

**A STUDY OF TOP MANAGEMENT SUPPORT ONTO BIM ADOPTION IN
CHINA CONSULTING COMPANIES**

QIN YI YING

**MASTER OF SCIENCE IN CONSTRUCTION MANAGEMENT
(BUILDING INFORMATION MODELLING)
FACULTY OF ENGINEERING AND QUANTITY SURVEYING
INTI INTERNATIONAL UNIVERSITY
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Companies >**

Author: QIN YI YING

Student No: I19018303

Supervisor: Dr Chan Siew Chong

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ABSTRACT

Top management support is a crucial driver for consulting companies in China's architecture, engineering and construction (AEC) industry. They must identify changes in the competitive environment, which are becoming increasingly technical. In addition, top management must respond most efficiently and effectively possible. Currently, China consulting companies which using BIM are subject to changes of organizational contexts and top management support that influences the BIM application. This study focuses on this phenomenon through analyzing the variables of top management support and organizational readiness affecting BIM usage. This paper uses qualitative research to analyze data output based on interviews with ten China consulting companies. The aim of the analysis is to find evidence from the above mentioned relationship using the Technology-Organization-Environment (TOE) framework. Besides that, organizational readiness to increase BIM adoption in consulting companies with top management support is also studied. The findings highlight that top management support and the need to provide organizational readiness for companies to improve their technical capabilities are the essential prerequisites for BIM adoption in the companies. The contribution of this paper is to provide empirical evidence to show that the behaviour of top management support influences the effective adoption of BIM organizational factors in China consulting companies.

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LIST OF ABBREVIATIONS

AEC : Architectural, Engineering and Construction

BIM : Building Information Modelling

ICT: Information Communication Technology

DOI: Diffusion of Innovation

IT: Institutional Theory

NIBS: United States National Institute of Building Services

TAM: Technology Acceptance Model

TOE: Technology-Organization-Environment

TPB: Theory of Planned Behaviour

TRA: Theory of Reasoned Action

SME: Small and Medium Enterprises

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DECLARATION OF ORIGINAL WORK

I, QIN YI YING, ID Number of I19018303 hereby declare that the work entitled “A Study Of Top Management Support Onto BIM Adoption In China Consulting Companies” is my original work. I have not copied from any other students’ work or from any other sources except where due reference or acknowledgement is made explicitly in the text, nor has any part been written for me by another person.

18/08/2021
Date submitted

QIN YIYING
Name of the student (Matric No.)

CHAPTER 1: INTRODUCTION

1.1 Research background

Building information modelling (BIM) is changing the construction, engineering, and construction (AEC) industry worldwide (Azhar, 2011). As part of the digitization of the industry, BIM is considered to be a way to solve the problems of internal division and slow productivity growth (Elmualim and Gilder, 2014). The effective adoption and use of BIM can bring several benefits, including faster and more efficient processes, better design and visualization, controllable life and environmental data, better production quality, automated assembly, and better customer service, The integration of life cycle data, planning and implementation processes, an efficient and competitive industry, and more (Chegu Badrinath and Hsieh, 2019).

Building information modelling (BIM) is seen as an opportunity to change the rigid attitude of the industry, and these changes have so far hindered the modernization of the entire construction industry (Ahmed and Kassem, 2018). Within the industry, BIM is considered to be the most widely discussed innovative technology. In contrast, BIM is considered to be a key element of digital transformation, and BIM offers the opportunity to introduce new paradigms in the built environment such as the Internet of things, smart sensors, ways to connect different sectors of the building and large amounts of data (Oesterreich and Teuteberg, 2016, Zhao, 2017, Ahmed and Kassem, 2018).

Although many studies have shown the potential value of BIM and the awareness of adopting BIM is increasing among users in the construction industry, users are still hesitant to adopt BIM widely (Lindblad and Guerrero, 2020). In this context, the adoption of BIM in organizations is associated with various challenges and drivers.

The lack of top management support is one of the most significant barriers and obstacles (Faisal Shehzad et al., 2020, Ahmed and Kassem, 2018). Despite the potential benefits of BIM being attractive, the adoption rate varies from country to country. Previous studies have shown that the adoption and use are increasing in most developed countries (Faisal Shehzad et al., 2020, Abubakar et al., 2014).

However, the level of BIM adoption in developing countries has stagnated. For most developing countries, BIM has not yet been applied throughout the construction cycle of a construction project. In China, particularly in the early years of BIM use, it was mainly used for architectural design, while now BIM use is mainly focused on the construction phase and the entire project management phase (Qin et al., 2020, Ding et al., 2015)

1.2 Problem statement

Previous research has identified the lack of top management support in organizational factors as a key influencing factor in the widespread adoption of BIM in the construction industry (Ahuja et al., 2016, Song et al., 2017, Okakpu et al., 2018, Faisal Shehzad et al., 2020). In this context, top management support is seen as a necessary driver for the adoption of BIM as an innovative technology in the construction industry.

In this way, top management must make decisions, improve workflows, define objectives and define the responsibilities of each person involved. Top management support must build leadership throughout the BIM implementation process so that all project team activities are monitored and coordinated to avoid errors and misunderstandings. In order to do this, top management support must promote an adequate culture and values that enhance technical learning and a culture of collaboration between project team members (Villena-Manzanares et al., 2020).

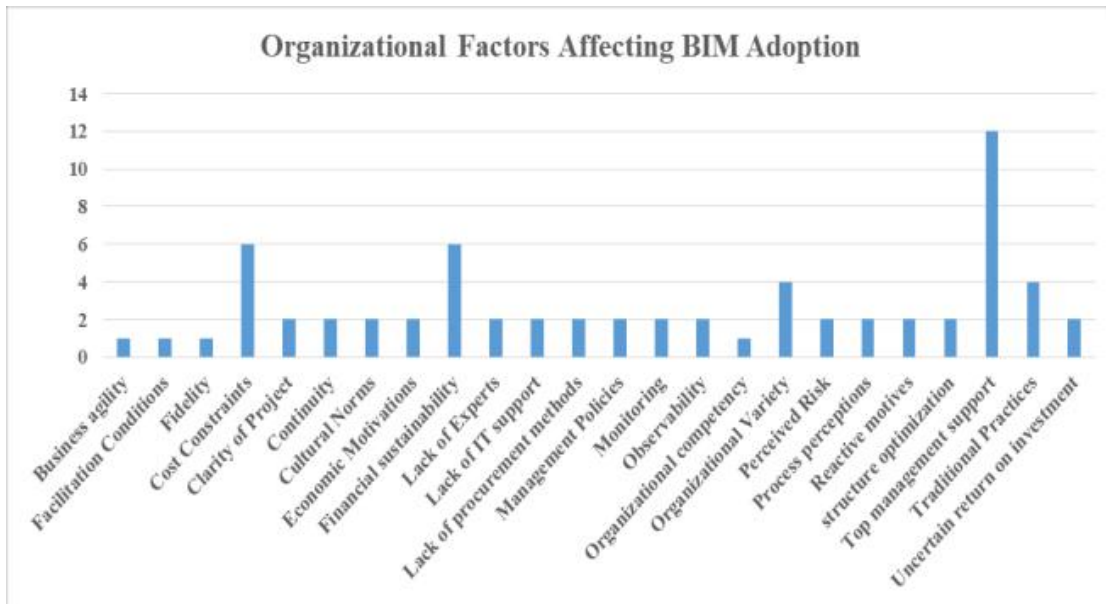


Figure 1.1: Organizational Affecting BIM Adoption

Source: (Shehzad et al., 2019)

In previous studies, there has been a significant amount of research on the adoption of BIM in organizational structures and assessing the implementation of BIM at the project level. However, so far, the focus has been almost exclusively on contractors (Bosch-Sijtsema et al., 2017), architects and designers (Ahuja et al., 2016, Son et al., 2015), or studies investigating the construction industry and national contexts, without focusing on specific groups (Ahuja et al., 2020, Cao et al., 2019, Kim et al., 2016, Liu et al., 2015). In particular, few studies have explicitly focused on engineers or consulting companies. Since consulting companies are one of the key parties in the development of BIM projects, there is a need to improve the effectiveness of BIM adoption. This party cannot be ignored as they will help facilitate the BIM transformation in the construction industry.

1.3 Research aim

This study aims to analyse the current state of BIM adoption in China consulting companies, especially on effective BIM adoption in top management support. This study contributes to a better understanding of BIM adoption in China consulting

companies.

1.4 Research objective

As mentioned in the problem statement, recent research has shown that top management support is critical for successful BIM adoption, particularly at the organizational level (Ahuja et al., 2016, Hong et al., 2019, Li et al., 2019, Saka and Chan, 2020). In this context, the objective that prompted this study was the lack of knowledge on the adoption of BIM in consulting companies, with a particular focus on top management support in organizational factors. In order to achieve the stated objectives and meet the quality outcomes, this study will be fully committed to the following specific objectives:

- a) To identify the current status of BIM adoption in China consulting companies.
- b) To determine the critical organizational drivers for BIM adoption in China consulting companies.
- c) To evaluate solutions to improve the effectiveness of BIM adoption by China consulting companies.

1.5 Research Questions

In order to fill the gaps in the existing literature, this study uses a few research questions as a research framework. These questions are to guide researchers to deepen their understanding of the factors of effective BIM adoption by China consulting companies:

- a) Does top management support increase BIM adoption in China consulting companies?
- b) Does the link between top management support and organisational readiness in organisational factors?
- c) Does top management support affects the effectiveness of BIM adoption in China