

IS BUILDING INFORMATION MODELLING A DISRUPTIVE INNOVATION?

V. Boros¹

¹Schömig-Plan Engineering Consultants, Stuttgart, Germany.

e-mail: boros@schoemig-plan.de

SUMMARY

The implementation of Building Information Modelling (BIM) in ever more countries across the globe promises a leap in civil engineering techniques. Ever since the idea of disruptive innovation has been introduced in 1997, the term had become a buzzword and is also often used in connection with BIM. Meanwhile disruptive innovations show in fact several recognisable characteristics, distinguishing them from sustaining technologies. The properties of BIM in the German market in respect to these aspects have been established by conducting interviews with 10 experts including four clients, four consultants, a contractor and a software company. Based on their professional assessment, in the present paper the disruptive potential of BIM is determined according to five different theoretical frameworks. While BIM shows some disruptive features, the outcomes clearly indicate that it falls significantly short of the score obtained by truly disruptive innovations. Especially for smaller companies this may present a valuable insight in respect to BIM adoption.

Keywords: *Building Information Modelling, Disruptive Innovation, Technology leaps, Expert interview.*

1. INTRODUCTION

When discussing the synergy of civil engineering and culture, as well as the challenges ahead of us, the steadily ongoing digitization of society as a whole and structural engineering in particular represents an essential phenomenon, which may not be overlooked. Building Information Modelling may be considered the flagship of digitization in the construction industry and has indeed been heralded as “an epochal transition in design practice” [1]. However, just like in our society in general, the digital transition bears not solely benefits, but is also accompanied by disadvantages and must face several obstacles and fears. Digitization often comes at a high price to already established competitors, as a new market entrant may introduce a more attractive digital business model and thus quickly gain a significant market share, ousting previous market leaders, as it has happened in case of smartphones, Amazon or Uber. Therefore we may ask the question, whether BIM is about to have a similar effect on the construction industry? In recent decades numerous scientific approaches have been developed to identify such disruptive innovations in various fields and markets. The present study applies several of these methods to BIM, in order to establish whether it may also to be considered a disruptive innovation or is rather merely the next step in a sustaining technology. Since however, both the terms “BIM” and “disruptive innovation” have become buzzwords in recent years, interpreted quite differently by various authors, first of all the definitions of these two key phrases, as considered in the present paper, are provided.

2. DEFINITIONS

2.1. Building Information Modelling

Even documents of normative character such as the National BIM Standard of the United States [2], the Task Group of the European Union on BIM [3] or the BIM Handbook [1] offer significantly different definitions for the acronym BIM, generally emphasizing those aspects of the term which concern them most. We shall adopt the definition by the British Publicly Available Specification PAS 1192-2 [4] which defines Building