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Integration of automotive service and technology strategies

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ABSTRACT

Automotive after sales service is a highly profitable business. Nevertheless, service providers have to deal with an increasing range of variants of products and technologies, shorter life cycles and changing customer demands. In spite of these manifold challenges, after sales departments are often not involved in the early product development stage, nor are customer demands and technical parameters fully considered in the service development processes. Therefore, an integration of service and technology strategies is necessary. This paper presents a framework for this integration that visualises the complex interdependencies and interfaces between service as well as product and car workshop technologies.

1. Introduction

Organisational and technical challenges are determined by the interaction of different factors. Cross-linked thinking is a method for the analysis of the interdependencies (Fig. 1). For example the higher the economic success is, the higher is the technical progress. New markets mean rising investments and innovation. A problem-adequate form of organisation is a precondition for a good strategic position and economic success [1].

The automotive industry but also other industries are embedded in a rapidly changing environment (Fig. 2). Rising variant variety and/or rising individualisation of vehicles are determined by the possibility for differentiation in competitive markets. Moreover, they are affected by the customer demand for individualised products. Further on, the technological progress of producing variants or customer individual vehicles has to be economical.

Increased competition as well as increased customer demands also lead to faster implementation of new technologies in vehicles [2]. As a result, the development towards a highly diversified automotive market is accompanied by a continuous acceleration of product cycles and growing product complexity [3] (Fig. 3).

The outlined development leads to radical changes in the service and after-sales markets. Today, service intervals of 15,000 miles or more are usual (Fig. 4). The amount of electronics in vehicles has increased dramatically over the last decades [4,5]. But at the same time the product life span remained unchanged or even easily rose (12–15 years). As a consequence, new car workshop technologies are required and new challenges for an effective spare part management of electronic components after the end of production exist [4].

As the customer expects high product availability, the increased product complexity requires an appropriate service offer. An adequate service organisation and the ability to handle different vehicle technologies efficiently are necessary. Apart from the relevance regarding brand image and customer loyalty, also economic success is also determined crucially by the service. Apart from the actual service achievement the sale of spare parts determines the turnover of automotive companies to a large share.

On the whole, the different factors result in a strong pressure on companies regarding innovation and costs on the companies, and the constraint to market the innovative products in a short period of time [2]. Due to this, service is becoming a reservoir of challenges from a technological as well as organisational point of view. Because service technology and service organisation are not merely single tasks, but strongly geared, both disciplines are connected in this paper. Initially, basics concerning technology and service have to be defined.

2. Technology

2.1. Technology in the automotive industry

One of the major challenges facing service organisations like the automotive after sales is how to maximise the value of its

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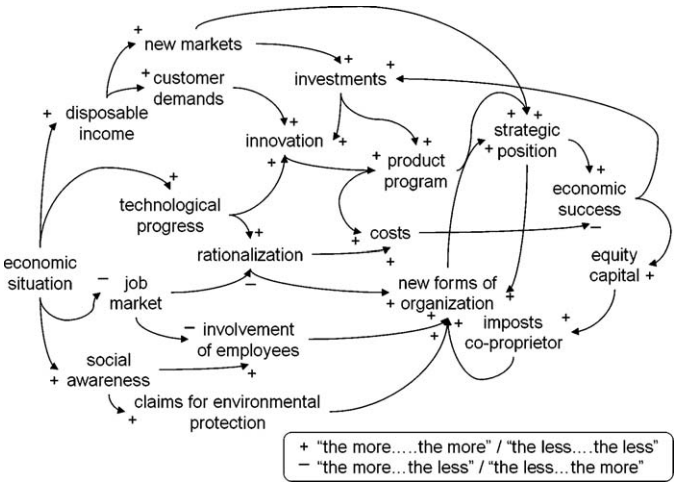

Fig. 1. Situation analysis by cross-linked thinking [1].

investments in technology [6]. However, Farrukh et al. criticise what they see as a lack of a systematic approach to managing technology. Often companies have a well-established new product development process but still come up against problems if technologies and products have to be developed simultaneously [7]. There is also the fact that today demands from automotive after markets have only minor influence in the early product development process. "Often a single focus (..) on e.g. design for production in order to cut down costs, e.g. by using more integrated parts, may result in increased costs for service and end-of-life treatment, instead of reducing the overall cost for the product, i.e. the total life cycle cost increase" [8].

2.2. Technology management

One answer to this problem can be a holistic *Technology Management* as it is defined by the European Institute for Technology & Innovation Management. "Technology management addresses the effective identification, selection, acquisition, development, exploitation and protection of technologies (product, process and infrastructural) needed to maintain a market position and business performance in accordance with the company's objectives" [9]. In the context of the automotive sector where especially electronic becomes more and more important and is rapidly changing, effective technology management depends on the ability to forecast trends as well as to anticipate their potential impacts [10]. An appropriate forecast and planning method is needed, which links both technology and business

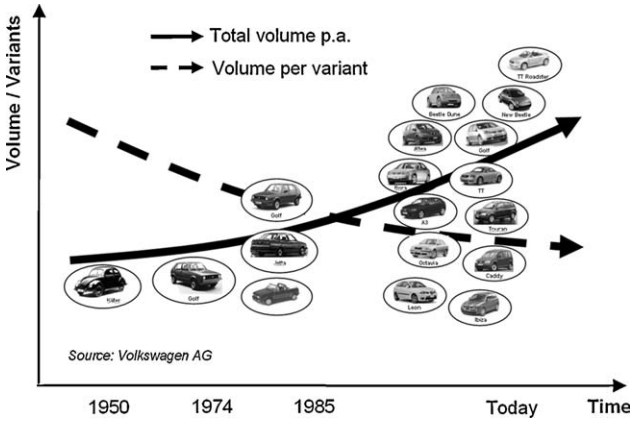

Fig. 2. Increasing variant variety in automotive industry.

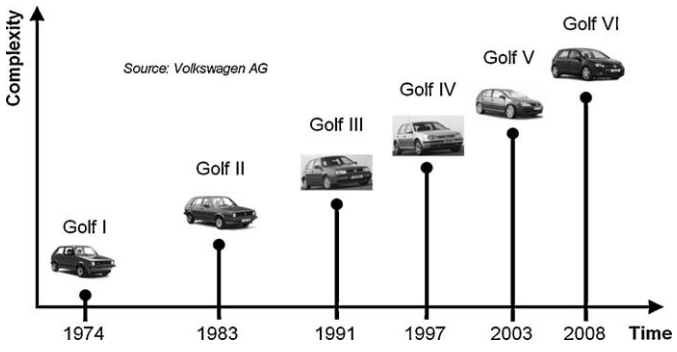

Fig. 3. Acceleration of product cycles in automotive industry.

objectives [11,12]. In case of automotive after sales, service operations along with the required skills and the involved failure diagnosis requirements have to be combined with vehicle segment and after sales service objectives [5].

2.3. Roadmapping for after sales services

2.3.1. Basics

Roadmapping is such a foresight method [13], which assists technology strategy creation and management in cases where cross-functional alignment and integration are key requirements. For this reason it has evolved as a best practice, mainly for large, global organisations [14,15]. In the 1990s the focus of interest was always on the end result, the roadmap itself, and not on the process. Nowadays technology roadmapping is defined as "a needs-driven technology planning process to help identify, select, and develop technology alternatives to satisfy a set of product needs" [16,17].

2.3.2. Roadmap formats

Nevertheless many companies fail to apply roadmaps. One reason is that a wide range of roadmap formats exists, which have to be customised to specific needs of the firm and its business context [18]. The most common form of technology roadmaps is a multi-layered graphical illustration of how technology and product developments link to business goals. An integrated time axis indicates when particular circumstances, events, objectives, products and technologies are expected to emerge [12].

2.3.3. Roadmapping process

In addition to this diversity of forms, there is little practical support in implementing a roadmapping process and keeping it

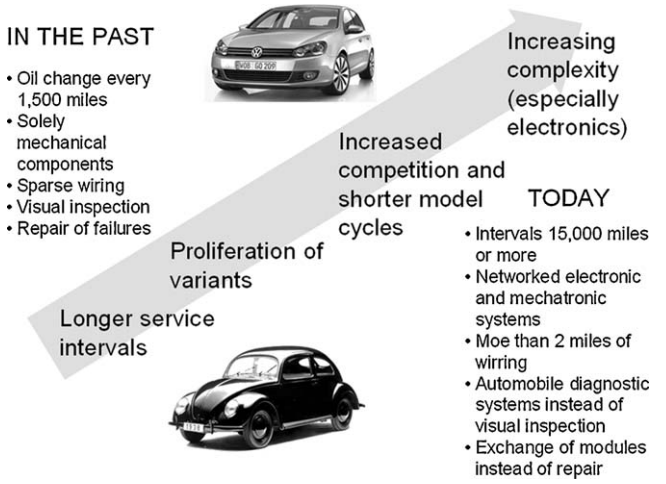

Fig. 4. Challenges for car maintenance operations; adapted [5].