagos transport-wise in all ramifications. The Abuja master Plan as of 1979 specifically recommended the development of mass transport by light-rail when the city inhabitant is about 1.6 million and 3.1 million for Airport. The non-implementation of the light rail in the city as at when due has aggravated the flood of vehicular traffic that generate a lot of Green House Gas that in-turn increase the city ambient temperature. This research therefore used the handheld outdoor thermometer to measure the traffic corridors in Abuja in relation to the WHO and FEPA tolerance threshold standard. This is compared with the modern electric rail that is environmentally friendly, and the result reveals that the present transport system in the city negate the global crusade for Green Mobility. It is therefore recommended that the federal government of Nigeria should as a matter of urgency seize from her lip-service to the global SDGs and fully implement the overdue Abuja light rail that will positively woo the other cities of the federation.

Keywords: Temperature, Climate Change, Mass-Transit, Light-Rail, Transportation.



8. Water Scarcity Problem and Households’ Adaptation Strategies: Evidence from Literature

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Abstract:

Water has been widely acknowledged to be explicitly linked with economic progress and developmental trajectories of most countries and regions of the world. The lack of water supply to household’s manifest in different dimensions; physical, access, quantity, quality and affordability. The United Nations Sustainable Development Goal (SDG) 6.4 aspires to significantly reduce the proportion of people suffering from water scarcity by 2030 among other policies. Despite the laudable initiatives and policies, water scarcity has continuously remained one of the most excruciating problems around the globe. This study therefore adopts the review approach to identify, and synthesize from extant literature the dimension of global water scarcity problem, as well as several evidences of strategies employed by households in coping with this pervasive phenomenon. Evidence from extant literature indicates that water scarcity is a lingering global phenomenon as global water availability remained near constant within the last century, with human population continuously increasing in connection to water use and withdrawals. However, the manifestation of water scarcity is far more pronounced in developing countries, as these countries are bound to experience extreme water scarcity in the foreseeable future due to increased water demand as 55% of the global population are said to reside in these countries. In addition, the review showed that households respond to the situation of water scarcity by employing four major strategies (Exit, Voice, Loyalty and Neglect) in adapting to the unreliable and intermittent public water supply. This study therefore suggests the need for policy response in terms of prioritization of interventions and measures to address water scarcity and deprivations.

Keywords: Coping, Household, Scarcity, Strategies, Water.



9. Assessment of the Resilience-related Capabilities of Households in Bida Town, Niger State, Nigeria

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Abstract:

Urban areas are today facing a plethora of socio-economic and environmental problems due to their high population growth rates, densities and congestions, and these have made highly fragile and unstable. There is therefore the need for households, as the basic units of the urban areas, to develop coping mechanisms or shock absorbers in the event of disasters. In view of the foregoing, this study set out to assess household resilience-related capabilities, that is, asset ownership of households in Bida with the view of determining their level of resilience. In order to attain this, a set of questionnaire was administered on 594 household heads in Bida and the data obtained were analysed using the descriptive statistics and linear scaling technique. The outcome of these revealed that while the indices of plots of land (0.597) and building ownership (0.587) lie in the moderately resilient category, the indices of automobile (0.467), livestock (0.474), and appliance ownership (0.483) lie in the low category of capability-based resilience. The study further revealed that Bida recorded a resilience-related capability index score of 0.522. Thus, it is moderately resilient in the assessed variables of capability-based resilience. To this end, the study recommended that efforts should be made in establishing small-scale industries, so that more residents of Bida would be gainfully employed and this would naturally build-up households' asset stock. It was also recommended that households should be encouraged to build some levels of resilience through entrenching the saving culture and increased asset ownership (especially in livestock production).

Keywords: Households, Resilience, Social, Shocks.



10. Appraisal of Households’ Resilience to Social Shocks in Bida Town, Niger State, Nigeria

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Abstract:

The resilience of households, as the basic units of the society, is one of the most important precursors for the attainment of social resilience by a society. This is because the lack of household resilience makes communities highly insecure and delicate by exposing them to the debilitating effects of poverty (financial shocks), insecurity, youth restiveness and violence. Social shocks are inevitable but can be checkmated by the ability of households and communities to cope with and adjust to social threats. To this end, this paper assessed the preparedness of households in Bida town to shocks that may result from their social conditions. In order to attain this, a set of questionnaires was each administered on a total of 594 household heads (or their representatives) using a multistage sampling technique. The data collected were analysed using the descriptive statistics. The outcome of this indicated a high rate of income poverty in Bida. The study also revealed that households in Bida are challenged by the low and moderate levels of social safety nets and community connectivity indices respectively, and these have resulted in their poor social resilience. Hence, the study area has become susceptible to high rates of poverty (financial shocks) and poor community stability. Owing to these, the study recommended that NGOs and CBOs should make efforts at taking the large number of poor households in Bida out of poverty through developing their productive skills in agriculture, arts and crafts. It was also recommended that the NGOs and CBOs should also be encouraged to embark on resilience building activities such as mobilising members of the community to undertake self-help projects, serving as a voice for all, and helping in public enlightenment/information dissemination.

Keywords: Households, Resilience, Social, Shocks.



11. A Review of Sustainable Energy Conservation for Residential Buildings

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Abstract:

Scholars have emphasized the need for residential buildings as spaces for rest attain maximum comfort. In attaining such comfort, using sustainable energy strategies is significant. The United Nations (UN) has acknowledged this by establishing affordable and clean energy, sustainable cities and communities as some of its sustainable development goals. Similarly, different studies have expressed diverse views towards attaining sustainable energy solutions in residential buildings across the globe. It is to be noted that sustainable energy solutions in residential buildings are dynamic and contextual. This study therefore investigated the current strategies for sustainable energy conservation in residential buildings across the global landscape using the semi systematic review method. Data was collected through desk study which involved the exploration of academic research repository using the key terms: sustainable energy, residential building, clean energy and renewable energy. The findings of the research showed that several strategies have been established as solutions towards sustainable energy conservation in residential buildings However, Nigeria is yet to explore the application of the sustainable strategies that are suitable. In conclusion the paper suggests suitable solutions and how they can be implemented in residential buildings to achieve sustainable energy conservation in Nigeria.

Keywords: Energy conservation, Residential buildings, Sustainability, Renewable energy, Green energy.



12. ASSESSMENT OF AN INTEGRATING DESIGN APPROACH OF PASSIVE COOLING PRINCIPLES IN HOTELS IN MINNA, NIGERIA

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Abstract:

Over the years, hospitality has thrived on the high side of energy demand and consumption; accounting for up to 20% to 50% of global energy consumption. In Nigeria, the cost of energy has generally shot up astronomically to a frightening position which mandates the need for sustainable buildings that yield efficient energy conservation through passive means. In order to achieve thermal comfort in hotels in Northern Nigeria where the average temperature is considerably high for most parts of the year, it is vital for the building envelope to reduce heat gain to keep the indoor air temperature lower than outdoor temperature; hence, the need for passive cooling building design approach. This study aims at assessing the passive cooling design techniques in hotels within Minna, Nigeria. The study adopts a rather descriptive research method with the use of purposefully and well-structured observation schedules to assess attendant level of integration of passive cooling principles in the design of hotels in Minna, Nigeria. The findings which were presented using tables, pictures and charts show a low level of implementation and use of passive cooling principles in the design of hotels within the study area. Architects, and other professionals in the built industry should incorporate passive cooling features in hotel buildings as an inherent part of the design; which is a recommendation this paper puts forward. This paper concludes by advocating for the compliance of passive cooling principles in the design and construction of hotels in Minna, and generally in Nigeria to further preach the global gospel of energy conservation and sustainability.

Keywords: Energy, Hotel, Passive Cooling, Sustainability, Thermal Comfort.



13. EVALUATION OF MARKET FIRE HAZARD AWARENESS AND PREPAREDNESS IN MINNA METROPOLIS

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Abstract

The impact of fire accidents has been severe in places where there is low or absence of fire hazard awareness and preparedness. The impact of fire outbreaks are not only on the individuals, but also on the market environments. This research was aimed at evaluating the level of fire hazard awareness and preparedness in Minna markets. The research was carried out with descriptive cross-sectional study, using interviewer-administered questionnaires as well as observational check lists. Findings show that, most of the people doing business in the market study areas of Minna are men. Larger percentages of the respondents doing business in the study markets are graduates. The study was concluded on the fact that fire outbreaks in the market study areas were caused by faulty electrical wiring and leaving the power on after the closing hour in the market. The majority of the respondents on the level of awareness were aware of the fire hazard and its consequences. The preparedness measure indicated that, they were not prepared against fire outbreaks. From the survey and observation conducted in Kure ultra-modern market and Kasuan-Gwari market, the fire bus would experience difficulties in driving-in because of poor access road within the markets, except Building material market that has well planned access road. The research hereby recommends that, the markets management in collaboration with office of the fire safety service and Niger State Emergency Management Authority to join hands in ensuring that all the fire hydrants within the market environments are functional at all time. Fire extinguishers also to be installed at the corridors of all the buildings at recommended distances

Keywords: Fire Hazard Awareness and Fire Hazard preparedness.



14. Employing Proxemics Communication Strategies in Evaluating Prototype Design in Educational Buildings

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Abstract:

Prototype in architecture is a term used to define the use of design of a building type more than once. It is usually adaptation of the earlier designed or executed project. Adaptation of building design with little or no modification is a common practice in Bayero University, Kano. Using principles of proxemics, this research was aimed at evaluating the suitability of the adopted prototype design for the Department of Architecture, in Block J, Faculty of Earth and Environmental Sciences, Bayero University, Kano. Content analysis and observations were employed as research strategies. The focus was on the learning spaces which included classrooms, design studios and an e-studio. Similarly, NUC Basic Minimum Academic Standards (BMAS) for space requirement was also used as a basis for comparison. The data was analysed using Content Analysis. The findings showed that the classrooms and design studios were appropriate in terms of size and capacity but fall short of the minimum number required for Architectural training based on the standards. Similarly, the e-studio was found to be unsuitable in terms of size and capacity for its users as it is the conversion of supposedly classroom space. The research has established the inappropriateness of adopting prototype designs in tertiary educational buildings for different users/functions and emphasized on the use of proxemics by designers for better functionality.

Keywords: Prototype buildings, Proxemics, Educational Buildings.



15. Towards Developing Standards for Earthquake Resilience and Sustainability of Public Buildings in Abuja, Nigeria.

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Abstract:

Architecture in different countries has proven to be pragmatic and dynamic in nature, because of how we have seen it evolve over the years. Natural and manmade disasters are some of the factors that cause this dynamic nature of design and construction. Nigeria has experienced and documented Earthquakes since 1933 to date. On the fifth to seventh of September 2018, Abuja experienced an Earth Tremor and the National Space Research and Development Agency (NSRDA) has identified selected locations in Bayelsa, Ogun, Oyo, Kaduna and Abuja as hot spot for Earthquake. This information has drawn the attention of the professionals of the built environment to draw out strategies and plans to stand out in the event of an occurrence. This study is aimed at accessing the need for developing standards in design and construction of buildings to resist future occurrences of Tremor in the Federal Capital Territory (FCT) Abuja. Qualitative method of Research was used and questionnaires were administered to different professionals in the building industry, some of the tools employed were indirect interviews. An average of 90% of professionals strongly agrees to the need for developing standards for earthquake resilient buildings along seismic fault lines in Abuja. However it was recommended that there is a need to first of all identify the areas along seismic fault lines by using state of the art Seismometer and then set policies and standards that govern design and construction in those locations.

Keywords: Standards, Earthquake, Seismic wave, Sustainability, Resilience.

16. Behaviour and Functioning of Children Hospitalized in Nigerian Conventional Hospital Ward Setting

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Abstract:

For hospitalized children, stress is a constant. Studies in the last two decades have shown that hospital norms, medical protocols and situational cues stress children's lives and delay their health restoration. The aim of this study is to explore the behavioural responses of children in hospital wards without intervention measures in northern Nigeria. Features and attributes in the ward that can sustain children's interest, physically, socially and cognitively are lacking. This study methodological approach uses observation and judgemental scale questionnaire on how illness and hospitalization define children's behaviour in relation to their healthcare settings. The study was conducted at Abubakar Tafawa Balewa University Teaching hospital Bauchi, Nigeria. A total of 12 children were observed for 2 weeks and 15 nurses responded to the Analytical Hierarchy process (AHP) scale questionnaire respectively. The hermeneutic analysis of recorded videos and Expert Choice were categorized to relate with the domains of physical, social and cognitive activities. Action and behaviour shown by the children are physical behaviour (n=7), followed by social behaviour (n=4) and cognitive behaviour (n=4). Findings from Expert Choice (EC) revealed that children behaved regressively in the ward, they display more passive behaviour than active behaviour in the ward with being fearful and restlessness scoring the highest. It signified that the children were experiencing low physical, social and cognitive functioning. The result of the study indicated an association between hospital norms, medical protocols with situational cues and their effect on children's behavioural outcomes. Even if the present understanding of the hospital norms and protocol is being considered favourable in caring for ill children, the study showed it hinders their restoration process.

Keywords: Children, Hospitalization, Hospital norms, Medical protocols, Situational cues, Health



17. Indoor Occupancy Detection using Machine Learning Techniques

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Abstract:

Indoor occupancy detection is one of the smart building areas that received a lot of research attention in the past years. Indoor occupancy detection serves various applications in building operations such as energy-saving, evacuation, indoor emergency, and safety check. Existing techniques use direct occupancy sensing to detect and predict room occupant which has a major drawback of inaccurate prediction. To address this challenge this study proposed an indoor occupancy detection model that uses machine learning artificial intelligent technique to estimate the number of occupancies based on an indoor environmental variable dataset from previous knowledge and performance. The key goal of this study is to compare the finding obtained by various algorithms, which include many variables such as True Positive, False Positive rate, and so on, to achieve optimum performance. The collected findings were mostly based on improving precision such that proper research could be performed on them, which could then be used for various purposes.

Keywords: Energy efficiency, Machine learning, occupancy, smart home

18. Assessment of Factors Affecting Performance of Construction Organisations in Abuja, Nigeria

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Abstract:

The performance of organisations is often affected by lots of factors. These factors differ from one industry to the other; and the performance of construction organisation has a significant effect on the economy. It is a known fact that majority of construction organisations in Nigeria are not performing and this problem has led to delays in project delivery, failure in achieving effective time and cost performance, and poor-quality projects. This paper aimed to assess factors affecting the performance of construction organisation in Abuja with a view to improving performance of construction organisations. In achieving this aim, well-structured questionnaires were designed and distributed to two hundred respondents (200) in fifty (50) building and civil engineering construction organisations practising in Abuja, Nigeria. 186 questionnaires were retrieved and used for the analysis. Mean item score was used to calculate the factors according to their frequencies. The scores were ranked and it was found out that the factors that must be given importance to when planning on achieving better construction organisational performance were cash flows with MIS of 4.75, knowledge management with MIS of 3.75, and governance and economic policies with MIS of 3.75. the paper concluded from the output of the results that, construction organisations in Abuja should focus on knowledge management, cash flows, governance and economic policies, in order to achieve better construction organisational performance. The study recommends more focus on these factors to achieve a desired performance for construction organisations in Abuja, Nigeria.

Keywords: Affecting, Construction, Factors, Organisations, Performance.

19. Project Managers’ Performance on Sustainable Construction of Residential Estates in Abuja, Nigeria. Belgore, U¹ & Makinde, J. K.²

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ABSTRACT

Encouraged by the support given to the sustainability agenda globally by the United Nations, Nigeria along with many other countries is slowly focusing on achieving a sustainable built environment. This paper assessed the performance of project managers on sustainable construction of residential estates in Abuja, Nigeria by examining project managers’ perception of their own competence, and the performance of project managers on the sustainable construction of residential estates. Data collected from 26 Project Managers using close-ended-design questionnaires were analyzed through descriptive statistical methods (Mean Score and Relative Importance Index). Historical project data was also obtained on 22 residential estate projects, and was analysed using Percentage analysis. Findings from data analysis revealed that Project Managers rated themselves high in ten competencies and moderate in six competencies that include Budgeting, Risk management, and Emotional intelligence. The competencies of Project Managers had the strongest influence on project quality performance. All three of the traditional ‘iron triangle’ of project performance indices (cost; quality; time) were highly influenced by technical competencies such as Budgeting and Procurement management. It was recommended that Project Managers participate in Continuing Professional Development (CPD) in order to hone their competencies in areas such as Budgeting, Risk management, and Emotional intelligence where some weakness has been identified in this study.

Keywords: construction, performance, project manager, residential and sustainability



20. Residential Property Use Conversion and Rental Value Trends in Osogbo, Nigeria

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Abstract:

The volatility in property rental market and the increasing trend of property use conversions in Nigerian cities have become a typical issue of national discuss, as every available plots or building fronting Major Streets in our cities are either in the process of conversion or have been converted. This paper assesses property use conversions with the view to determining it causes and influence on rental trends or performances in Osogbo, the capital of Osun state. Ten years data on rental values spanning from 2010 to 2019 were collected and used for the study. Data on rental values and property usage were sourced from Estate Surveyors and Valuers (ESV) while information on use conversions were obtained from tenants and the State Ministry of Lands and Physical Planning (MLPP). In order to achieve the aim of the study, 236 questionnaires were administered on the respondents, only 200 questionnaires representing 84.75% was correctly filled and returned for analysis. Data collected were analyzed using both descriptive and inferential statistical techniques. The results of findings revealed a statistically significant influence of land/property use conversion factors on rental performances in the state. It further shows that economic and demographic factors are the two prime reasons for property use conversion from residential to commercial uses, after use conversions command higher annual average rental values. The implications are among others, the creation of an unenviable property rental regime in the city and depletion of the available residential housing stock. It is on these findings that the study recommend the effective and efficient land use conversion control and management mechanism as well as incentive for residential property developers in the city of Osogbo.

Keywords: Residential Property, Property Use Conversions, Rental Values Trend.



21. Evaluation of Passive Cooling Design Considerations in Faculty of Basic Medical Science Buildings in Northern Nigeria

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Abstract:

The most substantial discuss currently in the built environment of architectural practice and education is “Passive Design” because it has progressively become difficult for professionals to ignore its concern, considering the energy supply gap especially in Nigeria. Mechanical form of cooling, lighting and ventilating of educational buildings has continuously proven to be unsustainable. More so, it is important for faculty buildings to maintain a conducive thermal environment because of the negative impact, the lack of such could have on student’s cognitive abilities and academic performance. This paper aims to identify the passive cooling design strategies incorporated in Faculty of Basic Medical Science Buildings in Northern Nigeria. The study adopted a descriptive survey method and data on passive cooling design strategies were collected through observation schedule. The random sampling method where the frequency of use and effectiveness of passive cooling design strategies were studied in six (6) sampled faculty buildings. Indicative findings from the studied samples were statistically analyzed and interpreted to show if the passive cooling design strategies were appropriately integrated to achieve thermal comfort. The result showed that passive cooling design considerations were not properly integrated in Faculty of Basic Medical Science Buildings in Northern Nigeria. It is recommended that passive cooling design strategies such as proper building orientation, adequate landscape elements, proper openings, adequate building envelope, thermal insulation, and adequate shading devices should be appropriately incorporated in the design of buildings, particularly faculty of Basic Medical Science Buildings to achieve thermal comfort.

Keywords: Faculty Building, Passive Cooling, Design Strategies, Natural Ventilation, Thermal Comfort



22. Policy Issues and Integration Settlement for Sustainable Development in FCT Abuja

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Abstract

The study assesses resettlement policies in the Federal Capital City, Abuja and its effects on the suburban growth, environment and development of the indigenous ancestral settlement at Karu-Abuja. This study aimed at evaluates policy issues and integration settlement for sustainable development. The study is undertaken with a view to establish extent of impact of integration policy as best option on the lives of Angwarn Gwari community. The study uses field survey were both quantitative and qualitative techniques were adopted and questionnaire were administered to purposively fifty-eight (58) household of original inhabitants. A total of 42 (72.41%) respondents consisting of men, women and youths were retrieved while penalty scoring was assigned to relevant variables obtained using Likert's scale. The research collected data using a uni-variated analysis on 11 rated items on five-point scale using inferential statistics techniques, the sum weighted score (SWS), mean weighted score (MWS)) rating was obtained. The research findings identified overwhelmingly “agreed” response of satisfaction with the statements as evident in the significant value that integration policy has positive impact on the indigenous people. The study reveals that the city is growing faster than the provisions of its master plan and that integration policy, if well implemented would have been best option against total eviction and evacuation as communities are being displaced. The study recommended that the community can be self- reliant to improve their lives educationally, socially, and economically. The interviewees indicate thanks to the government for accepting integration of their community.

Keyword: Abuja- Karu, Resettlement, Integrated Settlement, Resettlement Policy, Sustainable Development.



23. Assessment of Design Method on Fire Prevention Strategies for High Rise Buildings in Lagos, Nigeria

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Abstract:

High rise buildings are popular structures with improved construction activities and technology that help in reducing land scarcity, urban density and accommodate large families in lesser space. Fire outbreak is one of the risks associated with high rise buildings because the buildings consist of multiple floors which create a cumulative effect that require many people to travel through vertical distances. Fire outbreak in high rise buildings is always terrible as population of occupants in building make escape difficult or tedious. This study, therefore, assessed the design methods used to prevent the spread of fire in High Rise buildings in Lagos State. Qualitative research method was used with purposeful sampling technique employed; the researcher analysed 11 high rise buildings in Victoria island Lagos the findings show a high percentage of high-rise buildings in Lagos state adopt fire prevention strategies, however there is a clear lack of fire escape in most of the buildings. In conclusion, the paper suggests design ways of preventing the spread of fire in high rise buildings to avoid of loss of life and properties.

Keywords: high rise building, life and properties, fire prevention strategies, fire outbreak, Nigeria.



24. Evaluation of Factors Influencing the Adoption of Building Information Modelling for Facility Management in Abuja, Nigeria

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Abstract

Previous studies have shown that very little research have been on the implementation of BIM in each of the application areas of Facilities Management (FM). These pose challenges for the effective management of facilities. This study therefore evaluated the factors influencing the adoption of BIM for FM in Abuja, Nigeria with a view to improving the adoption of BIM in FM. In view of this, a quantitative research approach was employed for the study. Data were collected from 356 randomly selected construction professionals in Abuja with the use of structured questionnaire. The data collected were analysed with the use of frequency count, percentage and Mean Item Score (MIS). Results of data analysis revealed that the factors influencing the adoption of BIM for FM are important (Group MIS = 3.87); the drivers to the implementation of BIM for FM are important (Group MIS = 3.99); the level of BIM awareness in all the FM application areas in Abuja is high (Group MIS = 3.72); the level of BIM implementation in the FM application areas is high (Group MIS = 3.52) but requires more improvement; and the most effective measures for enhancing the adoption of BIM for FM are Incorporation of BIM to academic curriculum and Embarking on intensive awareness of BIM by software vendors and training institutes (MIS = 4.22 each). It was concluded that the factors influencing the adoption of BIM for FM in Abuja are important and requires to be put into consideration for the successful management of facilities. It was thus recommended that stakeholders should work collaboratively to set up a mechanism for the effective implementation of the measures for enhancing the adoption of BIM for FM. This will in turn enhance the level of adoption of BIM for FM and hence the successful management of facilities.

Keywords: Facilities Management, Building Information Modelling, Implementation, Adoption.



25. Assessment of Shared Parking in Mixed-Use Buildings in Kano State

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Abstract:

Right from time, man has been a wanderer moving about in search of food and shelter. Building as a shelter is as old as man, also different buildings perform different functions or uses to man. Some buildings have a single function, while others serve multiple functions or purpose known as ‘Mixed-use building’. One major problem encountered with these types of structures is the issue of parking, caused as a result of either; the design, the users of the building, or standard laws (rules and regulation) guiding the location. This study aims at assessing the importance of shared parking space as a solution to parking problems in mixed-use buildings. Purposive Sampling Method was employed, where the sample population to be studied were selected and data was collected through questionnaires and personal observation. The study concluded that shared parking is the best means of achieving an efficient and sustainable parking space in a mixed-use building or development. This can be achieved through the provision of the right parking spaces to the functions performed as well as proper planning during the design stage. Also, the issue of shared parking in order to reduce too much usage of scarce land for parking lots should be well planned. Analyses of the quantity of the parking spaces provided, estimating the average number of car users’, and ascertaining the user’s perception on the parking lots provided.

Keywords: Building, Mixed-use, Parking, Shared parking, Shelter.



26. Influence of Urban Recreational Facilities Quality on Domestic Urban Tourists Patronage of Parks in Abuja City, Nigeria

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Abstract:

Quality of facilities in urban parks are essential to tourism development in cities. Ironically, the state of facilities in urban parks are often not accorded adequate academic attention in some developing countries including Nigeria. Thus, this paper examines the effect of parks facilities quality on patronage of urban tourists in Abuja. Four parks namely: Millennium Park, Magic Land, Jabi Lake Park, and Tobix Garden were chosen for this study. 500 questionnaires were administered to domestic tourists who were conveniently selected in the parks and 320 questionnaires were filled and returned. Firstly, frequency of visit was determined, then the quality of facilities was measured, and followed by the effect of facilities quality on tourists' patronage using descriptive analysis and chi-square analysis in SPSS version 20. The finding of this study revealed that majority of tourists visit the parks once in a week. While majority of the tourists rated the facilities in the parks to be of high quality, in good condition, only the toilets were rated negatively low. Furthermore, the findings of the study indicate that only walkways and access roads significantly and positively influence patronage of parks, while poorly maintained toilets significantly and negatively influence patronage of parks in Abuja city. The paper recommends that all facilities in parks in Abuja city should be properly and regularly maintained to enhance increased patronage.

Keywords: Tourism development, Urban Park, Facilities, Patronage, Abuja.



27. Passive Design Strategies for Sustainable Operation of NYSC Camp Buildings, Minna, Nigeria.

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Abstract:

Niger State is characterized by tropical dry climate of minimal rainfall and dry hot periods, with an average temperature of 33°C at its hottest months. The NYSC orientation course takes place four times in the year which cuts across the dry temperate periods of the year. This extreme dry, dusty and hot weather results in asthma, cough and other related sicknesses for building users. As a result, several corps members seek redeployment. Observation shows that NYSC camp buildings are designed with little or no consideration for passive comfort of the users. Lectures, trainings and other social activities are largely dependent on mechanical energy for cooling, which are insufficient and not cost effective. The aim of the paper is to investigate users comfort in the buildings, with the objective to promote low energy architecture, using passive design strategies. Quantitative methods were used to collect data on the users' perception of comfort within the buildings. Findings suggests insufficient natural ventilation, inappropriate building orientation, absence of shading devices as contributors to thermal discomfort of the users. The paper recommends passive design strategies among which are landscaping elements, to achieve users comfort and low energy consumption in the NYSC camp buildings. It concludes that there is a need for redirection in the design of NYSC camp, which puts into consideration the climatic condition of the environment where the camp is situated.

Keywords: Comfort, Low Energy, Operation, Passive Design, Sustainable Building.

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F. GEOINFORMATICS FOR LAND MANAGEMENT/GENDER ISSUES IN ACCESS TO LAND

1. Solid Waste Disposal Site Suitability Analysis Within Jalingo Metropolis, Taraba State, Nigeria

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ABSTRACT

Waste disposal site selection in urban areas is a critical issue due to its huge impact on the economy, ecology and public health. In this study, site suitability for waste disposal in Jalingo metropolis were evaluated based on four criteria; road network analysis, drainage network, population and topographic features using GIS/RS techniques. The GIS software packages that were used for the research includes ILWIS3.7A and ARCVIEW 3.2A for geo-referencing and digitizing of map respectively, while IDRISI Taiga was used to buffer, overlay, reclassification, image processing and analysis using Boolean operations. the following constrain factors was adopted in this work; Distance from the road (300m); Distance from water bodies (1km); Distance from residential land use (3km); and elevation of the topography (100m to 200m height). The study revealed that extreme north-west of the metropolis and the north- east part of Jalingo were considered suitable. It was observed that the (31) existing dump sites didn't met the four criterion used for evaluation. Therefore, the pattern of the landfills was dispersed and unsuitable for waste disposal in the metropolis. The study recommends the establishment of new dump sites based on multi-criteria analysis using ARCGIS9.1 and that the State and Local Government Authorities concern to immediately stop waste disposal at the existing dump sites and relocate same to suitable areas.

Keywords: Waste, Dump Site, Boolean operations



2. Development of a Geospatial Information Software for Cadastral Survey Data Processing and Management

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Abstract:

Manual approach to cadastral survey data processing is not only rigid, cumbersome, and time consuming but also prone to computational errors. There is need to embrace complete automation of the system for easier, faster and error-free data processing. One of the problems of cadastral surveying in Nigeria is having an appropriate software and tool for processing and managing cadastral data and also for identifying the control stations (with their coordinates) closest to the parcel of land to be surveyed. Attempt has been made in this research to develop a software named Cadastral Survey Office (CSO), designed to successfully identify the closest control point to the land parcel to be surveyed and carry out necessary computations and adjustments for the coordinates of the control stations and the stations defining the boundaries of the land parcel. The software also plots both the client’s copy plans and the record copy plans (for lodgement with the regulating government agencies) and as well, provides a digital database for data storage. Statistical experimentation of the developed software shows that there is no significant difference between the accuracy of the coordinates computed using the designed software and the same coordinates obtained from manual computation at 95% confidence interval, with the software showing potentials of greater and more robust accuracy.

Keywords: Cadastral Surveying, Geospatial Information Management, Survey Plan, Fit-for-Purpose, Data processing.



3. Application of Location Based Service for flood Vulnerability Assessment of Part of Minna, Niger State, Nigeria

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Abstract

Flood disaster has been a global emergency issue, the cause may be traced to both natural and man-influenced factors, the alarming increase in global warming has an underlying effect on glacial melting, sea level rise etc. these, coupled with the effect of human activities such construction along flood plain, deposit of waste in rivers etc. have pose a threat not only lives but putting properties into danger. In order to alleviate the effect of this flooding, emergency agencies and individual must be informed about the status of such emergency. Flood vulnerability status is thus a reliable solution to such problem. How will individual get current vulnerability status of their current location? The research revolves around creation of an android application capable of indicating the vulnerability to flooding of points within the study area. Data source include administrative map, Digital Elevation Model and Landsat Imagery with band 6, 7 and 8. ArcGIS software was used to produce the flood vulnerability information and database for the study area. Different elevation ranges; (very low, low, moderate, high and very high) were classified to determine the flood vulnerability status. The android application was developed using Android studio application. The location based service in the mobile device help to correlate the longitude and latitude information of points within the study area with the database to determine the vulnerability status of an area to flooding on average scale. It also stores such details. The result shows that the study area is a relatively low terrain and is more vulnerable to flooding; with very low and low terrain having a percentage of 18 and 36% respectively. The result also show that only 11% of the study area are built up with vegetation and farmland having a percentage of 18% and 22% respectively. Although it was discovered that the flood vulnerability assessment can only be done within the study area, updating can be done to enable it work for other area.

Keywords: Android application, Location based service, flood vulnerability, landuse/land cover and Digital Elevation Model (DEM)



4. Flood Inundation Mapping of Gbaganu Area Minna, Niger State

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Abstract

Flooding in recent times has become a critically problematic phenomenon of spatio-temporal order and considerably high frequency of occurrence all over the world. Gbaganu area of Minna covering an area of 16.389hectares within Niger state, Nigeria has witnessed and is still witnessing multivariate cases of flooding which attains its peak in the rainy seasons (April-October) of every year, sometimes resulting to loss of life and economic valuables/properties. In order to curb this menace, an integrated solution of drainage morphometric parameters with remote sensing and geographical information system capacity is thus herein presented using the downloaded Shuttle Radar Topography Mission (SRTM) of 1-arc second (30m resolution) which covers nearly the entire Niger State and the DEM of the study area was extracted and digital elevation model (DEM) generated from topographical point data (position and elevation of points within the area) taken with Differential Global Positioning System receivers and the satellite image of the study area to delineate watershed, contributing area, flow direction and flow path/channel. The Height Above the Nearest Drainage (HAND) tool was used on ArcGIS software for analyses. The study was able to produce a map depicting within the study area; regions that are highly susceptible to flood. The morphometric analysis of flood inundation hazard in the area watershed shows that the risk to building will be more serious in the nearest future meanwhile the implementation of flood countermeasures and the identification of priority areas for flood risk reduction using flood inundation map will also help to reduce the flood impacts within the study area.

Keywords: Flood inundation mapping, digital elevation model, remote sensing, geographical information system and height above the nearest drainage



4. SPATIO-TEMPORAL ANALYSIS OF URBAN SPRAWL AND ITS IMPACT ON ECONOMIC TREES IN GIDAN MANGORO-MINNA, NIGER STATE, NIGERIA.

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Abstract:

Gidan mangoro, a settlement located along Minna-Bida road in Niger State, derived its name as a result of the abundance of economic trees (mango trees) that are now subjected to continues deforestation due to urban sprawl. Deforestation and biodiversity loss is on increase thereby reducing the carbon sink capacity of the vegetal cover. This research uses satellite imagery Landsat (TM/ETM) and over a period of 15years (2003-2018) to assess spatial changes in the area. ArcGis software 10.5 was used using the supervised image classification technique. Google earth image was used for population data of the study area and for spatial distribution of mango trees. The study revealed an increase of 44.77ha (18.74%) in built-up area in 2018 as compared to 8.87ha (3.70%) in 2003, there was also a decrease in vegetation from 18.47ha (7.74%) in 2003 to 6.59ha (2.76%). The population of Gidan mangoro increased from 1,216 in 2003 to 5,286 in 2018. Mango trees decreased from 695 in 2003 to 158 in 2018, this indicates the rate at which deforestation has taken place in Gidan mangoro. It is therefore recommended that proper zoning ordinances that preserve economic trees and biodiversity should be adhere to for sustainable development in Gidan mangoro and Nigeria at large.

Keywords: Deforestation, Ecosystem, Vegetation, Urban sprawl, Sustainable Development.



5. Appraisal of Informal Access to Land for Housing Delivery in Karu Urban Area of Nasarawa State, Nigeria

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Abstract:

Failure of formal land management system to provide planned land for orderly development has given rise to alternative ways to ensure access to affordable urban land, which is informal land management. This study is aimed at appraising informal access to land for housing delivery in Karu urban area of Nasarawa State in Nigeria. To achieve this, the study identified procedures for informal land acquisition; identified determinants of access to land through informal channels; evaluated the effect of informal land to housing delivery; and examine the relationship between informal access to land and housing delivery. A total of 375 questionnaires were administered in five neighbourhoods of Karu, targeted at landholding households' head. Both descriptive and inferential statistics were employed for the research analysis. The findings revealed that there was contribution from the access to informal land to housing delivery, with a calculated value of 206.164 greater than the chi-square critical value of 9.488. The study also revealed that informal land which is 78.7% and affordability of land registration with 64.1% were the best strategies of making informal land process more efficient in the study area. Hence, the study recommends land regularization, improvement of tenure security and transparent systems in transferring land right by the government.

Keywords: Access, Informal land, Housing delivery, Urban area, Land regularization.



6. Automatic Extraction of Farmland Boundary Lines from Satellite Imagery Using Fully Convolutional Networks – A Review

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Abstract:

Accurate information on agricultural field boundaries is important for precision agriculture and can serve as a basis for establishing cadastral information in countries which do not yet have. Though previous works have shown promising results in the delineation of agricultural field boundaries, automatic boundary extraction remains a significant task, especially in the case of smallholder farms in Africa. The field boundaries are often irregularly shaped and have a poor spectral contrast between internal and external parts of the fields. The internal parts of most smallholder farms are heterogeneous with mixed crops and trees. In this review, the applicability of a deep feature learning approach based on Fully Convolutional Networks (FCNs) for the detection of agricultural field boundaries was investigated. Boundary concept and the methods of boundary detection some of which include edge and contour detection, image segmentation, convolutional neural networks (CNN architecture), visual geometry group network (VGGNet), and fully convolutional network (FCN DKs) were also discussed, while also identifying some research issues associated with the implementation of FCN for boundary delineation. The study concludes by highlighting the advantages of adopting FCN over other methods of boundary delineation.

Keywords: Fully Convolutional Networks, Convolutional Neural Network, Image Segmentation, Precision Agriculture, Cadastral Boundaries.



7. Prospectivity Mapping for Gold (Au) Mineralization Using LandsAT 8 OLI Data in Part of Niger State, Nigeria

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Abstract

The study was designed for possible precursor of gold (Au) mineralization in Rafi Local Government Area of Niger state and its environs. Remote sensing (RS) technique was adopted as means for delineating hydrothermal alteration zones for probable precursor of Au mineralization. The study utilised five spectral bands from LandsAT 8 OLI satellite image to compute Sabin's ratio and Kaufmann's ratio within the study area. Based on the computed ratios, the results confirmed the findings that remote sensing studies could be used for demarcation of hydrothermal alteration. It was therefore concluded that integration of remote sensing techniques (using the adopted ratios) and geological field mapping provide a tool for delineating economic mineralization of Au.

Keywords: Hydrothermal alteration zone, Mineralization zone, Band ratioing



8. ASSESSMENT OF GEOTHERMAL POTENTIAL WITHIN THE BASEMENT REGION OF KOGI STATE, USING AEROMAGNETIC DATA

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Abstract:

Interpretation of Total Magnetic Intensity for Geothermal potential within the Basement Region of Kogi State was executed by the analysis and interpretation of aeromagnetic data of the area. Spectral depth analysis was employed to unravel the geothermal parameters corresponding to Curie point depth, Geothermal gradient and Heat flow of study area. The analysis showed a distribution of heat flow values ranging from 60 to 166 mW/m² across the study area with an associated geothermal gradient range of 24 to 66 °C/km. Both Heat flow and geothermal gradient maximum values were recorded at the eastern edge of Lokoja, mid-portion of study area (Longitude 6.125 °E and Latitude 7.75 °N). The least Curie point depth of 8 km also occurred at this point making it the most favourable for exploration of geothermal energy in the study area.

Key words: Curie point depth, Geothermal gradient, Heat Flow



9. Delineation of Structures for Solid Minerals within Kubil (Sheet 128) and Wawa (Sheet 159) North Central, Nigeria from Aeromagnetic Data

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Abstract

To resolve the problem of artisanal miners using trials and error method to locate solid minerals, a modern geophysical techniques was employed to delineate structures that host mineral in the study area. The study focused on both (Qualitatively and Quantitatively) analysis of high resolution Aeromagnetic data to delineate the geological structures that serve as host to mineral within Wawa (Sheet 128) and Kubil (Sheet 159) Niger State, Nigeria. The area is bounded by latitude 4°00' and 4°30'E to longitude 9°30' and 10°30'N. The aeromagnetic data was subjected to various filtering method such as production of Total Magnetic Intensity Map, Analytical signal, First vertical derivatives and center for exploration targeting (CET). The total magnetic intensity map comprises of both positive and negative anomalies with magnetic values within the study area ranges from -66.589 nT to 129.237 nT. Result of analytical signal depicts high amplitude response of magnetic anomalies ranges from 0.232 to 0.355 cycles in regions of shallow magnetic intrusive rocks and low amplitude response of magnetic anomalies ranges from 0.010 to 0.218 cycles in regions of thick sedimentation. The first vertical derivative helped to place both low and high magnetic susceptibilities and sets of lineaments which are the area of interest that serve as host for minerals. This was located around latitude 9°50' to 10°10'N within Yangari, Lasun Sarabe, Wawa Maleté down to Doro across rivers Yakumosin. The lineament trends in North East and South Western direction. The major lineament which were mapped on the first vertical derivative were also mapped automatically on the centre for exploration target map at the same said region which is also region of mineralization in the study area.

Keywords: Artisanal Miner, Solid Minerals, Structures, Lineament, Magnetic Anomalies, Magnetic Susceptibility



10. Effects of Density of Ground Control Points on the Accuracy of Maps Produced Using UAV: A Review

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Abstract

A large number of unmanned aerial vehicle (UAV) operators with little or no surveying and photogrammetric knowledge is constantly increasing because of the wide availability UAV and their ease of use. Also there are no easily accessible guidelines regarding the choice of some of the parameters (flight height, specification of the lens and camera, and weather condition) that may affect the quality of the orthophoto obtained from a UAV. This affect to a large extend the accuracy of UAVs maps. Another important factor that determines the precision of UAV maps is Ground control points (GCPs). In order to produce a centimeter accuracy maps, the use of GCPs is essential. In this study, we investigate the effects of the density of GCPs on UAV based maps and concluded that to obtain high accuracy of geometric correction of UAV maps, the location and distribution of GCPs should be taken into consideration.

Keywords: Photogrammetric, surveying, Unmanned aerial vehicle, Orthophoto, Ground control points, Flight parameter.



11.Piping Investigation of Kiri Dam Located in Shelleng L.G.A, Adamawa State, Nigeria, Using Seep/W

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Abstract:

Dams fail through many ways. One of the most important causes of dam failures is excessive seepage. Excessive seepage causes piping which can cause dam settlement. Piping depends on many factors including nature of construction materials, reservoir water level, nature of the dam foundation and nature & efficiency of the seepage mitigation constructions like clay core and diaphragm wall. Piping through Kiri dam is studied by investigating hydraulic gradients and positions of phreatic lines using a software called SEEP/W which is a finite element based. Four sections that include CH 685, CH 800, CH 1000 and CH 1100 are considered for analysis. On each section, 36 different reservoir elevations that include monthly reservoir elevations of 1984, 1997 and 2003 are considered. From the analysis of the results piping was observed not be occurring. Therefore, the downstream surface of the dam remains dry and stable.

Key words: Piping, SEEP/W, Kiri Dam, hydraulic gradient, phreatic line.



12. Factors Influencing Land Use Changes and Conversion: A Critical Review

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Abstract:

Land use alteration occurs when a particular land is changed from the use that was initially allocated due to invasion and succession, economic rents, highest and best use and other factors that incorporates urbanization in its entirety. Many studies have focused on identifying the driving forces shaping urban development patterns, such as urban scale, and rate and location of land use conversions. The study sought to identify the factors influencing land use changes and determine whether the Bid Rent Theory by Alonso is actually at play in explaining the factors responsible for land use changes in different climes. The driving forces of land use change are numerous, multifaceted and interwoven. The study adopted the use of secondary data from journals, research articles, books obtained through printed and online resources. Going by the vast literature on land use change factors, population growth, socio-economic, socio-cultural, technological, and natural factors as well as national policies and globalisation are the recognised motivating factors of land use changes. However, there are other drivers of land use change that are peculiar to developing countries like Nigeria. These include inter-urban migration as well as security and safety considerations. The Bid Rent Theory advocated the Willingness To Pay concept which explains the increase in demand for land and its changes. The identification of these drivers of land use change and conversion and their intricacies will help in terms of policy formulation to improve land use planning activities, sustainably manage land resources, reduce housing deficit and generally improve the lives of the citizens by boosting the national economy.

Keywords: Land Use, Land Use Change, Land Use Change Factors, Bid Rent, Willingness to Pay.



13. VALUATION OF AGRICULTURAL PROPERTIES: EMPIRICAL EVIDENCE FROM OXFARMS MINNA, NIGERIA

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Abstract:

This study aims to examine the anecdote that the Valuation Standards template for valuing specialized property, suffices for valuing a Non-Performing Agricultural Entity, NPAE. Data from a purposive case study of Ox Farms and interviews with 7 practising Estate Surveying and Valuation firms and a questionnaire-survey of 29 commercial Farms in Minna environs were applied using qualitative theme analysis. The main objectives are to analyse existing valuation standards template for specialized properties, and benchmarking of NPAEs, with reference to Ox Farms case study. A collective grade point index, CGPI, was developed to assess and classify Farms’ operational performances. The study found out and concluded that the general standards for valuing specialized property do not fully recognize the operational performance state of agricultural entities. It was recommended that the application of an appropriate classification model to assess the operational performance status of an identified specialized property and combined techniques of a mix of multiple bases and methods matching the purpose of valuation would provide a pathway to best practices in valuing NPAEs. By implication, this approach would potentially move valuation practice closer to the reasonable level of accuracy expected by users of valuation services.

Keywords: Agricultural Entity, Performance, Specialized Properties, Valuation Standards.



14. COLLABORATION AMONG CONSTRUCTION PROFESSIONALS ON BUILDING INFORMATION MODELLING (BIM) IMPLEMENTATION IN ABUJA, NIGERIA

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ABSTRACT

Building Information Modelling (BIM) is one of the most significant technological advances in the building design and construction industry to date. Implementation of BIM has increased significantly over the past decade; the project participants are realizing that sharing of knowledge and information is one of the key elements of a successful contractual relationship among stakeholders in construction activities in whole life cycle of a project, lack of collaborative interactions among parties have resulted to project delay, waste of materials, rework and low quality of work. This study is aimed at improving the interaction among stakeholders in the construction industry to achieve a common project goal. Total of one hundred and fifteen (115) questionnaires were administered to architects, quantity surveyors, structural engineers, and builders, and eighty five 85 numbers of questionnaires equaling 73.9% were returned and analyzed, The data collected were analyzed using descriptive analysis (chart, table, relative important index and mean item score). The study identified “reduction and avoidance of project failure, encouraging team building,” further highlighted the benefit and challenges faced in construction. In conclusion the factors enhancing BIM collaboration and how the stakeholder’s performance can be measured were identified and analyzed which resulted that the interaction among parties can be improved in the implementation of BIM technology. However, it was recommended that deliberate technique should be instituted at the construction phase to effectively improve and measure the binding relationship and performance among all parties in the construction business; if productivity and project delivery on expected time quality and cost remain the objectives of the organization for effective and efficient productivity.

Key words: Collaboration; Stakeholders; BIM Implementation; Construction phase.



15. APPLICATION OF ELECTRICAL RESISTIVITY METHOD TO DELINEATE CONSTRUCTION SITES AT GIDAN KWANO CAMPUS, FUT, MINNA, NIGER STATE, NIGERIA

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Abstract:

Vertical Electrical Sounding (VES), using ABEM SAS 4,000 Terrameter was carried out on a 500 x 500 m area of land located between latitude 09°32'21.4" N to 09°32'37.8" N and longitude 06°27'29.2" E to 06°27'45.5" E at the northern part of Gidan Kwano Campus, Federal University of Technology, Minna, Niger State. The study was aimed at investigating the subsurface structures of the study area with a view to delineating the sites suitable for civil engineering work. A total of 36 VES points at 100 m interval were sounded with a 100 m maximum half inter current electrode spacing ($ab/2$). Result revealed that the study area is underlain by three (3) geoelectric/geologic layers which include: the top soil with 10.6 to 1679.8 Ωm , 0.5 to 4.2 m and 0.5 to 4.2 m as its range of resistivity, depth and thicknesses respectively; the weathered layer having resistivity of 4.8 to 61.5 Ωm , depth of 2.7 to 23.0 m and thickness of 2.1 to 21.1 m; and the fractured/fresh basement which has 158.7 to 1421.5 Ωm as its resistivity value with undefined depth and thickness. The observed curve types include: A (3%) and H (97%). The points delineated for civil engineering works are VES stations A6, B1, B6, C5 and F1 having shallow depth to basement.

Keywords. Resistivity, Basement, Depth, Geoelectric layer.

16. Computational Fluid Dynamics (CFD) Investigation of Pressure Drop across Highly Porous Metallic Structure

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Abstract

The study critically investigates the pressure drop developed across highly porous metallic structures via tomography datasets and Computational Fluid Dynamics (CFD) modelling and simulation. This study simply provides an insight into the determination of pore structure and flow information of microcellular structure for flow regimes ranging from transverse Darcy to Turbulent. In addition, permeability (K), form drag coefficient (C) and Forchheimer coefficient (C_F) was determined accurately by Darcy expression (Re <1) and Forchheimer expression (Re >1) respectively.

Keywords: Porous metals, Pressure drop, Modelling and Simulation.

17. Delineation of Solid Mineral Structures within Upper Part of Nasarawa State from Aeromagnetic Data

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Abstract

Aeromagnetic data was analysed and used to delineate the structural features of the upper part of Nasarawa state of Nigeria which consist of Kuje, Keffi and Akwanga. These structural features include: lineaments, faults and folds which are channels for the formation of solid minerals. In delineating these structural features, some enhancement techniques such as first vertical derivative, analytical signal and generalized derivatives were employed. The total magnetic intensity (TMI) map showed regions of different magnetic susceptibility which correspond to different lithology and depth of source rock. The TMI values ranges from -25.0 to 110.7 nT. The high magnetic signature occupied mostly the north-eastern and south-western part of the map corresponding to Akwanga and Kuje area respectively. The south-eastern part of the map which is the sedimentary region has low magnetic intensity. The analysis of the first vertical derivative map revealed fault zones, lineaments and intrusions. The trend of the lineament is in the NE-SW direction while that of the fault is in the E-W and NE-SW direction. The analytical signal showed amplitude range of 430.241-15738.841 nT/m. Most of the lineaments, faults and intrusions observed in the map has high analytical signal. On the other hand, the sedimentary region has low analytical signal. The generalized derivative map revealed a distinct demarcation between the sedimentary rock and the basement complex rocks. Also, some intrusions were observed in the generalized derivative map.

Keywords: Basement complex rocks, lineaments, faults, intrusion.

18. Evaluation of Passenger Perception of Public Transport Hubs in Abuja-Nigeria

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Abstract:

Transportation plays an important role in the economic systems of most developed countries of the world. The public transport system in Abuja, FCT which caters for about 1.4 million commuters is confronted with many complicated and heterogeneous problems. This study therefore is aimed at evaluating passenger satisfaction with the service quality attributes of public transport hubs in Abuja, Nigeria. The study was conducted using a “Mixed-Method” technique that involved qualitative and quantitative data collection methods. A survey was carried out and Five (5) samples of transport hubs were selected for this study which includes; Nyanya-Karu-Mararaba axis, Kubwa-Zuba-Suleja axis, Lugbe-Kuje-Gwagwalada axis, Dutse-Bwari axis, and the City Centre axis. A random selection of 400 public transport hub users was made to draw out the overall users’ perception with the use of public transport hubs in Abuja, using a self-administered questionnaire. The data collected was analysed using descriptive statistics and findings were presented in form of tables and charts, illustrating passengers’ perceptions on the quality attributes and services provided in Abuja transport facilities. Out of 14 variables analysed, 12 quality attributes services of public transport hubs in Abuja were highly unsatisfactorily recorded by the respondents. Only 2 variables (Good security measures within and around terminal and Traffic management in and around the terminal) partially met the expectations of passengers. The study therefore showed that the passengers of public transport hubs were not satisfied with the quality attribute and services provided by Abuja transport facilities.

Keywords: Abuja, Transport Hub, User Perception, User Satisfaction.



G. RAPID URBANIZATION, SUSTAINABLE LAND USE AND SPATIAL PLANNING

1. Influence of Igala Culture on Spatial Relationships and Space Distributions within Households in Anyigba Kogi state

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Abstract:

Cultural influences over spatial relationships for a long time has been an aspect of architecture well researched, unfortunately there exist limited studies on the architecture of the Igala people. This study assessed the cultural factors within the Igala kingdom which affects spatial relationships and organisations within some selected households in Anyigba. Four main settlements exist in Anyigba namely; Iji, Aji-Tachi, Obeya and Egume-Ankpa Road. Qualitative approach to data gathering was used in the form of observation and participant interviews, floor plans of the households adopted for this study were sketched and a comparative analysis on the various spaces was made, pictures were also taken, the data collated were presented in tabular form, the data sourced was analysed using narrative and content analysis. It was deduced that security, privacy and Atakpa: (the hut where most activities take place) are the main cultural factors that determine spatial relationships and organisations within the Igala household. It is hereby recommended that for a sustainable actualisation of incorporating Igala culture into its architecture these established cultural factors should be made as a policy and enforced on professionals by the authorising agencies when a new household is being conceived.

Keywords: Spatial Relationships, Cultural Factors, Sustainable, Igala, Architecture.



2. Assessment of Fire Safety Compliance (FSC) in Nigerian Markets: Case Study of Selected Markets in Three (3) Geopolitical Zones

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Abstract

This study assessed the level of fire safety compliance in selected markets within 3geopolitical zones in Nigeria. Questionnaires were administered to traders in some selected markets in Kano, Anambai and Lagos State. Focused group discussions were held with management and associations of the markets as well as officials of state Fire Services. Physical observations were also carried out. 41.69% of the traders interviewed had one form of fire safety knowledge or the other. 3.58% of the respondent had knowledge of fire first aid and rescue. 35.66% had basic knowledge on causes of fire, 30.00% had knowledge of fire prevention, 26.00% had knowledge of controlling fire and 4.75% had knowledge of all the three. 18.75% of the respondents had at least one of fire control equipment however, not maintained. it was also observed that, most markets deviated from the initial layout of the market. Some of the challenges faced by traders that mitigates effective fire management are: irregular water supply, frequent power surges, use of faulty generators due to frequent fire outage, amongst others. This study concludes that there is low level fire safety knowledge in markets as the level of compliance to fire safety measures is also abysmally low. it is hereby recommended that Fire Service should organise periodic enlightenment programmes, conduct Fire Safety Audit in markets yearly. The management of the market should ensure that more fire control equipment is made available and maintained as required.

KEYWORDS: Fire Safety, Compliance, Prevention, Control, Fire Audit.



3. Evaluation of Passive Security Measures for Tourism Development in Nigeria

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Abstract:

Security issues continue to raise a threat to tourism development. This has caused several setbacks for tourism development within the country and as such security challenges should be evaluated and resolved as much as possible. The aim of this study is to evaluate security measures for tourism development in Nigeria. The research method employed in this study is the qualitative research method and the process of observation has been employed for gathering data. Observation schedule was used as an instrument for data collection and these data were sampled using the non-random sampling method. These data were analysed through content analysis and the findings showed that security measures have not been properly adopted in tourism development and that most tourism centres have not been optimally developed thereby making them vulnerable to security threats. The research recommends that designing for security should be considered as an utmost importance in the design of tourist centres by professionals and urges the government to look into the development of potential tourist centres within the country.

Keywords: Passive Security, Planning, Tourism, Development, Tourist centres.



4. Terrain Analysis for Effective Spatial Coverage of FM 92.3Mhz signal in Minna Metropolis

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Abstract

A Geographic Information System (GIS) viewshed is the result of a function that uses a terrain model to determine which areas on a map can be seen from a given point(s), line or area. A Differential Global Position System (DGPS) was used to acquire coordinates from the field. Geo-referencing and digitization was performed using Arc GIS 9.2 version, which aided the production of Digital map showing the locations of the Radio mast. The optimal sites from where signal have extensive reach and effect, and areas of maximum signal reach were determined using spatial analysis tools in GIS. In this work, measurement of electric field strength of FM radio signals from 92.3MHZ was carried out along streets in Minna Metropolis using a Digital Signal Level Meter, (GE-5499), covering the signal range of 30-120 dB μ V, was employed. The Easting, Northings, Altitude (E, N, and H) and also distance from the reference point (i.e., location of the Transmitting Antenna) were measured at every location using a GPS receiver. The parameters obtained were used to map the coverage areas of the Search FM radio signals in Minna Metropolis. It was revealed that FM signal strength and speed are good and fast mainly around the mast, while other areas of considerable long distances have poor or no signal reception (Inverse Square Law). The results also showed that viewpoints on high peaks produce better visibility and signal reception than on lowlands in the line of sight analysis. The study recommends that Radio masts should be installed at locations of high peaks where the line of sight will not be obstructed.

Keywords: Viewshed Analysis, FM Radio waves, Transmitting Antenna, Signal coverage map.



5. The Effect of Urban Land-Use Planning Regulations on Residential Property Investment Returns: Evidence from Literature

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Abstract:

Different socio-economic activities in the urban areas take place on land, a unit whose relationships and significance is guided by policies. Literature have clearly shown that urban land use planning and management policies and regulations influence residential price due to its latitudinal bond with locational, structural and neighbourhood attributes in the housing market. This paper reviewed related literature and observed that the trends in studies on the effect of urban land use planning regulations on residential property investment returns have been advancing in continents like Asia, America, Australia and Europe but lagging behind in African countries like Nigeria. It was found that computable but varied price premium were paid for housing attributes such as bedrooms, greenbelt land and proximity to school by buyers/renters for residential properties. Hence, this variables are significant predictors of housing price/rent. This paper recommends that these variables should be considered in urban studies of developing countries like Nigeria with a history of ineffective urban land use planning and management policy to unearth the peculiarities of their urban regions.

Keywords: Urban, Land-use, Regulations, Residential property, Returns.



6. POTENTIALS OF EFFECTIVE URBAN PLANNING AS TOOL FOR DISASTER RISK REDUCTION IN NIGERIA

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Abstract

In the last couple of years, disaster occurrence, both natural and human-induced are increasing worldwide. The magnitude of these disasters and the severity of their impacts have become sources of concern to development analysts and disaster risk managers. This study highlights that unlike what obtains in many other parts of the world such as Europe, North America and South East Asia that are particularly ravaged by natural disasters such as landslides, earthquakes and hurricanes amongst others, the disasters commonly experienced in Nigeria as in many other sub-Saharan African countries, save for perennial flooding, are mostly human-induced disasters. In spite of the low frequency of natural disasters in the country the frequency and severity of human-induced disasters in recent times has become worrisome. This study therefore, emphasize that many of the this kind of disasters such as building collapse, fire outbreaks, pollution and epidemics occur in the country as a result of the inappropriate pattern and poor land-use planning and uncoordinated physical development activities, particularly in the urban areas. The paper therefore, highlights the relevance and utility of effective urban land-use planning and physical development tools such as land-use zoning, prevention of unwholesome and incompatible land-uses amongst others as veritable tools or measures for the prevention and minimization of human-induced disasters in the Nigeria.

Keywords: Disaster, Effectiveness, Potentials, Risk reduction, Urban planning



7. Analysis of Urban Densification and Housing Market in Bida, Niger State, Nigeria

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Abstract:

This study examines pattern of urban densification as an element of urban growth and how it can provide extra spatial information explaining variances of housing market of Bida. Census sampling techniques was adopted in sampling all 31,410, 46,489 and 47,394 buildings for the years 2008, 2013 and 2018 respectively and also 138 houses managed by the 3 registered estate firms in Bida. Data were collected using Google Earth to capture satellite imageries for the years 2008, 2013 and 2018, while handheld GPS was used to take coordinates of rental houses managed by registered estate surveyors and valuers. Point Density spatial analyst tool and Ordinary Kriging (OK) was used to analyse residential density and rental prices respectively, while Artificial Neural Network (ANN) was adopted to analyse and forecast residential density and housing prices with the aid of Map Algebra tool in ArcGIS. It was found out that the pattern of densification process confirmed urban economic theory for monocentric open cities, while OK model disconfirmed Alonso’s monocentric theory. The ANN model revealed that residential densities increase shall continue along the urban – rural gradient thereby causing a transition of open spaces and low density areas in to medium and high density areas in the coming years, while rental prices of housing apartments shall continue to decreases with decreasing distance to the city centre. It was therefore recommended amongst others that there is the need for rational densification for urban development in order check the increasing residential density that reduces green and open spaces.

Keywords: Urban densification, Housing market, Kriging, Artificial Neural Network,



8. EXPLORING COMMUNITY-BASED FACILITIES MANAGEMENT PRINCIPLE TOWARDS A SUSTAINABLE URBAN LAND MANAGEMENT IN MINNA

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Abstract:

There are challenges with urban land management in many emerging economies of Africa. In Nigeria, one of such challenges is the existence of both customary and statutory interests in urban land. The Land Use Decree No 6 of 1978, currently known as Chap L5 LFN 2004, which empowers a state governor to acquire customary interest for overriding public interest, is faced with many challenges. Preliminary discussion from interaction with land officer at the Niger State Geographic Information System revealed that over 10% of state government layouts are currently being challenged by the natives in various courts across the state. The litigations revolve around issues of inadequate assessment index, inadequate compensation, protracted litigations arising from compensation assessments, all of which have contributed to unsustainable development of many urban lands. For holders of customary interest, there is the issue of development that lacks clear objective with regards to known planning principles, leading to slums, poor housing conditions, poor sanitation issues, incompatible urban land uses, poor property value, low environmental quality, and inability to have public utilities and social infrastructures amongst others in various communities. This study proposes a new paradigm that integrates both customary and statutory interest through community-based facilities management (CbFM) strategy to solve the urban land management problems. The study adopts a critical literature review of the core principles of community-based facilities management which include: service management, social inclusion, strategic development, economic longevity and environmental sustainability. The core values of these principles are recommended to enhance sustainable land management that will help in resolving the many challenges of urban land administration in Minna. It is intended that these principles be further tested with a range of case studies in Minna.

Keywords: Community-based facilities management, Sustainability, Urban land management, customary land ,



9. Management Options for Some Selected Peri-Urban Areas of Kaduna Metropolis, Kaduna State, Nigeria

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Abstract:

This paper examined the management options for Periurban areas of Kaduna Metropolis. It centered on the physical, economic, and social attributes of the study areas which were explored to provide strategic options for management of the areas, using Strength, Weaknesses, Opportunities, Threats (SWOT) analysis. Relevant published and unpublished works, and online articles/journals, were reviewed on various approaches for managing peri-urban areas. Physical surveys were conducted, which involved measurement of road length and observations of the condition of housing, economic activities and social characteristics. Interviews with few residents, General Manager of Kaduna State Urban Planning Development Authority, and the Assistant Director of Town Planning department of Kaduna Geographic Information Systems provided information on socio-economic characteristics, Authority’s planning jurisdiction, and land use characteristics of the peri-urban areas via updated maps and gazetted guidelines respectively. An inventory of social services, infrastructure, were taken alongside formal interviews with the community heads of each of the selected peri-urban area. All these primary data, provided basis for situational analysis which were later used in SWOT analysis. The Strength, Weaknesses, Opportunities, Threats, **SWOT** analysis was carried out on the physical, economic and social attributes of five (5) peri-urban areas of Kaduna metropolis, and were juxtaposed to arrive at strategic options for managing the peri urban areas in Kaduna metropolis. Strategic options such as Strength-Opportunities(S-O), Strength-Threats(S-T), Weakness-Opportunities W-O), and Weakness-Threats (W-T) were reached by taking advantage of opportunities using strengths and neutralizing threats by minimizing weaknesses towards effective management.

Keywords: Analysis, Land use, Management, Periurban, Strategic options.



10. Assessment of Household Knowledge and Practice of Solid Waste Characterization in Kaduna Metropolis

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Abstract

The study investigated the extent to which household solid waste characterization practiced as a unit of waste management in Kaduna metropolis. It focuses on the knowledge, attitude and practices of households in waste separation, recycling and also analyzed the determinants of these practices. The survey was conducted on 384 households, using systematic random sampling techniques. The questionnaire utilized for the study targeted household heads. In the absence of a male household head, it was administered to the next eldest person irrespective of the gender. Descriptive statistics was utilized to understand the knowledge of segregation and recycling of solid waste and the reasons for engaging in solid waste characterization practices. Correlation analysis technique was employed to understand the determinants of household solid waste segregation. The findings indicate that, a significant number of households have knowledge of solid waste separation and recycling. However, they practice it for different reasons. The study observed that there is significant negative correlation between solid waste segregation and household income. This implies that an increase in household income is found to be associated with a decrease in the level of solid waste segregation. There was weak correlation between solid waste segregation and educational level. This implies that educational level has little or no influence on the practice of solid waste segregation in Kaduna metropolis. It was recommended that, the provision of garbage collection bins to households will be a good starting point and encouragement towards effective and efficient solid waste segregation in Kaduna metropolis.

Keywords; solid waste, waste segregation, evaluation, household, recycling.



11. ASSESSMENT OF INDOOR THERMAL PERFORMANCE FOR SUSTAINABLE SENIOR HOUSING FACILITY IN MINNA, NIGERIA

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ABSTRACT

Recent research has linked recovery rate and prevention of ailments to the environment in which it is taking place. The objective of this study was to assess the effect of the condition/performance on the perceived Indoor Air Quality (IAQ) and the indoor air-related symptoms of senior's facilities. In this study, indoor air quality design considerations gotten from literature are used as a reference for comparison with what is found in the facility. The design considerations are expected to work as a reference for promoting environments that are adapted for the needs of older adults. The perceived IAQ and the related symptoms were collected by means of questionnaire survey and observation schedule among the senior adults in the facility. The performance was significantly low in the facility, having little impact on the quality of the indoor environment. Therefore, it is imperative that IAQ design consideration be adapted in the design of residential apartments for the elderly as it helps to prevent, promote and provide a curative remedy for their well-being.

KEYWORDS: Indoor air quality, Landscape, Respiratory health, Seniors, Ventilation.



12. Developers Readiness for Green Affordable Housing delivery in Nasarawa Local Government, Kano State, Nigeria

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ABSTRACT:

The significance of having a sustainability and green housing agenda has motivated greater interest for green construction. Nigeria is still seen to be lagging being in green building development as compared to other developed and developing nations. This paper is focused on assessing the housing industry’s key stakeholders’ readiness factors with regards to the implementation of green building concept. The current practice of affordable housing delivery has not transformed from the unsustainable mode of delivery, regardless of the universal call for a paradigm shift away to sustainable practices. The delivery of green and affordable housing has not yet received a resounding success from the housing sector. This study seeks to establish the readiness factors of Nasarawa Local Government housing sector to deliver green affordable housing. A quantitative approach was employed with a Delphi technique as a method of data collection in achieving the objectives from the housing sector. Descriptive statistics was used to analyse the data using SPSS 21. It was found that the most important readiness factor are lack of leadership skills and responsibility of developer to adopt green building as well as lack of stakeholder involvement in the design process. Clearly, the level of readiness of the housing sector in the delivery of green housing is not high, with the respondents on average percentage concluding that the readiness level of their firms is low. Hence, the need for relevant authorities to continue to sensitized the housing sector on the potential benefits of green affordable housing development towards sustainable society. Green affordable housing skill-sets should be established as well as the willingness-to-pay for green affordable housing in the Nigerian construction industry.

Keywords: Affordability, Delphi Technique, Green Building, Housing Delivery & Readiness Factors



13.The Nexus between Social Infrastructure and Residents Wellbeing:

A Review

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Abstract

Social infrastructure refers to various neighborhood facilities and services which improve cohesion and participation among residents to create a livable environment. Infrastructure is crucial to the development of a vibrant city. However, it is a requisite tool for human and social capital development, as it provides response to the basic needs of individuals and the community at large. Although social infrastructure is provided at various levels, the provision at neighborhood and urban centre's affect the wellbeing of residents and improve community sustainability. Despite several inputs by different authors on this subject, little have been said about the link between social infrastructure and wellbeing of residents at the urban centre's. Hence, this paper attempt to explore literature on the nexus between social infrastructure and resident's wellbeing. The study was achieved through systematic and random review of recent and relevant literatures on social infrastructure, quality of life and wellbeing. Also theories and concept of individualism, collectivism and cognitive psychology were highlighted. The review has observed that the role of social infrastructures play on residents wellbeing cannot be over thrashed. Therefore, it is necessary for development policies in the urban place to be in tone with best global practices, geared towards improving the living standards of residents by providing an enabling environment for individual capacity building and collective social development in order to improve resident's wellbeing.

Key Words: Infrastructures, Livability, Sustainability, Wellbeing and Development



14. MPACT OF THE LAND USE ACT ON SUSTAINABLE HOUSING DEVELOPMENT IN NIGERIA FROM 1978-2018

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Abstract:

The Land Use Act (‘the Act’) was enacted to address the problems associated with acquisition of land for development purposes such as housing development. However, since the inception of the Act about 42 years ago, the objective of sustainable housing development in Nigeria has not been realized as majority of Nigerians cannot afford decent housing. The research problem lies in the inability of the Act to facilitate housing development and delivery in Nigeria which can be traced to requirement of consent of Governor, the power of revocation of land for public purpose, and entrenchment of the Act in the constitution. The objective of this paper is therefore to examine the legal effects of these provisions on housing development. This paper employs the doctrinal method of research by reliance on legislation, case laws, textbooks and journal articles to examine the impact of the Act on housing development in Nigeria. The finding of this paper reveals that the requirement of Governor’s consent and exercise of power of revocation are serious impediments to access to land for housing. More so, the entrenchment of the Act in the Constitution made it difficult, if not impossible, to amend the Act. It is thus recommended that the Act should be amended to make the processes of revocation of land by government and obtaining consent of the Governor less cumbersome. Finally, the constitution should be amended to expunge the Act from the Constitution to make it easy for Act to be amended to fastrack the development in the housing industry.

Keywords: Land, Housing, development, Constitution,



15. SQL-Driven Spatial Database Transactions in Support of Compulsory Land Acquisition for Road Expansion Projects

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Abstract:

Activities in an electronically-driven land administration organization might warrant the deployment of spatial database queries that culminate in cartographic visualization of the likely outcome of intended land management decisions among which include the compulsory acquisition of land for overriding public interest. This study is an experimentation of spatial database query in the retrieval of information about land and buildings that may likely be affected by the exercise of government's eminent domain powers for the widening of a motorable road in the municipality of Idah in Kogi State, Nigeria. Spatial data for the prototype project area covering three neighbourhoods in Idah municipality were obtained from Google Earth[®] and OpenStreetMap[®] and were further processed and analyzed using QGIS[®] and Spatialite[®] respectively. Prototype database tables for property owners' identity, parcels, buildings, and roads were created; while structured query language (SQL) operations were instantiated to project the spatial and non-spatial attributes of properties that may be affected under varying scenarios of a proposed road widening scheme. Experimentation of the 10 metre-, 15 metre-, and 20 metre SQL buffer operations returned visually reliable results of the total number and attributes of land and buildings that may be vulnerable to expropriation for the prototype road widening project in the municipality. The value of this study is anchored on the deployment of SQL operations in the planning phase of compulsory land acquisition and compensation.

Keywords: Spatial database, SQL, Land administration, Compulsory land acquisition, Road project.



16. Impacts of Urban Poultry Farm Activities on Water Quality in Kuje Suburbia, Abuja

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Abstract

The rapid rate of urbanisation is associated with unemployment and urban food security challenges. To address the food security challenges in cities, urban residents have embraced the practice of urban agriculture, a practice which involves the production of animals and crops in urban and peri-urban areas. Poultry farming is a vital approach toward providing urban residents with the required protein intake in form of eggs and meat. This study examines the impacts of urban poultry farms activities on water quality in Kuje suburbia. The parameters measured for water sample was carried out in a laboratory test to assess the physicochemical parameters of the water. The results show high concentration of TA, Mn, Ph, NO, and BOD above the WHO/ NESREA recommended standard in surface water, borehole, and well water sampled. In conclusion, the poultry farms activities impact the environment of the vicinity they operate by causing water pollution. The study recommends among others the need for appropriate distance between poultry farms and residences to be determined and enforced by regulatory authority. This will help to mitigate the effects of environmental pollution /health hazards on the residents.

Keywords: Urban agriculture, Community health, Residents Perception, Environmental Pollution

17. Africa’s Population Growth: Adopting the Smart City Model in Nigeria as a Blueprint For it’s Future Cities

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Abstract:

Africa is currently experiencing impressive population growth and Nigeria at the helm of it all, the continent is envisioned to hit a population of 2.4 billion between 2016-2025. This population growth will highly favour urban areas over rural areas but also pose a threat if these cities are not ready to harness the population potentials. Lagos with its alarming population growth has taken a proactive step to begin the construction of a smart city called the Eko Atlantic city. But Lagos is not the only city which has an alarming population on the other end of Nigerian Map is Kano state with a highly growing population and also a high commercial presence. This paper aims to bring to foresight the need for Nigeria to be responsive towards its population growth and in that regard make proactive design considerations in planning her cities. Through a critical review of literature gathered from secondary data of similar situations from countries around the world that have overcome similar challenges and analysed through content analysis. Findings reveal that a major setback of smart cities evolving in Africa is as a result of economic, environmental, cultural and financial factors. It is however recommended that while implementing government policies, urban development agencies should take into consideration the rapid growing population in the planning of its cities to meet the sustainable, resilient and responsive cities as advocated by the UN sustainable development goals.

Keywords: Population, Urbanization, Smart Cities, Sustainability, Nigeria.



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