

THE ROLES OF STAKEHOLDERS IN AN NPD PROJECT: A CASE STUDY

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Abstract:

New product development (NPD) is affected by multiple stakeholders. This study assesses the key stakeholders in an NPD project, the roles of the stakeholders, and the project phases stakeholders' involvement is most important. The literature review of the study focuses on stakeholders in product development, while the empirical part explores industry views at managerial level through a single case study. The results include identification of key stakeholders in an NPD project. Furthermore, these stakeholders' roles and their involvement in different project phases are analysed. The results highlight the importance of appropriate stakeholder involvement in the project and the need to manage their involvement. The study also demonstrates a need for systematic way of working and good internal co-operation among product management, R&D, and other internal stakeholders. Practicing managers can utilise the findings to improve decision-making, prioritisation, and to reduce unnecessary complexities in NPD projects.

Keywords: new product development (NPD), stakeholders, project, product management, research and development (R&D)

1. INTRODUCTION

New product development (NPD) is vital for companies to meet their objectives. NPD can improve revenues, market shares, net results, and share prices (Cooper, 2011). Over the years, product development has been studied from different viewpoints (e.g. Krishnan & Ulrich, 2001).

NPD is influenced by multiple stakeholders, i.e. groups or individuals who can affect or are affected by the achievement of the organisation's goals (Freeman, 1984). Stakeholders have been discussed in academic literature from many perspectives (e.g. Mitchell, Agle & Wood, 1997). Because NPD is cross-functional in nature, many internal stakeholders contribute to it. Furthermore, various external stakeholders need to be considered by using methods such as customer value chain analysis (CVCA) (Donaldson, Ishii & Sheppard, 2006). However, the conflicting requirements of different stakeholders make the management of product development very difficult (Bendjenna, Charre, & Eddine Zarour, 2012).

Stakeholders affect decision-making in organisations and the outcome of NPD projects. The previous literature on stakeholders has addressed many important topics (Freeman & Reed, 1983; Mitchell et al., 1997) including requirement engineering (Glinz & Wieringa, 2007). However, the previous studies have not adequately addressed how stakeholders contribute in different phases of NPD project. This study aims to provide new viewpoints by assessing the key stakeholders in an NPD project from product management and research and development (R&D) perspectives. The two aforementioned functions have been found especially important in product development context (Majava, Harkonen & Haapasalo, 2015). This study focuses on the roles of the stakeholders and clarifies the project phases stakeholders' involvement is most important.

This paper includes both a literature review and an empirical study. The literature review focuses on stakeholders in product development, while the empirical part explores industry views at managerial level through a single case study.

2. LITERATURE REVIEW

Product development transforms market opportunities into production, sale, and delivery of completely or partially new products (Krishnan & Ulrich, 2001). Product development projects are initiated based on various drivers (Majava, Haapasalo, Belt & Mottonen, 2013). The projects can be classified into research and development (R&D) projects, breakthrough projects, platform projects, derivative projects, incremental improvements, and fundamentally new products (Schilling & Hill, 1998; Ulrich & Eppinger, 2012). Small change projects entail acquiring tacit knowledge about customer needs and current product deficiencies. In NPD to existing markets customers' tacit unmet needs are translated into product features without having an existing product. In NPD to new markets, customer involvement typically takes place only when a prototype is available (Un & Cuervo-Cazurra, 2009).

Various definitions for stakeholder have been presented in academic literature. Broadly defined, stakeholder can be considered as "any group or individual who can affect or is affected by the achievement of the organisation's objectives" (Freeman, 1984, p. 46). According to narrow definitions, in turn, stakeholders are groups or individuals on who the organisation is dependent for its continuous survival (Freeman & Reed, 1983). These narrow views define stakeholders in terms of their direct relevance to the company's core economic interests (Mitchell et al., 1997). In a product development context, stakeholders can be considered as the parties that can affect or are affected by the "transformation of a market opportunity and a set of assumptions about product technology into a product available for sale" (Krishnan & Ulrich, 2001, p. 1).

Stakeholders can be categorised in many ways including primary or secondary, owners and non-owners of the company, those in a voluntary or involuntary relationship with the company, resource providers to or dependents of the company (Mitchell et al., 1997). Stakeholder salience describes how managers prioritise competing claims. Both internal and external stakeholders can be key stakeholders, if the issue is salient to them (Savage, Nix, Whitehead & Blair, 1991). The salience is based on three attributes: the stakeholder's power to influence the firm, the legitimacy of stakeholder's relationship with the firm, and the urgency of stakeholder's claims. However, it is ultimately the firm's managers who decide which stakeholders are salient and will receive attention. (Mitchell et al., 1997)

Stakeholders can affect the product demand, and they enable product delivery to the final users and the support throughout the life cycle of product (Ulrich & Eppinger, 2012). Appropriate stakeholder participation in NPD projects is needed to ensure correct requirements and avoid problems during the development (Aapaoja, Haapasalo, & Söderström, 2013; McManus, 2004; Razali & Anwar, 2011). Stakeholders must be prioritised in decision-making, as their interests conflict, resources are often limited, and requirements have to be balanced (Bendjenna et al., 2012). Methods for stakeholder identification in NPD include Design for excellence (DfX), (Bralla, 1996), the stakeholder identification framework by Razali and Anwar (2011), and customer value chain analysis (CVCA) (Donaldson et al., 2006). Stakeholder prioritisation techniques include ordinal scale (ranking) and ratio scale methods, such as analytic hierarchy process (AHP), Cumulative Voting (CV), and Hierarchical Cumulative Voting (HCV) (Berander & Jönsson, 2006; Saaty, 1980).

3. RESEARCH PROCESS

The study started with a literature review on product development and stakeholders to form a theoretical basis for the empirical study. The empirical study included a case study of a product development project of an ICT company based in Northern Europe. In the case study, six mid-level managers involved in the NPD project were interviewed regarding their views on the project stakeholders. The managers interviewed included two product managers, concept manager, software product owner in R&D, programme manager, and project manager.

Semi-structured interviews were conducted to gain insights of the case project and respondents' views regarding the studied topics. The first phase of the interviews included questions on product development in the company, the case project, and its stakeholders. In the second phase, two interviewees, a product manager and software product owner in R&D, who were most actively involved in stakeholder collaboration, were selected for an in-depth interview on stakeholder roles and involvement in the project. The interviews were recorded and transcribed for analysis.

4. RESULTS

4.1. Case project

The studied project was a software project of a global ICT company in a business-to-consumer market. The most important driver of the project was the company's strategy; the product offering had to be renewed rapidly due to competitive pressures. In addition to a new software release creation, the user interface and architecture of the software platform that was used in the final products were renewed. The final products were targeted to a specific consumer segment in developing markets, but also wider market, distribution partners, and geographical requirements were considered. In terms of size and newness, the project can be considered a large-scale, radical development project.

Development work in the project was iterative according to agile software development principles. Project phases included concepting, minimum content definition, minimum content implementation, full content implementation, maturation, and sales start.

4.2. Project key stakeholders and their roles

Various stakeholders, both internal and external to the company, were identified for the project. The first key internal stakeholder, software *product management*, had a central role in the project. It defined the software content, high-level objectives, and feature priorities. Product management provided guidance to *research and development (R&D)* and protected the engineers from issues outside their core expertise. This "protection" included managing customer and business related interfaces, such as sales and marketing interfaces, during the project. Overall, product management was seen as the most important internal customer for R&D. R&D, in turn, was responsible for technical implementation in the project and "turned what into how". In addition to technical planning and objective allocations to teams, R&D turned business objectives and customer requirements into technical features. However, implementation order followed the priorities set by product management.

The third key internal stakeholder in the project was *management*. Management defined the strategy that was the driver for the project initiation. Management also provided the project with resources

needed, and accepted the project milestones. By accepting the milestones, management committed to upcoming investments in the project.

Marketing was also considered to be a key internal stakeholder in the project. Marketing participation in content definition was important to ensure the marketability of the product. Marketing also represented consumer view and implemented marketing activities in the project. Marketing related work was supported by a consumer research team, whose role in the project was to help defining product target segments. In addition, the consumer research team conducted studies on products in the market, which were utilised at the beginning of the project.

Sales teams, which included local sales units and customer teams, provided the project with regional and country specific requirements. The sales teams also provided feedback on the software content at the time when the content was known. Their feedback was also utilised in deciding whether certain software errors should be corrected. Finally, sales teams accepted the software for sales, and by doing that, committed to sell the end product in their regions.

Product programs were considered an important stakeholder, since they acted as an internal customer for the project. The product programs developed hardware for the final products and set related requirements. They also provided information on the important features, sales arguments, and feature priorities from end product perspective. *User interface (UI) and experience (UX) teams* provided usability related data at the beginning of the project, which helped to identify the focus areas in UI renewal. Furthermore, the teams conducted internal and external usability tests with end-users to find out improvement areas during the project.

The rest of the key internal stakeholders included *service development team, application enablers team, testing and certification*, and *parallel business unit* of the company. The service development team provided services that were part of the product offering. Application enablers team, in turn, developed technical enablers for both company-internal and external application development, whereas testing and certification had an important role in acquiring certifications and country specific type approvals. Finally, parallel business unit's product offering affected the project content definition.

In addition to internal stakeholders, many external stakeholders were identified. The first key external stakeholder, *end-users*, was considered to include both external consumers and internal end-users (company employees). The end-users set needs and requirements that greatly affected the project content definition. The end-users also participated in usability tests. Furthermore, internal end-users were involved in the project end-phase tests, where the end product was used daily to identify problems and evaluate sales start readiness. Key *direct customers* were considered less important than consumers in the project. However, the direct customers had specific requirements that had to be fulfilled to ensure distribution in certain markets. Direct customers approvals were needed to get the end product into their portfolios, and thus, increase sales.

The roles of *standardisation and regulatory bodies and governments and legislators* were somewhat similar. These stakeholders set requirements that had to be fulfilled; either to receive needed approval or to satisfy market-specific legal requirements for the products. *Application developers* also had an important role in the project. Some 3rd party applications were seen as necessities in certain markets, and the applications complemented the company's product offering.

The rest of the key external stakeholders included *subcontractors, competitors, and suppliers and technology vendors*. Although the development work was mostly carried out internally in the company, subcontractors provided resource flexibility for development and testing activities. Competitors, in turn, set benchmark for "keeping up with competition" and information on their offerings were utilised in the project concepting phase. Finally, suppliers and technology vendors were not seen to be directly involved in the project, but provided components and technology for company's larger offering affecting the project.

4.3. Key stakeholders' involvement in the project phases

In addition to the roles of key stakeholders, their involvement in different project phases was analysed. The project phases included concepting, minimum content definition, minimum content implementation, full content implementation, maturation, and sales start. Software product management participated in all project phases from concepting to sales start. R&D was responsible for technical implementation, and the cooperation between product management and R&D took place throughout the project from minimum content definition phase onwards. Management's involvement, in turn, started already prior to concepting phase and continued in the project milestones.

Marketing was most actively involved in concepting, maturation, and sales start phases. However, information exchange with marketing also took place in other project phases. The involvement of consumer research team and UI and UX teams focused on project beginning and end phases. All of these teams were involved in the concepting phase, and UI and UX teams involvement continued throughout the project until sales start phase. Consumer research team became actively involved in the project again at sales start.

Sales teams were strongly involved in concepting, full content implementation, maturation, and sales start phases. The sales teams were also involved in minimum content definition and implementation phases, but to a lesser extent.

Testing and certification became involved in the project in full content implementation phase, and the involvement continued in the maturation phase. Parallel business unit affected the concepting phase, but it was not involved in other project phases. Product programs, as well as service development team, were involved throughout the project. However, the most active phases were concepting, full content implementation, maturation, and sales start. Application enablers team, in turn, was most actively involved from minimum content definition to maturation phase.

In addition to internal stakeholders, the involvement of key external stakeholders was analysed. End-users were involved in the project in concepting, full content implementation, maturation, and sales start phases. Key direct customers, on the other hand, became involved in the project later, in minimum content implementation phase. The late involvement of the direct customers differed significantly from earlier projects; in the studied project the most important customer group was consumers.

The involvement of standardisation and regulatory bodies and governments and legislators was most visible in full content implementation and maturation phases. However, country specific legal issues were considered already in concepting phase, and they were processed as minimum requirements in the project.

Application developers became involved in the project in full content implementation phase. In this phase, the software was considered to be stable enough for application development. Finally, subcontractors were involved in project implementation and maturation phases, whereas competitors mostly affected the concepting phase. Suppliers and technology vendors' involvement was seen indirect; they affected all the project phases by providing components and technology for company's larger offering.

4.4. Stakeholder cooperation

Stakeholders largely defined the project objective-setting, and the success measures included how well the project met its targets in terms of profits and technical requirements. A potential measure for the success of stakeholder cooperation was the number of change requests. The amount of change requests was only a few percentages of the total software features; this was considered very low compared to earlier projects. Thus, it can be concluded that stakeholder cooperation worked well in project beginning, which reduced the need for changes in the end phases. Although development was iterative, the stakeholder interaction focused more on the beginning and end phases. In beginning phase, stakeholders had a vital role in requirement definition, and in the end phase stakeholders' role turned into acceptor of the project outcome.

In terms of importance of stakeholders, the exact priority order was considered difficult to define. Product management and sales units had the biggest roles, because they had the business responsibility in the project. However, based on the interview analysis, all stakeholders can be considered important due to their different and complementing roles. Product management was responsible for stakeholders related to business, sales, and marketing. In R&D, the software product owner was responsible for stakeholders related to technical implementation, such as certification, subcontracting, and product development steering group. Both product management and software product owner actively contacted sales units and marketing to provide information on project status and to receive feedback and guidance. The cooperation was seen as a dialogue aiming for the project's success.

Stakeholder cooperation worked especially well with a few of the sales units that were closely collaborating with the project team already at the beginning. People from the project team visited the sales units, and cooperation was smooth also in critical project phases despite heavy time pressures. On the other hand, business environment and organisation changes sometimes posed challenges in stakeholder cooperation. The project lasted many months, and changes in personnel responsibilities complicated cooperation, especially if the changes were made fast. Dependency on individual persons was seen as one of the key challenges. In addition, the target customers and markets were rather far away from the development site. Despite know-how and information existed inside the company, processing the information and selecting the right things to focus on was considered difficult.

5. CONCLUSIONS

Product development is increasingly complex to manage. Various external and internal stakeholders affect decision-making in organisations and the outcome of NPD projects. This study assessed the key stakeholders in an NPD project, the roles of the stakeholders, and the project phases stakeholders' involvement is most important.

The results of the empirical study describe the key internal and external NPD project stakeholders, their roles, and contribution in different project phases. The results highlight the importance of appropriate stakeholder involvement in the project and the need to manage the stakeholder involvement.

The study also demonstrates a need for systematic way of working and good internal co-operation among product management, R&D, and other internal stakeholders. In spite of project specific differences, NPD managers can utilise the study findings to improve decision-making, prioritisation, and reducing unnecessary complexities in projects.

The limitations of this paper include typical limitations of a single case study, which makes the generalisation of the findings difficult. Thus, further research is needed to address these limitations; this involves conducting similar studies in different types of projects, companies, and industry sectors.

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