5-Dimensional BIM and the Challenges of Adopting Measurement Standards

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Key words: Cost management; Building Information Modelling, Classification Systems, Measurement Standards, Project cost, Quantity Extraction

SUMMARY

Building Information Modelling (BIM) is considered as the future of the construction industry and its implementation will change the way building information is exchanged and accessed by project participants. The five-dimensional BIM (5-D BIM) considers a project cost and schedule in addition to spatial design parameters in 3-D, therefore allowing project participants to identify, analyse, and record the impact of changes on project costs and scheduling. However, the Nigerian construction industry still relies on bespoke software tools and there is no common platform to exchange project information among project participants. There is lack of single source that provides integrated project information that can be used for rule-based quantity take-off and estimation in 5 -D BIM. This study identifies the challenges of adopting measurement standards in 5-D BIM in the Construction Industry of developing economy. A semi-structured interview was conducted among industry practitioners (Architects, Engineers, Quantity Surveyors) that has been previously involved on BIM projects in Nigeria. The interview was designed to figure out the existence of classification systems used in the industry, the relationship between such classification systems and measurement standards, how quantities are extracted for BIM, the feasibility of using measurement standards for quantity extraction and estimating in BIM models, and suggestions to enable the use of measurement standards in 5-D BIM. The study also investigates how design information are exchanged among project participants. Findings from the study show that, 79% of the participants believed there is no classification systems in the construction industry, 20% have no knowledge of the use of classifications systems, 45% pointed out that there is no relationship in the measurement standard used and industry classification systems, 10% of the participants stated that they have organisation-based classification system used for BIM projects. Findings from the study have allowed conclusion to be drawn that there is no building classification system in the industry that provide basis for information exchange among project team. That there is no synergy between measurement standards used by cost consultants and design information produced by the designers.

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Therefore, cost information is extracted separately to another software before quantity extraction and estimation could be carried out by cost consultants. This study is important because it contributes to the research on 5_D BIM adoption by cost consultants and addresses the challenges faced in the use of measurement standards.

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