



Product portfolio management – Targets and key performance indicators for product portfolio renewal over life cycle



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ABSTRACT

The main purpose of this study is to widen the scope of product portfolio management (PPM) targets and key performance indicators (KPIs) to cover all phases of the product life cycle. Earlier research mainly covers PPM performance management within new product development (NPD) life cycle only. In addition, current challenges relating to PPM performance management over product life cycle are studied.

The research method includes current state analysis based on both a thorough literature review and analysing ten case companies that represent hardware (HW), software (SW), services and solutions type businesses. The contribution is discussed and validated by a focus group consisting of all the case companies before making final conclusions.

The principal results of this study include the potential framework for managing product portfolio renewal over the entire product life cycle based on strategic, tactical and operational performance measures. The PPM performance management, its business impact and connection to business processes and performance management dashboard are discussed.

The role of PPM as a means of executive level dynamic performance management and decision making sets further questions for researchers' for systematic product portfolio definitions, governance models, processes and tools over product life cycle.

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1. Introduction

Product portfolio renewal is about adding new products to the product portfolio, enhancing and modifying the existing products and removing obsolete ones. New products are seen vital for securing a company's competitive position in the market (e.g. Balachandra, 1997; Poolton and Barclay, 1998; Lynn et al., 1999). Nevertheless, the share of totally new product development is decreasing (Barczak et al., 2009) while the existing products are upgraded frequently to achieve cost reductions and functional improvements (Hänninen et al., 2013). Company mergers and acquisitions may also widen a company's product portfolio without conducting new product development. This type of situations lead easily to widening product portfolios as has occurred in several industries during the recent decades (e.g. den Hartog, 2012). In fact, according to Droge et al. (2012) for every obsolete product removed from the portfolio, 1.8 new products are added.

The common belief is that a diverse product portfolio will have a positive effect on a company's sales volumes, and the product variety is often justified by fulfilling customers' requirements (Wan et al., 2012). Product variety has emerged as a source of competitive differentiation in response to requests for increasingly customised products and services (Hayes et al., 2005). However, too wide product range can lead to mass confusion by the customers, thus weakening sales (Wan et al., 2012). In fact, internal product variety and complexity usually reduce sales per product variant (Cooper and Griffiths, 1994; Randall and Ulrich, 2001; Thonemann and Bradley, 2002; Wan et al., 2012). According to Orfi et al. (2011) the product variety leads to product complexity with negative impacts on productivity, costs, new product development time, and customer satisfaction. Simultaneously offering functional products and new innovative products is also seen to complicate the demand supply chain (Langenberg et al., 2012). According to Gunasekaran et al. (2004) a wide range of products decreases the performance of the operational supply chain, resulting in less value added per headcount, longer lead times, and decrease in on time deliveries.

Today, companies are often too focused on managing single products instead of managing the entire product range. Consequently, companies could benefit from considering several product

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families rather than separately optimising each product (Salvador et al., 2002).

Productivity can be achieved by working smarter according to company strategic objectives rather than just increasing the amount of work (Pekuri et al., 2011). One aspect that is often ignored in the literature is managing the product plans, products under development, and products in the market over the product life cycles, from an end-to-end viewpoint. The new and existing products require different types of target setting and key performance indicators (O'Reilly and Tushman, 2004). According to a new product development (NPD) benchmarking study (Cooper et al., 2004) there is a correlation between the success of the business results and systematic use of product portfolio management (PPM) targets and key performance indicators (KPIs). The best performing companies use PPM targets and KPIs more frequently and systematically, to analyse and adjust their NPD phase of the product portfolio. According to Griffin (1997), about one third of the sales come from technologies and products introduced five years ago, hence, products being introduced today will impact future sales revenue in a similar way. Based on O'Reilly and Tushman (2004), successful product portfolio management requires constant incremental innovations and also architectural innovations. Existing products can be further developed by smaller incremental innovations to extend their life cycle, improve cost competitiveness and create additional value to customers. Fundamental changes in technologies and business models require architectural innovations. Discontinuous innovations are required as well to make the oldest technology and products obsolete (O'Reilly and Tushman, 2004). Analysing product complexity is an additional product portfolio viewpoint. Orfi et al. (2011) defines five dimensions of product complexity: design, development, manufacturing and assembly, and supply chain. Each of these dimensions has impact to the direct and indirect product costs.

This research paper aims to analyse and improve the PPM target setting and performance management approach especially over the entire product life cycle to contribute to existing literature and to overcome the current PPM challenges faced by the case companies of this study. Based on the findings, a new framework is proposed for PPM performance management over life cycle.

The above discussion can be condensed into the following research questions (RQs):

- RQ1. What are the PPM targets and KPIs over life cycle?
- RQ2. What are the current PPM challenges, PPM targets and KPIs in case companies?
- RQ3: What kind of performance management framework would promote product portfolio renewal?

This study addresses the research questions by using a qualitative and inductive approach, through case company interviews and a literature review. RQ1 is answered in Chapter 2 by reviewing the literature and earlier research on strategic performance management for PPM. RQ2 and RQ3 are answered in Chapter 4 by analysing ten case companies and developing and validating the new proposed framework for PPM.

2. Literature review

Product portfolio can consist of hardware (HW), software (SW), Services and Documentation types of products, which are connected to higher and lower level groups and items. The products in a portfolio can be classified in many ways; by customer segments, by technology generations, by product families, etc. (Kropsu-Vehkaperä and Haapasalo, 2011). The share of totally new product development is decreasing which is seen as a drop of business performance

(Barczak et al., 2009). Cooper et al. (2004) conducted a benchmarking study on “best-in-class” innovation strategy and related impact on business performance. High performers were seen to have more focus on innovation and technology strategy, which lead to more innovative NPD projects to create new products. 75% of successful product ideas are seen come from the marketplace (Cooper, 1996). According to Cooper et al. (2004) the best performing companies direct 40% of their product development capabilities for totally new products and innovations. The worst performing companies use less than 1/3 of their capabilities for innovations and they were seen to focus on enhancing existing products. Only 60% of NPD teams have their targets derived from company strategy (Barczak et al., 2009).

The direction for a company's performance management should be given by company mission statement and strategy (Haapasalo et al., 2006; Williams, 2008; King et al., 2010; Pinheiro de Lima et al., 2012). Strategic alignment is pointed out as the most important success factor for the development of business processes and performance management practices (Bai and Sarkis, 2013). According to Pinheiro de Lima et al. (2012) company's business processes and their performance management should be connected together as an integrated performance management framework. According to Falsey (1989) the mission statement defines the company, who it is, and what it does. The mission statement can be product, technology and customer oriented, and it defines the competitive advantage of the company (Falsey, 1989). The mission statement communicates values, purpose, identity, and business goals of the company and can be seen as the extension of the shorter vision statement (King et al., 2010). Mission statement is the declaration of an organisation's “reason for being” and it defines the position of the company in a value chain (David, 2009). According to Kinnunen et al. (2013), company's position in a value chain impacts the nature of its products and product portfolio. The ecosystem can be defined based on business models and relations of participating companies. According to David (1989) the mission statement should consist of nine preferred components: (1) Customer, (2) Product or Services, (3) Location, (4) Technology, (5) Concern of survival, (6) Philosophy, (7) Self-concept, (8) Concern for public image, (9) Concern for employees. Based on their study there are some similarities but also differences between high and low performing companies in the focus of nine components. Both high and low performers have equal focus on customers, products and services, and self-concept. Major differences are related to survival, the public image and employees which are more focused in high performing companies.

The environmental and sustainability issues have been raised to the strategic level of company targets within the last decades. The sustainability issues are embedded in the eight mission statement component, social responsibility (David, 2009). According to Meinrenken et al. (2014) the current life cycle assessment (LCA) methodologies are yet to be applied for the entire product portfolios, however, they exist more on the level of individual products. For the purpose of improving LCA, Meinrenken et al. (2012) have studied the entire value chain and developed a method for collecting and analysing data in the context of carbon dioxide reduction scenarios. The challenge of measuring and setting environmental and sustainability targets for the product portfolios includes the lack of practical guidance documents in addition to the developments of ISO standards (Draucker et al., 2011).

According to Cooper et al. (1997), Barczak et al. (2009), Vähäniitty (2006), Leffingwell (2007), Weerd et al. (2006), Mikkola (2000), and Kamensky (2000) the key product portfolio performance focus areas can be summarised as follows: (1) the product portfolio strategic fit, (2) value maximisation, and (3) the balance of the product portfolio. Strategic fit ensures the consistency and alignment in the product portfolio according to company's strategic targets. Value maximisation as an objective includes sub-targets such as return-on-investment,

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