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Change decisions in product development projects

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Abstract

In dynamic business environments, product development projects rarely proceed according to the original plan. It is likely that some changes must be made and plans or goals be redefined to adapt to changes in the business environment. Which changes should the project approve and implement, which ones to reject, and why? Earlier product development literature has largely covered planned decisions and go/no-go decision criteria in line with a phased product development process. Project management literature, in turn, suggests change management processes and practices during the project. Earlier research has not sufficiently covered criteria for change decisions that are needed between product development gates, nor a holistic approach for making such decisions in complex product development projects.

This paper explores decision criteria and change management in complex product development projects. In a qualitative, multiple-case setting we characterize change management practices, decision criteria, and managers' experiences with change management in seven complex product development projects within one firm. The results report multiple parallel change management approaches differing in terms of business context maturity, type of change, and IT system use. Operative criteria dominated in the change decisions of the case projects, as opposed to more long-term oriented strategic criteria. The paper concludes with propositions concerning more holistic change management frameworks that would account for contextual contingencies.

Keywords: Product development; Change; Change management; Decisions; Decision making

1. Introduction

Projects today seek much wider business benefits than just the reaching of immediate project goals [1]. In product development, this means extending the view from product functionality and project goals to business performance, customer satisfaction, and project portfolio benefits. Typically, such benefits are considered before the project and reconsidered at the decision points – gates or milestones – of the product development process [2].

Various strategy-related decision criteria are being used, to ensure the right focus for projects, and to increase probability for business benefits. Traditional product development decision-making literature largely focuses on phase (gate) related decision making [3] and neglects decision making on changes between the gates. Continuous, non-gate-specific change decision schemes are important, as they suggest flexibility in projects as a response to dynamic business environment.

While the traditional view on project management has considered changes as a negative issue, in an uncertain environment changes are not only unavoidable but they might be prerequisites for successful results. Projects need to be managed flexibly [4,5]. While gate-related decisions may keep the project focused, changes between the gates help the project to adapt to uncertainty in the business environment [5]. There are also other lines of research that

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– instead of gate-specific decisions – covers changes made continuously upon specific needs throughout product development and other types of projects [4,6–11]. Change management, or integrated change control, has an important position in projects' integration management [12].

Decisions are made both at gates and upon need concerning occasional changes between the gates. Change decisions require that the change need is identified and its relevance and impacts are properly assessed (e.g. [12]). Different decision criteria have been researched for decisions at gates, but such research is missing for between-the-gates change decisions. Research has not provided solutions as to whether flexibility-oriented change management in a dynamic business environment can be carried out in a robust, controlled manner. The purpose of this study is to explore the use of decision criteria for change requests of product development projects, to identify decision-making approaches and change management systems, and analyze their relevance to managers' perceptions of the robustness of such change management.

We first report a literature review on the decisions and decision criteria in product development, and changes and change decisions in projects. Secondly, we introduce the case study setting, research questions, data collection approach, and analysis methods for the empirical study in a complex product development environment. Thirdly, the results of the empirical study are presented. Finally, we discuss the findings in light of earlier literature, and conclude key contributions and ideas for further research.

2. Literature review

2.1. Decisions and decision criteria in product development

Studies in product development management claim that having the right product concept and launching it at the right time and on the right market are among the main factors explaining product development success [2,13,14]. Such factors clearly involve making conscious choices on, for instance, what the product is, and when and where to launch. Decision, according to Mintzberg et al. [15] is commitment for action. In product development, such commitments are made throughout the whole product development process. Earlier literature has focused on decisions regarding project selection, product launch, the flow of decisions on the gates of the product development process, and project termination. Earlier empirical studies have identified and used a variety of methodologies and decision criteria on these different decision points.

Project selection and start decisions concern which new product ideas to pursue and where to invest resources, with an intent to eliminate potential failures as early as possible. A variety of literature covers e.g. project selection, screening of product ideas, and design decisions after the "fuzzy front end" of product development. Also decisions on project portfolio selection and balancing, project selection, and resource allocation focus on this early phase of product development [16–18]. Decision support models such as optimization models and other analytical methods have been developed and analyzed by many authors (e.g. [19–25]). A variety of criteria have been used to evaluate project and product ideas, e.g. fit with marketing competence, fit with technological competence, pay back time, profit, risks, process effectiveness, customer satisfaction, and uncertainty (e.g. [18–20,24,26,27]). Recent literature has particularly encouraged to seek decision criteria beyond the immediate financial benefits and suggested longer-term oriented tools to support decision making, e.g. technology roadmaps [28].

Product launch decisions concern when and with what product, price and market parameters the product is launched. This has been considered even the single costliest choice in new product development [29,30]. Studies of product launch largely focus on the success of products under different decision conditions. According to a survey study with almost 300 products, Hultink et al. [31] reported that market and product type are associated with the type of decision. Decision criteria have not been in specific focus in these studies but, rather, differences between projects have been examined in terms of launch strategy before the decision, and decision content and decision success, after the decision. Hultink and Langerak [32] reported a survey study of competitive reactions to launch decisions, rather than antecedents to them. Guiltinan [30] reported a conceptual study on launch strategy and tactics and their relation to demand outcomes. He focused largely on the content of the decisions and actions regarding launch, and emphasized particular features and relative innovativeness of the product as the primary determinants of relative advantage. Di Benedetto [29] reported a literature review and survey on success factors in product launch. The results largely focus on skills, managerial actions, involvement of different units and cross-functional cooperation rather than decision criteria.

Decisions at product development process gates concern, besides the start and launch decision, any go/no-go type choices during the product development process. Krishnan and Ulrich [3] made an extensive literature review on product development decisions and identified the following typical decisions during product development projects: concept development, supply-chain design, product design, production ramp-up and launch. These relate directly to phases [33] or stages [2] in typical product development processes. Earlier research on development gates has examined what the decision criteria are and how they are used at different gates [34]. Hart et al.'s study prepared their criteria based on Griffin and Page's success factor studies and reported that different criteria are used at different NPD decision gates. They listed 20 different criteria later categorized into market acceptance, financial performance, product performance, and others. Hart et al. carried out a survey study in two countries to identify patterns of decision criterion usage across the product development gates. They did not report significant differences across countries