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The development of zero-energy transformation concepts in The Netherlands. A comparative case study analysis of two transformation concepts

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Abstract

In a new product development project numerous decisions are made that influence the course and the outcome of the project. Remarkably, little research is done on how decisions in new product developments are actually made and how the decision making affects the performance. This research contributes to closing this gap of knowledge by comparing the decision making of two new product development projects. This study provides insight in the importance of various decisions and how successful decisions should be made. The study contributes to the new product development literature through extensively studying the use of decision making styles in two product development projects of transformation concepts. The empirical findings emphasize the importance of understanding the context of projects and the way decision should be made to be successful.

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Keywords: decision making; new product development; renovation; zero-enery transformation;

1. Introduction

The social housing sector in the Netherlands has set itself the challenging task to transform 100,000 social houses in a timespan of seven years to zero-energy-usage homes. Six social housing associations and four construction companies are involved in this transformation process. The six social housing associations have taken

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responsibility to provide the required houses, whereas each construction company has committed to develop its own zero-energy-usage transformation concept.

The challenge is to come up with an integral zero-based energy concept that can be implemented on a large scale and assembled in a very short time frame. Special attention therefore needs to be paid to large scale production and assembly of the concepts on location. Since the tenants will stay in their homes while assembly takes place on location, the actual assembly not only needs to be fine-tuned with the respective social housing association, but also with the tenants.

To realize the agreed transformation target, the construction companies will need to take various strategic decisions. This varies from decisions on their concept proposition and consequently the design, the production and the assembly of the concept to the selection of their innovation partners. It is important for the companies to make the right decisions, in the right way, because a great deal is at stake.

In the past few years there is a growing interest on decision making in the new product development literature. Initially the scholars were focused on the decisions in an innovation context, particularly the stage-gate-decisions, i.e. go/no-go-decisions. In the more recent years, the focus is on the process of decision making [1,2]. Various scholars discussed the decision making regarding the innovation portfolio [3-5], whereas others studied the decision making in new product development projects [6,7].

In spite of the increase of studies on decision making in an innovation context, there is still little known how decisions are actually made in innovation projects. The aim in this study is to determine what the important decisions are in a new product development projects and which decisions have a large effect – either positive or negative – on the eventual intended outcome. The corresponding research questions are: "What are important decisions in a new product development project and how does the decision making affect the project outcome?"

In order to answer the research question a multiple-embedded case study is conducted. The studied cases represent two of the four transformation projects. The most important decisions in this case were identified and the decision making styles of these decisions were compared to the decision making of the less important decisions. The paper is structured as follows: First, the literature on decision-making in new product development projects is reviewed. Then, the research methodology is introduced and the collected data is analysed. The paper concludes with the contributions to the literature; the managerial implications; the research limitations; and, proposes directions for future research.

2. Theoretical background

2.1. Renovation in the housing sector

Although the research on renovation in the housing sector is limited, three main streams can be distinguished. The first stream is focusing on the policies that are applied to promote the use of energy-saving renovations [8-10]. These studies described the policy instruments that are used by national and European governments and what the effects are of these policies. The second stream focuses on the performance of energy-saving renovations [11,12]. The performance is for example determined through evaluating the energy effectiveness of the concepts or their payback time [13]. The third stream studies the adoption and implementation of energy renovations in the housing sector. These studies focus on the context in which the renovation concepts are proposed and which aspects play a part in a successful renovation [14,15].

2.2. Decision performance

Mintzberg, Raisinghani and Theoret [16] define decision making as "a set of actions and dynamic factors that begins with the identification of a stimulus for action and ends with the specific commitment to action" [16p. 246]. In this definition as well as the process of decision making as the outcome of decision making are incorporated [16,17]. Both are items of which the performance is widely discussed in the literature [18-21]. The process of decision making is frequently measured through comprehensiveness of the decision making and the speed of the decision process [18,20,22,23], whereas the outcome is measured via e.g. effectiveness and acceptance [17,19,21,24].

Decision comprehensiveness can be defined as the extent to which a decision maker attempts to be exhaustive or inclusive in making and integrating decisions as it considers multiple approaches, courses of action, and decision criteria in its decision making [22,23]. Decision speed on the other hand is about the pace a decision is made. Most