Product Platform Performance: Achieving internal effects

The aim of this research is to improve understanding of platform-based product development by studying platform performance in relation to internal effects in companies. Platform-based product development makes it possible to deliver product variety and at the same time reduce the needed resources, and the subject has gained increased attention in industry and academia the past decade. Literature on platform-based product development is often based on single case studies and it is sparsely verified if expected effects are achieved. This makes it difficult to put forward realistic expectations for companies engaging in platform-based product development. Similarly platform assessment criteria lack empirical verification regarding relevance and sufficiency. The thesis focuses on • the process of identifying and estimating internal effects, • verification of performance of product platforms, (i.e. if the expected results are achieved), and • reasons for possible deviations between these, comparing them to existing platform assessment criteria. The research results are based on 8 comprehensive case studies of product platforms in LEGO Company in the period of 2004-2009 (involving participant observation, observation, interviews and data analysis) and are validated by a series of interview with representatives from 12 Scandinavian companies. A descriptive model of the process of identifying and estimating internal platform effects has been developed. It involves analysis of past data and estimates from experienced representatives from the different life systems phase systems of the platform products. The effects are estimated and modeled within different scenarios, taking into account financial and real option aspects. The model illustrates and supports estimation and quantification of internal platform effects. The model empirically verifies findings in literature and received moderate support from industry in the validation study. The research findings document that product platforms achieve significant internal effects in terms of • reduced development time (often around 25 %), • reduced number of components (often around 50%) and • reduced production cost and investments (often around 25%). This verifies a significant, general improvement potential, a verification which has lacked in the literature. These findings underline the potential in platform-based product development as a way of creating competitive advantage. The findings also reveal that between half and two thirds of the platforms do however do not achieve the expected effects, despite that they do deliver some effects. This is mainly because of 1) lack of use of the platform assets, 2) technical reasons and 3) changed market conditions. These reasons are mentioned in literature, but only the two latter are addressed in platform assessment criteria. Hence a new platform assessment criterion is introduced, the platform user incentive criterion. Alongside with the introduction and recommendation of a platform user incentive criterion, recommendations are also made regarding focus on down-stream effects, modeling and viable estimation and quantification of effects, facilitation of performance tracking and goal-setting and finally to understand a product platform as an internal system in the company. A platform system model is introduced to support this understanding. Finally a categorisation of different approaches to platform-based product development is introduced, based on the companies from the industrial study.