

# Chapter 5

## Building Information Modelling in Cameroon: Overcoming Existing Challenges

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### ABSTRACT

*BIM has recently gained ground in developed countries. However, the use of BIM in developing countries including Cameroon is not well-known. In this study, BIM implementation in Cameroon is explored. The research methods used are a pilot study, electronic email surveys and in-depth phone interviews. Altogether, 179 professionals having at least a Master's Degree in Civil Engineering from the National Advanced School of Engineering Yaoundé I - Cameroon, a leading engineering institution in Francophone Africa, were sampled. Forty six provided feedback yielding a response rate of 25.7%. It emerged that some BIM software are already being used in Cameroon. However, major barriers hindering BIM uptake are high license fee and lack of huge projects that can pay off the cost of investment in BIM. Perhaps, partly because the respondents were highly skilled, it emerged that the lack of expertise was/is not a major problem to use BIM in projects. Although this study is limited to Cameroon, many recommendations could be relevant to other African countries.*

### 1. BACKGROUND

In the developed and developing countries, the construction industry has been noted for being too fragmented and lacking collaboration. This has led to the poor and inefficient delivery of projects

often falling short of clients' requirements. In the developing countries, construction projects have been noted for far exceeding planned schedule and cost (Frimpong et al., 2003), generating too much waste (Wahab and Lawal, 2011; Urio and Bent, 2006). The same is true for developed

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countries, although the level of inefficiencies in the developed countries might be lower than in developing countries. In the UK, for example, it has long been established that the construction industry is cost ineffective, less productive and an abyss of waste (Egan, 1998). Thus there has been an onus on the global construction industry to change its ways and adopt innovative approaches in delivering construction projects. The industry has been challenged to (i) increase: productivity, efficiency, infrastructural value, quality and sustainability; (ii) reduce: lifecycle costs, lead times and duplications; (iii) minimise or eliminate waste. In industry and government departments, Building Information Modelling (BIM) is being hailed as the solution to overcome these challenges. While most developed countries have positively responded by promoting policies and strategies (e.g. HM Government (2012) and HM Government (2013) in the UK, see Wong et al. (2009a) for progress made in Finland, Denmark and Norway and Wong et al. (2009b) for progress made in the USA) that might have partly led to the uptake of BIM, such strategies and the extent to which BIM is being used in developing countries especially Cameroon is not known. This paper focuses on investigating the use of BIM in Cameroon, a West-Central African country. The investigation is conducted through the use of a pilot study, electronic email surveys and in-depth phone interviews.

To facilitate understanding, an overview of the remaining sections of the paper will be provided. Section 2 is about the background of the Cameroon construction industry. The section establishes the importance of the construction industry and why BIM is required. In section 3, a literature review about major aspects of BIM has been examined. This review provides an overview of BIM and an understanding of the knowledge gaps that underpinned this study. The methodology of this study is discussed in section 4. In section 5, the analysis of the survey conducted in this study is presented. Section 6 is about data validation while key findings are discussed in section 7. As

a conclusion, the summary of the study including recommendations for future studies are discussed in section 8.

## **2. AN OVERVIEW OF CONSTRUCTION PRACTICE IN CAMEROON**

Similar to most developing countries, the construction industry contributes significantly to the Gross domestic product (GDP) of Cameroon. Despite the current global economic downturn, Cameroon construction industry accounted for 3.4% of GDP in 2011 (AEO, 2012). Its importance justifies why the Cameroon government promptly intervened with strategies to minimize the impacts of the global economic recession. Some measures include reducing construction material prices (Nkama, 2009) and encouraging international investors to explore Cameroon's construction market (Khan & Baye, 2008). In particular, China is one of the countries that have been investing in the Cameroon construction industry (Khan & Baye, 2008).

Despite huge investments from the Cameroon government and foreign investors in the construction industry, the industry has not been able to meet the needs of clients. One such sector is the housing, where demand for housing still far outstrips supply. This has led to the emergence of informal practices, where progressive refurbishment and regeneration have been carried out by individuals in most cities to render their houses usable (Fombe, 2012). In both the formal and informal sectors of Cameroon, housing delivery is a major challenge and is further exacerbated by many other issues related to construction project management. Studies about how to improve the understanding of key aspects of construction project management are scarce. Louzolo-Kimbembé & Pettang (2006) reported the lack of efficient cost planning techniques. Abanda et al. (2011), Manjia et al. (2010) reported the lack of labour

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