

ASSESSING THE PROFESSIONAL SKILL REQUIREMENT FOR PREVENTING BUILDING COLLAPSE IN NSUKKA LGA, ENUGU STATE

Kenneth Chidiebere Ezebuilo¹, Chioma Anastasia Omenyi², Obinna Davidsyn Awuzie³

^{1,3} University of Salford, Manchester, United Kingdom

² University of Luxembourg, Esch-Belval, Luxembourg

Abstract: Building collapse has become a recurring issue in Nsukka Local Government Area of Enugu State, often resulting in the loss of lives, property, and economic investment. This study aims to assess the professional skill requirements necessary for preventing such collapses by evaluating the competencies of key stakeholders in the construction industry, including architects, engineers, builders, and site supervisors. The research employs a mixed-methods approach involving surveys, interviews, and site inspections to identify skill gaps in planning, execution, supervision, and compliance with building standards. Findings reveal that inadequate technical knowledge, poor site management, and lack of regulatory enforcement significantly contribute to structural failures. The study recommends mandatory certification, continuous professional development, and strict adherence to building codes to enhance safety. Strengthening the skill base of construction professionals is essential for sustainable and resilient infrastructure in Nsukka LGA.

Keywords: Professional Skill Requirement, Building Collapse and Nsukka LGA.

Introduction

When buildings are not well planned, designed and constructed the result is building collapse. Building collapse on the other hand is a state of complete failure, when the structure has literally given way, and most parts have caved in, crumbled or buckled; the building can no longer stand as originally built. It occurs to building during or after the construction is completed (Dictionary of Architecture construction, 1975).

The frequency of building collapses occurrence in Nigeria as a whole in the recent past is so alarming. In fact, it has become major issue that borders the development of the country, as the frequency their occurrences and magnitude of the losses being recorded in terms of lives and properties are becoming worrisome. As a matter of fact, the spate and frequency of occurrences have become a great concern not only to the government but to all well meaning Nigeria, and most especially the stakeholders in the building industry in the country as the rate of the incidents are becoming very alarming. For instance, in the last quarter of 2011, there was a catastrophic collapse of a five-storey hospital building under construction in Pape Abuja that led to loss of lives and sustained injuries. Again, in the last quarter of 2014, there was also a catastrophic collapse of a three-storey building, still under construction in Nsukka-Central in Nsukka Local Government Area that claimed lives of some workers and loss of properties. Also, in the last of quarters of 2016 and 2017, a two storey building collapsed at Aku-Road and St. Theresa's Road respectively, all in Nsukka-central, in Nsukka Local Government Area in Enugu state, Nigeria.

Statement of Problem

There is no substantial recorded evidence so far available to show that building collapse in Nsukka Local Government Area has been fully studied. Yet, one cannot fully appreciate building technology without a comprehensive knowledge of the causes of building collapse in building. Owing to the inadequate study of building collapse in Nsukka Local Government Area as a whole, there has been unresolved argument about the building collapse and Nigeria at large. The implication of this is a rampant occurrence of building collapse in Nsukka and Nigeria at large.

Research Question

- What are the necessary skills needed to reduce the incessant building collapse in Nsukka L.G.A and Nigeria at large?

Research Objective

- To examine the construction, planning, organization and controlling skill needs of professionals involved in building construction in order to reduce incessant collapse of buildings in Nsukka Local Government Area in Enugu state, Nigeria.

Conceptual Review

Concept of Building Collapse

Building collapse is a catastrophic failure of a structure wherein it loses its stability and load-bearing capacity, often resulting in partial or total destruction. It is a serious concern in the fields of civil engineering, urban planning, and public safety. A collapse can happen during construction, occupancy, or renovation, and it typically results in the loss of lives, property, and resources. Human error and negligence are critical contributors to building failures. From corrupt contractors cutting corners to lax oversight by regulatory bodies, the role of human decisions in structural disasters cannot be overstated. Often, illegal modifications such as adding extra floors or removing load-bearing walls occur without the necessary structural assessments. Regulatory failures, where building inspections are skipped or poorly executed, further increase the risk. The collapse of the Champlain Towers South in Florida in 2021 is a modern example of the consequences of ignored warnings and delayed maintenance (NIST, 2023).

The immediate effects of a building collapse are devastating—loss of life, injuries, and massive economic loss. However, the consequences extend beyond the physical. Survivors often experience long-term psychological trauma, and affected communities may suffer social dislocation. Rebuilding efforts strain public resources, and property values may plummet. Furthermore, public confidence in institutions can erode, especially when negligence or corruption is involved. These collapses often result in legal proceedings, changes in regulations, and calls for stronger safety mechanisms in construction practices.

Preventing building collapse requires a holistic approach—starting with stringent design practices, quality construction, and regular maintenance. Engineers and architects must follow established codes, and construction materials should meet industry standards. Governments must enforce regulations through routine inspections and penalties for violations. Retrofitting old buildings, especially in seismic zones, is crucial for disaster preparedness. Ultimately, building collapse is not merely a technical issue it is a societal concern demanding ethical responsibility and long-term planning (Feld & Carper, 1997). Learning from past failures helps build safer structures and communities.

Construction skill needs of professionals involved in building construction

The construction industry is a major driver of economic development and infrastructure growth globally, and its effectiveness heavily depends on the skills and competencies of the professionals involved. From architects and civil engineers to project managers and skilled laborers, professionals in the construction sector must possess a diverse blend of technical, managerial, and interpersonal skills. The complexity of modern construction projects, increased adoption of technology, and the

growing emphasis on sustainability and safety make the need for a highly skilled construction workforce more critical than ever (SkillsYouNeed, 2023).

1. Technical and Engineering Skills

At the heart of construction is technical proficiency. Civil engineers, architects, quantity surveyors, and skilled tradespeople must possess deep knowledge of construction materials, structural design, soil mechanics, and building systems. They must also be proficient in interpreting technical drawings, blueprints, and engineering plans. This includes the ability to conduct site assessments, estimate loads, and ensure the structural integrity of buildings. Understanding local building codes and standards, such as Eurocodes in Europe or the International Building Code (IBC) in the United States, is vital to ensure compliance and safety (Indeed Career Guide, 2023). Additionally, professionals should be trained in green building practices and sustainable materials, aligning with global efforts toward eco-friendly construction.

2. Project Management and Planning Skills

Construction professionals, especially project managers, must be adept at planning, coordinating, and overseeing the execution of projects from inception to completion. This requires expertise in scheduling, resource allocation, and procurement management. Tools such as Microsoft Project, Primavera P6, and Building Information Modeling (BIM) software are now essential in managing complex projects efficiently. Project managers also need to understand contract management and risk mitigation strategies, ensuring that construction activities proceed within budget and time constraints while minimizing disruptions and liabilities (GetPowerplay, 2022).

3. Health, Safety, and Environmental (HSE) Management

Safety is a critical concern in construction due to the high-risk nature of the industry. Professionals must be skilled in identifying hazards, implementing safety protocols, and ensuring compliance with occupational health and safety regulations such as OSHA in the U.S. or HSE standards in the U.K. Knowledge of environmental protection measures is also essential to prevent construction-related pollution and promote sustainable development. This includes proper waste management, controlling noise and dust levels, and preserving biodiversity in construction areas. Ongoing training in first aid, emergency response, and safety audits is vital for maintaining a safe working environment (GoCodes, 2023).

4. Technological Competence

As digital transformation continues to reshape the construction industry, professionals must stay current with emerging technologies. Proficiency in digital tools such as BIM, AutoCAD, Revit, and drone surveying technologies has become indispensable. These tools enhance accuracy in design, improve collaboration, and facilitate better project monitoring. Additionally, knowledge of smart construction technologies—like Internet of Things (IoT) devices for site monitoring, 3D printing, and augmented reality for virtual walkthroughs—is increasingly sought after in modern construction practices (Construction Digest, 2023). The integration of technology not only boosts productivity but also reduces human error and project delays.

Planning skill needs of professionals involved in building construction

In the modern construction industry, the effective planning of skill requirements for professionals is essential to ensure timely, cost-effective, and high-quality project delivery. Building construction involves diverse activities—from design and engineering to site supervision and project management—each requiring specialized competencies. The rapid pace of technological innovation, sustainability imperatives, and evolving regulatory frameworks have significantly reshaped the skill demands in the sector (Loosemore, Dainty, & Lingard, 2012). Professionals must now navigate not only the technical intricacies of construction but also interdisciplinary coordination, digital integration, and stakeholder engagement. Planning for skill needs, therefore, is not a one-time exercise but a dynamic, strategic process that supports both organizational resilience and industry competitiveness.

Skill Needs Assessment: Current and Future Gaps

The first step in effective skill planning is conducting a comprehensive needs assessment, which involves identifying both present gaps and anticipating future demands. This process requires analyzing current staff competencies against project requirements and future trends such as smart construction and sustainable building practices. For instance, the increasing use of Building Information Modeling (BIM) and modular construction necessitates proficiency in digital tools and collaborative project delivery methods (Olawumi & Chan, 2018). Skill audits, performance appraisals, and consultation with project stakeholders can help map these needs accurately. Additionally, forecasting future skill needs involves monitoring technological developments, changes in building regulations, and global best practices to ensure long-term workforce readiness.

Role-Specific Competency Planning

In construction, skill needs vary significantly by professional role. Architects must combine design creativity with mastery of CAD and BIM platforms, while civil and structural engineers require expertise in geotechnical analysis, materials science, and structural integrity. Project managers need strong leadership, scheduling, risk management, and financial planning skills (Gann & Salter, 2000). Quantity surveyors focus on cost estimation, procurement, and contract management, and skilled tradespeople such as carpenters, electricians, and plumbers must adhere to strict safety standards and technical accuracy. A successful skill planning strategy must therefore differentiate and customize development plans for each role, recognizing both hard skills (technical) and soft skills (communication, teamwork, problem-solving).

Embracing Technological Innovation in Skill Development

Technological innovation is transforming the construction industry and influencing the type of skills professionals must acquire. BIM, 3D printing, drones for site surveys, and digital twin technology are becoming industry standards, requiring digital fluency among all professionals involved in a project. According to Succar, Sher, and Williams (2013), integrating digital competencies into training programs is essential for enhancing productivity and reducing project risk. As automation increases and Artificial Intelligence (AI) begins to play a role in predictive maintenance, cost control, and project planning, professionals must be trained in data analytics, digital modeling, and cybersecurity. This necessitates regular up skilling initiatives, cross-training, and investment in digital literacy across the entire construction value chain.

Partnerships with Educational and Training Institutions

Planning skill needs also involves establishing strong links with educational institutions, vocational training centers, and professional bodies. Aligning academic curricula with practical industry requirements ensures graduates enter the workforce equipped with relevant and up-to-date skills. Dual training systems that combine classroom education with hands-on apprenticeships offer a practical solution to the skills mismatch problem (Winch, 2010). Moreover, Continuous Professional Development (CPD) must be embedded in organizational culture, providing mid-career professionals with access to workshops, certifications, and on-the-job learning opportunities. Government initiatives and public-private partnerships can also play a role in funding and standardizing training programs to improve their effectiveness and reach.

Organization skill needs of professionals involved in building construction

In the multifaceted and dynamic field of building construction, professionals are tasked with orchestrating a multitude of activities that span from initial design to final delivery. The success of construction projects hinges not only on technical expertise but also on a robust set of organizational skills. These skills encompass the ability to plan, coordinate, and manage resources effectively, ensuring that projects are completed on time, within budget, and to the desired quality standards.

1. Project Planning and Scheduling

Effective project planning is the cornerstone of successful construction management. Professionals must develop comprehensive schedules that outline each phase of the project, allocate resources appropriately, and set realistic timelines. Tools such as Gantt charts and Critical Path Method (CPM) are instrumental in visualizing project timelines and identifying potential bottlenecks. This foresight allows for proactive management of tasks and resources, minimizing delays and ensuring a smooth workflow.

2. Time Management and Prioritization

Time is a critical resource in construction projects. Professionals must adeptly prioritize tasks, balancing urgency with importance, to meet deadlines and avoid costly overruns. Implementing effective time management strategies, such as setting clear milestones and regularly reviewing progress, helps maintain momentum and ensures that the project adheres to its schedule. Efficient time management also enables professionals to allocate sufficient time for unforeseen challenges, thereby reducing the risk of delays (Winch, 2010).

3. Resource Allocation and Budget Management

The efficient allocation of resources—including labor, materials, and equipment—is vital for maintaining cost-effectiveness and preventing wastage. Professionals must develop detailed budgets, monitor expenditures, and adjust allocations as necessary to stay within financial constraints. This financial stewardship is crucial for the profitability and sustainability of construction projects. Additionally, effective resource allocation ensures that each phase of the project has the necessary inputs to proceed without interruption.

Controlling skill needs of professionals involved in building construction

Controlling the skill needs of professionals in building construction is a multifaceted approach that ensures the workforce remains competent, adaptable, and aligned with industry demands. This process involves a combination of strategic planning, continuous development, and the integration of modern technologies to address both current and future challenges in the construction sector.

➤ Strategic Workforce Planning and Forecasting

Effective workforce planning begins with a comprehensive analysis of current skill sets and a projection of future needs based on upcoming projects and industry trends. For instance, the UK's construction industry faces significant challenges due to an aging workforce and a decline in young professionals entering the field. The shortage of skilled workers, particularly in specialized trades like bricklaying, threatens the government's housing targets and infrastructure projects (Chan, Scott & Chan 2014). Addressing this requires proactive strategies, including the development of a consistent list of future projects and targeted recruitment efforts.

➤ Competency Frameworks and Standardization

Implementing competency frameworks is crucial for defining the skills, knowledge, and behaviors required for specific roles within the construction industry. These frameworks provide clear benchmarks for recruitment, performance management, and career development, ensuring that professionals possess the necessary competencies to meet industry standards. Standardized qualifications and certifications further support this by establishing universally recognized criteria for professional competence (CIOB, 2010).

➤ Training, Upskilling, and Cross-Skilling

Continuous professional development is essential to keep pace with technological advancements and evolving industry practices. Training programs should focus on both technical skills and soft skills, such as communication and leadership, to enhance overall performance. Cross-skilling initiatives, including job rotation and internal mobility, allow professionals to acquire a broader range of competencies, increasing workforce flexibility and resilience.

➤ **Integration of Technology and Innovation**

The adoption of digital tools and technologies, such as Building Information Modeling (BIM), project management software, and automation, is transforming the construction landscape. Professionals must be proficient in these technologies to improve efficiency, accuracy, and collaboration. Investing in training programs that focus on these tools ensures that the workforce remains competitive and capable of leveraging technological advancements to drive project success.

Methodology

Nsukka town is in Nsukka L.G.A of Enugu state, Nigeria. It is the headquarters of Nsukka L.G.A. The town is situated some sixty-five kilometers to the North of Enugu, the administrative headquarters of the state. Nsukka town is located approximately on the latitude 7 degree North and longitude 7 ½ degree East. It lies in the transitional zone between the rainforest of southern Nigeria. It has a mixed vegetation of grassland and rainforest (Eze, 1998). Nsukka is bounded on the North by ObukpaAsadu and the South by Ieija and Obimo, on the East by Ede-Oballa and Eha-Alumona and on the West by Edem-Ani and Aro-Uno. The people of Nsukka live in a scattered home steads. Nsukka has three main quarters namely; Mkpunano, Nru and Ihe/Owerre, in their order of seniority. This study adopted a surveys research style which operates on the basis of statistical sampling; only extremely rarely are full population surveys possible, practicable or desirable. This style employs the principles of statistical sampling to secure a representative sampling for economy and speed. This style allowed samples to be surveyed through questionnaires, that is by introducing the questionnaires to the respondents for them to answer or fill in the structured questions contained in it. The estimated figure of the population of Nsukka according to 2006 census is 99,608. The research population comprised all the Engineers (structural and civil), Building Contractors, Architects, Estate Surveyors and Valuers and Town Planners in Nsukka L.G.A who are involved in planning and construction of buildings.

This study adopted cluster sampling technique with multi stage selection. This technique involves breaking down the population into sub-groups and a sample taken from only a portion of the sub-groups at a time until all the groups have been sampled. Nsukka L.G.A has three main quarters namely: Mkpunano, Nru and Ihe/Owerre, in their order of seniority. In each of these three quarters, the purposive sampling method was used to select only the respondents needed for the study. Purposive sampling technique was employed to enable the researcher select and interview the Engineers (structural and civil), Building contractors, Architects, Estate Surveyors and Valuers and Town Planners who resides in the area sampled. This study adopted questionnaire and works of some authors whose work are related to the topic as the research instruments. This study adopted parametric statistical tool for data analysis. This tool allowed random distribution for data set and also for the data collected to be analyzed and conclusion drawn from the analysis. The conclusion drawn was based on the reasons gotten from the data analysis.

Analysis

What are the necessary skills needed to reduce the incessant building collapse in Nsukka L.G.A and Nigeria at large?

Following the data collected for question (2), the building should be constructed and managed only by building professionals (Builders, Engineers, Quantity Surveyors and Architects). That is the building should be freed from quack construction, otherwise, known as faulty construction. It (building) should also be permitted by approved registered building board. Also, proper organization and management skills of professionals should be employed. As such, there should be nothing illegal plan of the building. Above all, standard materials should always be used and not the substandard ones.

Conclusion

Assessing the professional skill requirements is vital to preventing building collapse in Nsukka LGA. Many construction failures are linked to poor planning, supervision, and lack of technical

expertise. A structured evaluation of skills can identify gaps among architects, engineers, and builders. Mandatory certification and continuous training will enhance professional competence. Enforcing building codes and monitoring compliance can ensure safer construction practices. Proper skill assessment will lead to more durable buildings and improved public safety in the region.

Recommendations

1. Evaluate the current skill levels of architects, engineers, builders, and site supervisors through structured interviews, surveys, and performance assessments.
2. Enforce that only certified professionals registered with relevant bodies (e.g., COREN, ARCON, CORBON) are allowed to handle construction projects.

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