

DESIGN MANAGEMENT IN A DESIGN OFFICE: SOLVING THE PROBLEM OF RELEVANCE

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1 BACKGROUND AND IDENTIFICATION OF PROBLEM /KNOWLEDGE GAP

In this work, we contend that the conceptual foundations of conventional construction design and design management are obsolete (Ballard and Koskela 1998), and these need to be substituted by a more comprehensive theoretical basis. The narrow view of design management is founded on the conceptualization of design production as a transformation of inputs to outputs (Koskela 2000). Design managers focus on managing projects, tasks, resources and contracts (Howell et al. 2010) and less on managing people, processes, environment and technology. This has led to bad consequences (Arnell et al. 1996, Ballard and Koskela 1998, Fosse and Ballard 2016, Koskela et al. 2002, Pikas et al. 2015a, Freire and Alarcón 2002), including but not limited to: Disjointed management, operations and contracting methods; management by deliverables, focused on producing models and drawings, while needs, requirements and alternatives are poorly specified and studied; process and product uncertainty by designers/engineers on what, when and by whom must be designed; misalignment between different design flows etc.

As the first paper in the series of three, within this study the aim is to solve the problem of relevance or in another words, to justify the research purpose. For that, the current state of the practice of design and design management in an Estonian case study design office is analyzed. In following the research method is explained, results of the study are outlined, and conclusions are drawn on significant problems and challenges.

2 RESEARCH AIM AND METHODOLOGY

Within the domain of productive sciences, using methodologies addressing how things are is not fit to answer the questions of how things ought to be (Koskela 2008). Thus, in this work a constructivist research approach is used, namely design science research - learning through making (Kuechler and Vaishnavi 2011). The goal is to develop scientifically grounded solutions that are able to solve problems with practical relevance (Rocha et al. 2012).

For the methodological framework, we have adapted the DSR model (see Figure 1) from Hevner (2007), which is the embodiment of three closely related cycles of activities: relevance cycle between environment and design task (understanding context and requirements, and testing of developed constructs); design cycle within DSR domain (building design artefacts/processes and evaluation); rigor cycle between design science research and knowledge base (grounding in theories and methods, domain experience and expertise but also developing new knowledge generated by the research).

As part of this first article (environment in Figure 1) the current situation or “as-is” was analyzed. This stage was divided into three steps and in each of these several methods were used to study the current state of the design and management practices: 1) surveys and interviews for understanding designers and engineers’ views on main challenges; 2) database analysis based on the data from

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enterprise resource planning (ERP) system; 3) observation of one design project for gaining contextual understanding of the problems and challenges.

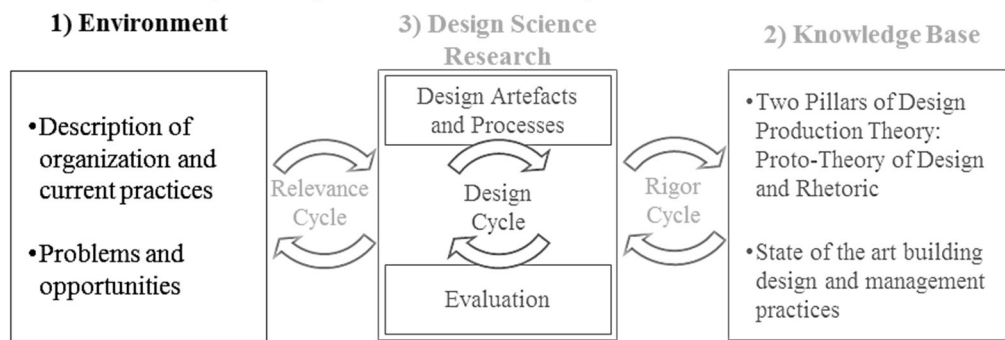


Figure 1. Design science research methodology for developing future design process and management model (adapted from Hevner (2007)).

3 RESEARCH FINDINGS

Based on the surveys, interviews, database analysis and observations, several conclusions were drawn on causes that make projects and project results highly unpredictable:

- Design management has focused on planning projects, tasks and resources, but not on managing the design process and value.
- Design management control is primarily based on the thermostatic model of control (Koskela and Howell, 2002), monitoring deviations between planned and actual resource consumption and task completion during design meetings (e.g. 45% of project managers' time is spent in meetings).
- The process of making work ready is carried out in a short term perspective and motivated by urgency within weekly meetings.
- Much time is spent on producing drawings, but not working through alternatives for delivering best value to the customer.
- Based on database analysis and observations, only little time is spent on controlling and supervising work activity at the unit level (1% in architecture and building services engineering, 4% in structural engineering and 7% in project management). There is no reason to assume that the whole will work if one or several elementary units do not.

The study results support the findings of other studies discussed in the introduction. However, we hypothesized that it is the poor understanding of design and design management that have led to the bad consequences. Indeed, the evidence in this study show that design management is narrow-minded and founded on the conceptualization of design production as a transformation of inputs to outputs, missing flow and value views (Koskela 2000). Traditional project management was the only visible method/framework in use, and the outcomes corresponded to what critical accounts of it have argued to occur due to poor conceptualization.

4 CONCLUSIONS

Any act of design requires understanding of the current environment and situation to close the gap, or, in another words, how things are and how they ought to be. Within this article, the aim was to solve the problem of relevance, and for that relevant practical but also theoretical problems were articulated. Traditional project management was the only visible method/framework in use, and the outcomes corresponded to what critical accounts of it have argued to occur due to poor conceptualization.

