



Appraising the integration of BIM Technology in the Nigerian Construction Industry

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Outline

Introduction

Building Information Modelling (BIM) Construction Processes

Benefits of BIM technology

Challenges of BIM adoption in Nigeria

Recommendations for successful BIM implementation in Nigeria

Conclusion

The hook - Think - pair - share - 5 mins



- Look at the picture on the left!
- What do you think is taking place here?
- How does this relate to the topic of today's presentation on BIM technology and the Nigerian construction industry?



An elementary school student being rescued from a building which collapsed in Lagos, school children trapped in the building, 20 people lost their lives

13th

March 2019



Another building collapsed on Kukawa Street in Lagos Island, barely a week after about 20 persons lost their lives in the Ita faaji building collapse in the same neighbourhood – a need to enhance construction processes

Purpose of the study

- To highlight the benefits of BIM integration on Construction Projects
- To examine the challenges facing the Nigerian Construction Industry
- To outline the necessary steps that Nigeria's Industry stakeholders need to take for successful adoption of BIM in Nigeria.

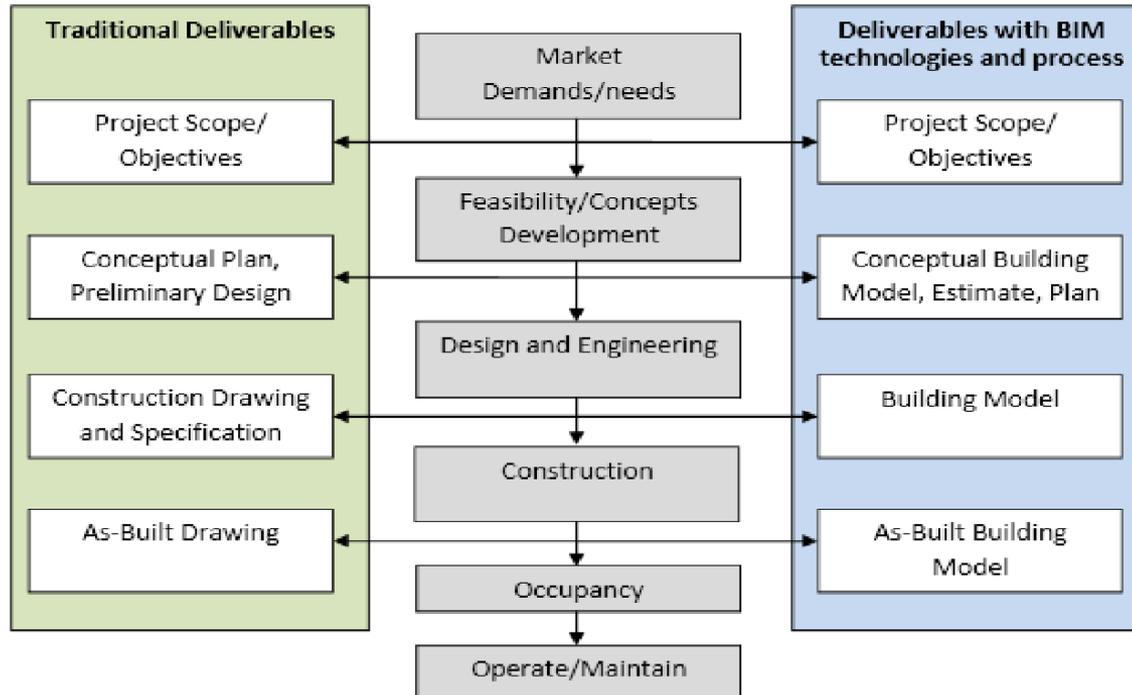
Introduction: Nigerian construction industry

- Accounts for 70% of fixed capital formation, yet it contributes less to the economy than other industries
- 4% contribution to Gross Domestic Product
- It is a cross cutting or linkage industry, generates employment
- Nigerian construction industry faces problems of construction delays, time and cost overruns, abandonment of projects, power shortage and corruption among others.
- Stuck in traditional construction processes
- Fragmentation of work processes
- Leads to multiple exchanges of information between people, disciplines and project phases
- BIM promotes better integration of construction processes
- Enables project teams to collaborate and exchange project information electronically

BIM construction processes and collaboration

- **Architects and Designers use BIM from the initial design concept to working documentation - Faster, more accurate and efficient documentation from model**
- **Engineers use Architects BIM model for their calculations, documentation and simulations through 3D models to check for collisions, compromises and errors.**
- **Manufacturers of Building Products use BIM integration systems to work with other professionals in the construction industry by making parametric BIM objects of their products available.**
- **Quantity Surveyors, Project Managers, Construction Managers, Contractors, Owners and other key actors in the construction industry use BIM technology to navigate the life cycle of the construction project in an efficient and more productive way.**

This diagram below compares BIM technology with traditional deliverables at various project lifecycles.



Benefits of BIM Technology to Project Delivery

- **Brings information of construction processes under one umbrella in a collaborative way.**
- **Creates an accurate model that is useful throughout the entire life of the building, from initial design through occupancy and operation.**
- **Used by the owner and owner's maintenance team to improve understanding of building operation, to adapt, renovate, make additions and alterations to the building faster and for less cost**
- **Leads to increased productivity**
- **Elimination of field interferences**
- **Increased pre-fabrication, less rework, fewer requests for information, fewer change orders, less cost growth, decrease in time from start of construction to facility turnover**

Benefits of BIM Technology to Project Delivery (2)

- Improved visualisation,
- Ease of retrieval of information
- Improved productivity and quality
- Increased coordination of design documents
- Improved coordination among project team
- Increased speed of delivery
- Reduced errors and costs
- Ease of access to links and other embedded information, more comprehensive schedules and estimates Identification and detection of design conflicts and Enhanced life cycle management

BIM MODEL SHOWING ARCHITECTURAL, STRUCTURAL AND MECHANICAL COMPONENTS



Challenges of BIM Adoption in Nigeria

- **The major players are either unaware or are resistant to change**
- **Difficulty in understanding how BIM offers more advantages compared to 2D drafting**
- **Lack of public and private sector investment in BIM Technology**
- **Lack of standard measures to oversee implementation of BIM nationally**
- **High cost of implementation (Software, hardware and training)**
- **Lack of trained professionals to handle the tools**
- **Lack of demand from clients**

Challenges of BIM Adoption in Nigeria

- **Interoperability- Interfacing between different softwares**
- **Poor internet connectivity**
- **Frequent and epileptic power infrastructure**
- **Lack of enabling environment (government policies and legislations) to guide implementation**
- **Lack of proof of financial benefits**
- **Erroneous belief that BIM is only effective for big projects**
- **Corruption/Lack of Transparency**

Recommendations for successful BIM Implementation in nigeria

Challenges preventing the successful implementation of BIM in the Nigerian construction industry, there still exist great potential for BIM to be integrated into the construction industry in Nigeria.

1: Industry Stakeholders Commitment and Knowledge of BIM

- **Government should provide enabling environment in ICT infrastructure, steady and sufficient power supply and internet network**
- **Government should enact policies in favour of BIM and insist on its usage for major public buildings**
- **Government should continue in its war against corruption**
- **Industry stakeholders should be committed to implementation of BIM technology by investing in or spending the software, hardware and training.**
- **Sustained patronage for practitioners to afford the soft and hardware and training**

2. Capacity Building for Technology Adoption

- **Professionals should train themselves to handle BIM tools**
- **Software availability and affordability should be addressed at professional level to ensure smooth implementation**

3: Organization Support

- **Support could come from top management through employee trainings and investment in areas that could promote BIM adoption as worthy investment**
- **Increased general perception by organizations that BIM adoption could enhance productivity and efficiency**
- **Construction organizations to create enabling environment through successful IT and knowledge management.**
- **Change management at organization level to be encouraged**

4: Collaborative Synergy Among Industry Professional

- **Collaboration on integration of software interface issues by industry professionals must be enhanced**

5: Cultural-Orientation

- **Culture is a way of life of a people which is difficult to change. Rigid ways of doing things must be overcome for successful BIM implementation.**

Conclusions

- **The integration of BIM technology is low in Nigeria due to several constraints and challenges bedevilling its adoption.**
- **There is hope that the Nigerian construction industry will embrace and utilize BIM technology for future prospective projects.**
- **Mindset and determination by industry partners and stakeholders crucial for integrate of BIM technology into the Nigeria construction industry.**
- **Framework for assessing project feasibility, performance, functionality and constructability can be updated to a standard that competes with other industrial countries where BIM has been utilized and has transformed the economy.**
- **BIM is a game changer and provides a platform that brings collaboration between project stakeholders and improvement of project outcomes.**
- **BIM should be fully adopted in the Nigerian Construction Industry.**

Thank!
You!