

Patterns of Sustainable Innovation in the Building Industry. Towards a Strategic Management Perspective on Environmental, Social, and Economic Values.

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Abstract

This research is concerned with the role of innovation and sustainability in the building industry. Despite innovation is largely recognized as a medium of advancement, and sustainability a necessary approach to the future of the practice, the building industry seems to lack the ability of strategically fostering and promoting the introduction of sustainable innovation as an advancement trajectory. This seems to be due to its inherent characteristics, particularly concerning with the relation with the industry. The investigation of the industrial unique characteristics and its innovation dynamics is critical to the understanding of the factors that can facilitate (or limit) the ability to introduce changes, foster innovation, and support a sustainable approach to the practice. To this end, this thesis seeks to identify and explore the nature and the impact that sustainable innovative design solutions on the environment, social and economic context. To do so, the work will try to shed light on actors, factors and dynamics that facilitate or limited the ability to innovate/introduce sustainable change; to define a design method aimed at assisting innovation introduction by identifying the relation between design solution and delivery process; and to define guidelines in support of the definition of innovation introduction strategies in the building industry. To this end, the work will rely on the methodological approach of case study theory. This methodological approach will allow the analysis of a number of specific case studies, exploring individual and unique characteristics of building products and yet allow the overall understanding of more general industrial dynamics. This will be achieved by analyzing, comparing and contrasting 30 case studies of innovative case studies to shed light on the degree of impact that each innovative design solutions have on the supply chain, and their ability of producing changes. These case studies will be then organized into a working frame to assess their type of innovation (irrelevant, incremental, modular, architectural or radical), characteristics of innovation (environmental, social, economic) stakeholders' roles and responsibilities, and sustainability results (environmental, social, and economic). This assessment will allow to tease out design variables that generated changes by mapping and discussing patterns describing the relation between different design solutions and consequential changes impinging on the supply chain, and delivery process, based on a number of variable. The expected results will contribute to define guidelines and design organization models that can be strategically utilized to foster sustainable innovation policies, and establish good practice trends. The expected overall research contribution is to be found in: the knowledge expansion on the theory advancing sustainable industrial dynamics in the building industry, in the contributing to industrial context by providing strategic models for sustainable innovation policies; and in the provision of positive example of sustainable innovation introduction in the industry by shedding lights on economic, environmental and social advantages that these examples have produced so far in the industry.