

BIM

Diffusion of Building Information Modelling as an Innovation



Sanjana Buć

Institute IGH d.d., Zagreb, Croatia

Introduction

The problem of BIM acceptance by organizations in Architecture, Engineering and Construction (AEC) industries can be successfully solved if approached as implementation of innovation

Diffusion of Innovations (DOI) - the process by which an innovation is communicated through certain channels over time among the participants in a social system (Rogers, 2003)

Innovation - idea, practice, or object that is perceived as new by an individual or other unit of adoption (Rogers, 2003)

Research question: How does DOI model translate to AEC context and especially for adoption of building information modelling?

Diffusion of BIM in AEC organizations

BIM - the process of creating a building information model - a digital representation of physical and functional characteristics of a facility, a shared knowledge resource for information about a facility for decisions during its life-cycle (BuildingSmart, 2015) - a systemic innovation (Slaughter, 1998), a product and process innovation (OECD, 2005)

The innovation process consists of **two main groups of activities** (Rogers, 2003):

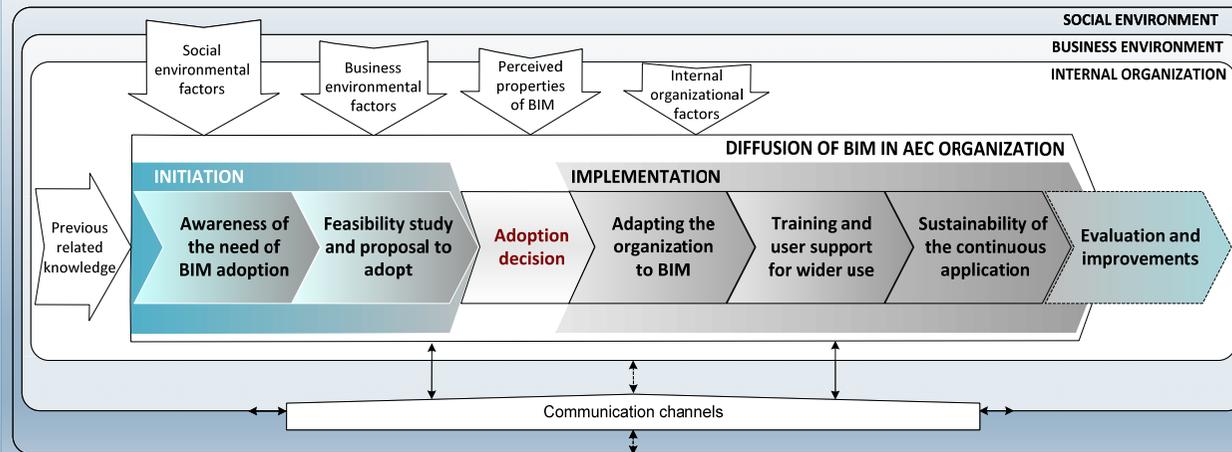
- (1) **Initiation** - information gathering, conceptualization and planning for the adoption of innovation
- (2) **Implementation** - events, actions and decisions involved in putting the innovation into use.

Literature cited

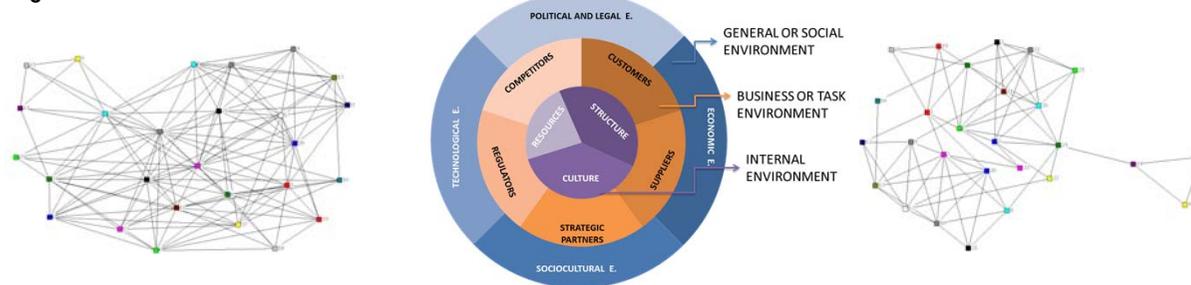
- Buc, S., Divjak, B. (2015) Innovation Diffusion Model in Higher Education: Case Study of E-Learning Diffusion, poster, 9th International Conference on e-Learning, Spain
- BuildingSmart, www.buildingsmart.org/standards/technical-vision, downloaded 15th June 2015.
- OECD, 2005. Oslo Manual: Guidelines for Collecting and Interpreting Innovation Data. 3rd ed. OECD Publishing, European Commission, Eurostat

- Rogers, E. (2003) The Diffusion of Innovations. 5th ed. New York: The Free Press
- Slaughter, E. S., (1998) Models of construction innovation. Journal of Construction Engineering and Management, 124(3), pp. 226-231
- Vishwanath, A. & Barnett, G.A. (eds.) (2011) The Diffusion of Innovations: A Communication Science Perspective. New York: Peter Lang Publishing

Conceptual model of BIM diffusion in AEC organizations



Organization environment



Acknowledgments

This work has been supported by the Croatian Science Foundation under the project IP-2014-09-7854.



Further information

sanjana.buc@igh.hr

INSTITUT IGH d.d.
Janka Rakuse 1
10000 Zagreb



Conclusions and further research

DOI model can be adapted to AEC organizations by:

- taking into account the key factors influencing this process
- adding the final phase „Evaluation and improvements“, the phase in which the usefulness of the adopted innovation is assessed.

Important: recognition of **communication agents and channels** that enhance diffusion of BIM

Further research:

- to define critical factors of DOI for each phase** of the innovation process
- to find which capacities an AEC organization needs to have** in order to successfully implement the BIM adoption for each of the main phases of the diffusion process taking into account the following:
 - external and internal environment of the organization
 - the perceived properties of BIM, as well as previous related knowledge influence the capacity of the organization to recognize and adopt BIM
- to upgrade the model** by means of social network analysis (SNA) in order to find key communication factors in DOI.

The majority of the existing research focused only on factors that influence an innovation adoption (Vishwanath & Barnett, 2011).

Described research will **contribute to the DOI theory** because it takes a broader view and upgrades the model (Buc & Divjak, 2015).