

Knowledge Competencies for Leveraging Core Products in Global Markets

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This study focuses on the strategic challenge of leveraging core products in converging markets of Nutraceuticals. The main question in this context concerns the missing competencies in the processes of new product development. The analysis includes a literature review of core competencies approaches and their roots in the resource based-view of the firm, an idealized model of leverage for nutraceutical products, and three cases of global food players which describe their leverage performance in the past. The study contrasts the theoretical derivation of three leverage-relevant competencies in the processes of new product development to the empirical evidence of the case studies.

JEL Classification: M21, L66, O32

Introduction

The idea of core competencies and the related logic of leveraging competencies to end products introduced by Prahalad and Hamel (1990) became extremely popular in theory and practice of strategic management. Nevertheless, a critical review of the relevant literature discloses that (1) most of the approaches focus on defining and indentifying core competencies, (2) empirical studies concentrate on high-tech industries and neglect the phenomena of converging markets, and (3) building-up and deploying competencies are seen in a sequential-structured process.

In Contrast, this paper examines the leverage of core products in dynamic industries with blurred boundaries. In this regard Nutraceuticals (**Nutrition + Pharmaceutic**als) represent an innovative product category resulting from converging markets. This confronts global actors from both industrial sectors with the challenge to provide complementary knowledge in processes of new product development and to combine two basic competences to a firm's key competence.

The general intention of this paper is to develop a deeper understanding of competencies required in the processes of new product development of Nutraceuticals. First, we want to reflect the academic discussion regarding relevant contributions made in context of core competencies within the last years. Second, we propose an idealized approach of levering core products respecting the conditions of Nutraceutical product development. Finally, we conduct a case study by exploring three multinational food processors in the context of using their "Nutriceutization" core competence. There we want to find out which competencies are required in order to generate a fast leverage effect by linking findings in the empirical research with cognitions of competence-based management.

We start with a review of past research made on the field of core competencies which differentiates three streams of literature (2). With focus on converging markets we reflect competencies in new

product development and present an idealized leverage of nutraceutical core products (3). Based on those we show present some lessons learned from three case studies of global food players concerning their leverage performance (4). The paper will be finished with a brief conclusion (5).

JEL Classification: L6, M21, O32

Core Competencies in the strategic management literature

The roots of competitiveness: from static to dynamic RBV

The academic literature of strategic management focuses on the general question, how firms can build up and sustain competitive advantage. The discussion can be divided into two paradigms, which answer the questions in different manners. In the tradition of industrial economics, the scholars of the Market-Based View (MBV) (Bain, 1986; Porter, 1986) focus the firm's portfolio of products and the question of positioning in an attractive branch. According to Porter, those firms with successful protection mechanism against the competitive forces will achieve competitive advantages by exploiting market power. But this can not explain differences in performance within one industry.

Firms in the same industry perform differently, since, even in equilibrium, firms differ in terms of the resources and capabilities they control (Amit/Schoemaker 1993; Peteraf, 1993). According to the RBV, the strategic performance merely depends on the availability of internal resources, competencies and capabilities in order to achieve competitive advantage by exploiting the so-called VRIN-resources (Barney, 1986; Wernerfelt, 1984). Despite this common basis, Foss (1997) points out that there are two versions of the RBV. The traditional resource-based begins by clarifying and examining the conditions that must obtain in order for resources to yield rents in neoclassical equilibrium. This static approach concentrates on the accumulation of resources, whereas recent contributions in the field of RBV include dynamic aspects like innovation, organizational learning and competence-building in theorizing. The focus shifts from the static perspective on resources to issues of coordination and flexibility in respect of internal resources. Contributions focussing on the dynamic elements are in particular the idea of core competence (Prahalad/Hamel, 1990) and the concept of dynamic capabilities (Teece/Pisano/Shuen, 1997; Eisenhardt/Martin, 2000). Concerning the economic analysis instrument the dynamic approach does not longer underlie the hard neoclassical equilibrium but the weaker version of Austrian equilibrium. Following this reasoning we are in the dynamic world in terms of Schumpeter or Hayek, which is merely characterized by innovation-based competition instead of the neoclassically preferred price-based competition.

Core Competencies in terms of Prahalad/Hamel (1990)

In this mindset Core Competencies can be described as "the collective learning in the organization, especially how to coordinate diverse production skills and integrate multiple streams of technology" (Prahalad/Hamel, 1990: 82). In this perspective the pure accumulation of different resources show little strategic value, but value will be created by effective and efficient coordination (Sanchez/Heene/Thomas,

1996: 27). According to the authors three basic conditions must be fulfilled when talking about core competencies (Prahalad/Hamel, 1990; Hamel, 1994): First, a core competence must create an important contribution to customer-perceived value. That does not mean necessarily that a firm does really understand the customer in detail, but they have an abstract idea what they want to buy. Second, core competencies include an outstanding performance capability in comparison to competitors. The differentiation must be competitive unique. Marino (1996) expands this cognition to the point that a core competence supports the strategic goals of a firm by inimitability and limited substitutability. Third, core competencies can be used for a broad range of products and business units and should provide in this regard a gate-way to new markets. This is a quite critical point; on the one hand it gives great potential to leverage and on the other hand it is very hard to abstract away from a particular product configuration and to imagine how to apply the competence to new product areas. In other words, a core competence perspective allows a firm to expand its view of potential opportunities. The crucial competitive advantage of Core Competencies will result from leveraging one or a few core products to a high number of end products. In this regard Prahalad/Hamel (1990) use the metaphor of a tree: core competencies are compared to the root system of a tree which holds and nourishes the tree. These competencies affect core products which can be seen as the trunk or the major limbs. Core products are applied in a number of end products (leaves, flowers and fruits) that can be found in different business units (like the smaller limbs and branches of a tree). A successful leverage in the context of a core competence strategy means to diffuse the costs of innovation (like R&D expenditures) to different marketable units.

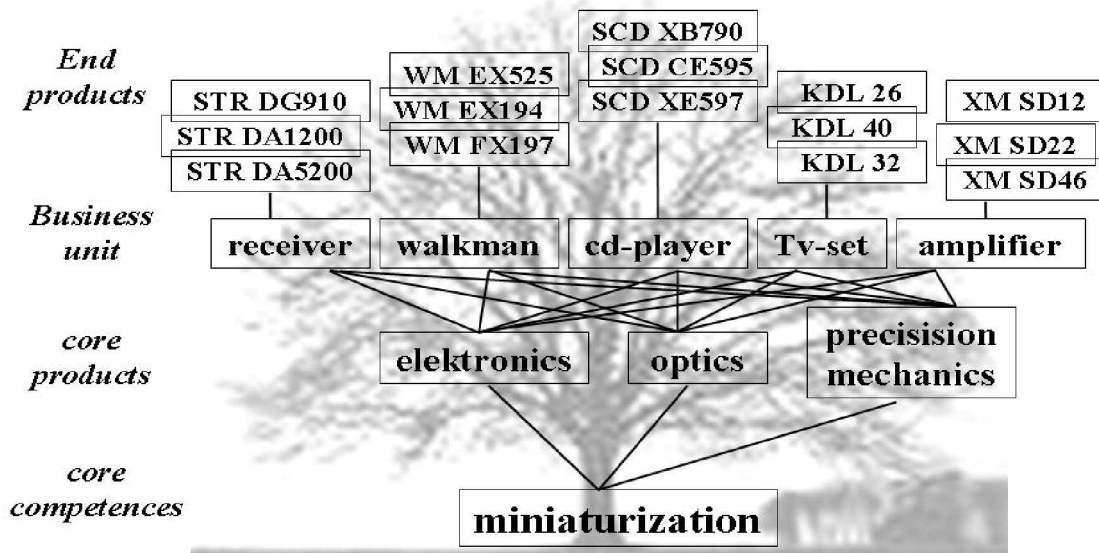


Fig. 1: Core Competencies of Sony

The dashed lines separating the core products indicates that there is not a strong stripline between them and all core products can be applied in all business units. These core products (in case of Sony: electronics, optics and precision mechanics) are deployed in a number of end products that are compared with the leaves or fruits (in the case of Sony: STR DG910, WM EX525 and so on) that can be found in different business units like the smaller limbs and branches of a tree

(in the case of Sony: receiver, walkman and so on). However, Sony is recognized as a very successful example of leverage, because one core competence gets applied in very high number of end products. When it comes to the question how to manage core competencies, Prahalad/Hamel recommend to concentrate on four key tasks (the following is based on Hamel, 1994: 25 ff.).

First, selecting core competencies is primarily a subject of screening the firms' environment, observing market developments and market impulses, considering competitors conduct and identifying changing consumer needs. Parts of this research area are discussed in the literature on absorptive capacity (Cohen/Levinthal, 1990). Second, building core competencies refers to the accumulation and integration of knowledge. There are different ways which are discussed in the literature on resource-based view: proprietary development, knowledge transfer, purchasing of technology-related competencies, head-hunting of personal-related competencies, acquisition of business units and which will be discussed later: Cooperation. Third, deploying core competencies means using resources and competencies across different business fields, requires often redeploying that competencies internally into new opportunity areas. In contrast to dynamic capabilities this does not mean a radical change but rather using leverage (logic of core competencies). Finally, protecting core competencies is in contrast to technological resources not primarily an issue of protection by patents. Not only imitation hazards are in the focus of protection efforts but also those resulting from the internal structure of an organization like lack of funding or competence-destroying fragmentations through divisionalization. And not surprisingly, competitors may employ the same strategies as mentioned before in order to build up their own competencies.

Conceptual framework approaches and explanatory models

In the beginning of the 90's the idea of Prahalad/Hamel became quite famous among researchers as well as practitioners. So far, the pioneering authors contributed three important elements which were due to help on the one hand to understand the theoretical background of the concept and on the other to give starting points for the practical implementation:

- the basic conditions of Core Competencies
- the tree metaphor to illustrate the logic of leverage
- the four key tasks of managing Core Competencies

Nevertheless, the theory-driven idea became immediately a buzzword while diluting the academic background. Thus, the need for further research was obvious, especially concerning improvements of the conceptual framework and the explanatory power of the approach.

A critical point was the perception that a clear distinction from related concepts like strategic resources and capabilities would help to identify a company's critical core competencies. In this vein Javidan (1998) proposes a strategic hierarchy model with an increasing level of value and difficulty starting from resources to core competencies. Resources and the way to exploit them (capabilities) refer to a functional or departmental strategy level whereas competencies affiliate to the level of strategic business units and core competencies are subject of the corporate strategy. Also Baker et

al. (1997) suppose a hierarchical model of business competence differentiating individuals, sub-processes, core-processes and finally the organization as a whole. This contribution illustrates the linkage between different functions and underlines the need of congruence at the hierarchical levels. Differently, Petts (1997) developed a conceptual framework as a multi-layer model which demonstrates how core competencies can be developed with the help of six meta-skills (these are: identification, learning, knowledge embedding, rapid development, re-structuring and innovation). The core competence engine combines the generic meta-skills.

Empirical and industry-based approaches

The academic debate about core competencies is very often accompanied by a more random-guided than systematically nomination of companies that show an exemplarily (and best practice) development of core competencies. Typical examples mentioned in several papers are Honda, 3M, Kodac, Sony, Walt Disney and so on. This stream of literature contains empirical studies of (1) single industries in the core competence focus (Roux-Dufort/Metais, 1999 (french nuclear industry); Goldberg et al., 2003; John, 2006), (2) different industries compared to their core competence performance (Mascarenhas et al., 1998; Gilgeous/Parveen, 2001), and (3) certain interdepartmental functions and their effect on supporting core competence development. Single industry studies have been conducted by Goldberg et al. (2003) regarding the Israeli software industry (with reputation building as a core competence) whilst John (2006) examines the strategic meaning of outsourcing core competencies in the pharmaceutical industry.

A multi-sectoral examination with case studies of 12 multinational companies was performed by Mascarenhas et al. (1998). They subdivided core competencies into three sections: superior technological know-how, reliable processes and close relationships with external partners. This study discloses how companies from different industries differ in the way they employ and constantly change these subsections to develop new core competencies. A more general survey without a detailed view on single cases was conducted by Gilgeous/Parveen (2001) investigating the level of understanding of core competencies in six different industries (food, transport, plastics, textiles, electrical, machinery products). According to this study the plastics industry seems to be the most visionary, with the food industry behaving in the most conventional manner.

Summary and Conclusion

When reflecting the contributions made on core competencies during the last decades we can differentiate the three streams of literature also in a timely respect (Fig. 1). In the end of the 90's authors concentrated on conceptual framework and explanatory approaches whereas in recent years industry-based and empirical papers appeared increasingly.

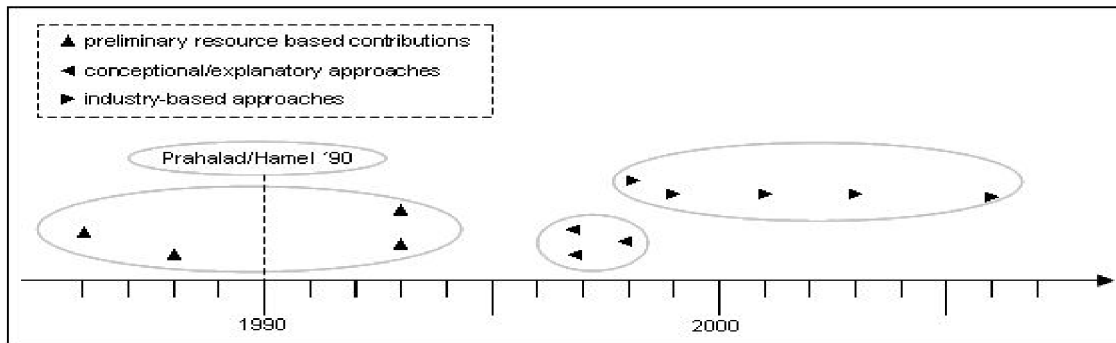


Fig. 2: survey of core competencies in the academic literature

It remains to state, that the idea of understanding the management of core competences as a sequential-structured process (as introduced by Prahalad/Hamel's key tasks: selecting, building-up, deploying and protecting) can be recovered in most of the hierarchical explanatory approaches. This hierarchical view implies an explanation with recourse on the meta level: firms in the same industry perform differently because of their resources, firms with similar resources differ in performance because of their capabilities to use them and so on. Furthermore, most of these contributions do not concentrate on the analyses of leveraging core products into new markets in connection with new product development.

Regarding the industry-based and empirical approaches it is interesting to state, that the idea of leveraging core products is in some industries (e.g. food industry) either more unknown than in other industries or assessed to be less applicable. In addition, empirical studies are concentrating on single industries in the traditional boundaries and neglect the phenomena of market convergences. These critical points are the motivation and the starting points for this paper as indicated in the introduction.

Leveraging core products in converging markets

The Problem of missing competencies

When observing the recent development of the food and the pharmaceutical industry tendencies of a convergence can be identified in the product field of functional food or so-called Nutraceuticals. These are characterized by a high value added to the product core that corresponds -besides the pure supply of nutriments- to changing consumer needs. Thus, nutraceuticals can be considered as a concrete example of one of the most innovative product categories in the domain of the food and beverage industry. In general, magnitude and acceleration of market convergences are typical indicators for the assessment of market dynamics. Market convergences are initiated and pushed by product- and process innovations which effect a change in the boundary of markets. In this context the emergence of new products or technologies allows markets to converge, that were economically separated before (Stieglitz/Heine, 2007). In terms of convergence processes in high-tech industries, firms reinforce their efforts to find linkages between the focal firm and extern knowledge sources of the other market. This convergence process of nutraceuticals performs with moderate speed but includes increasing importance of the

application of cooperative strategies in order to obtain necessary market knowledge.

In our field of study of nutraceutical products both parts of the converging industry potentially provide the necessary resources for each counterpart. Thus, the main question is how firms select appropriate partners (Gulati, 1998; Reid/Bussiere/Greenaway, 2001) which is concentrated on the level of attractiveness to exploit and develop their cooperative resources (Hamel/Doz/Prahalad, 1989) and using their technological capabilities (Singh, 1997; Mowery, 1998). Both, food processors and players of the pharmaceutical market are confronted with this challenge. Besides the rapid and efficient pooling of resources alliance partners face the problem to maintain open knowledge exchange sufficiently to achieve alliance objectives while controlling knowledge flows to avoid unintended leakage of valuable technology in longer-term considerations (Oxley/Sampson, 2004). This point will become critically in the strategic content dimension when both partners planning to establish a new core competence in the same field. Inter-firm cooperation in this regard are recognized as a way of increasing the participants' capabilities and endowments (Combs/Ketchen, 1999), combining and recombining the existing resources in future directions and simply to gather know-how and capabilities from their alliance partners (Kale/Singh/Perlmutter, 2000). So far, we have a strong connection between market developments and a firms' innovation strategy when fusion technologies as complementary resources meet with converging markets of tomorrow.

Knowledge Combining Competencies in NPD

Danneels (2002) argues that processes of new products combine technological know-how (manufacturing knowledge) with customers' knowledge (understanding customers' needs). A successful product innovation requires technological and customers' competence and their linkage as a capability in the meta dimension. In a similar way of argumentation, Song et al. (2005) find marketing- and technology-related capabilities as key resources in new product development. The development of nutraceuticals requires extensive R&D efforts where technological knowledge on the one hand and a high impact of customers expected added value on new product development requirements on the other hand is needed. Thus, a great challenge is to combine customer's knowledge with technological know-how. A very simple but nevertheless efficient way to create leveraging of knowledge and competencies is the process of identifying further deployment for an application of yet existing products (Koruna, 2004). Often, alternative uses of a product are not discovered by the firms themselves but rather by the firms' customers (Leonard and Swap, 1999). Identifying alternative applications of a technology or competencies largely depends on a firm's absorptive capacity (Cohen and Levinthal, 1990) and the firm's ability to tap the customers' absorptive capacity (von Hippel, 1986).

Assuming the case that complex product units are composed of a number of components, the process of new product development requires a set of function-specific or component competencies (Clark, 1985; Clark/Fujimoto, 1991). The competence needed to perform these integrative tasks is not included within the component competencies but can be rather described by architectural competencies, which capture the interactions between components in their applicational context (Cockburn/Henderson, 1994).

There is a strong connection between platform development and the leverage opportunities with a core competence as an architectural competence. In the case of functional food the competence of combining different component competencies includes nutrition solutions on the one hand and pharmaceutical solutions on the other hand. Both are required for the establishment of stable core competencies in the long run. Leveraging is the basic principle on which the platform concept is based on (Koruna, 2004). Employing a platform strategy providing a complex architecture of component products will become a critical success factor in order to leverage core products to a high number of end products. Furthermore decisions made which concern a firms' platform strategy must be aligned and coordinated the cooperation strategy.

When shifting the focus on firms' environment the relationship between focal knowledge or competencies and external knowledge become more important. Assuming, on the other hand, the case of market development in terms of convergence processes in high-tech industries firms enforce their efforts to find linkages between the focal firm external knowledge sources concerning the other market. Henderson and Cockburn found these linkages (gatekeepers) as a crucial success factor for knowledge creation in the pharmaceutical industry.

Food processing companies who intend to establish a core competence field of nutraceuticals need to connect the focal knowledge with those of the complementary market because of the market convergence. In this regard, the analysis of market pulses shows a high importance of long-term R&D-activities in order to build up experience in a quite sophisticated field of research. Furthermore, complementary assets can be found in terms of market convergences between actors of the pharmaceutical industry and those of the food market.

An idealized leverage of nutraceutical core products

In this section we are going to combine the logic of leverage with the analysis of knowledge combining competencies for developing nutraceuticals. In this regard, the conceptual claim of an important contribution to the customers-perceived value is due to the cognition of changing consumer needs that ends up in products with an abstract expected value added (like wellness-creating or safety-signaling food etc.). When different firms compete for the differentiate uniqueness, they try to install a high-value added core in range of attractive business fields (organic food, convenience food etc.). Finally, a core competence was characterized by its potential application for a broad range of products and business units as a gateway to new markets. Thus, the emerging added values expected by consumers correspond to changing product requirements in the process of new product development which demand a rethinking within the process-related competencies. For an idealized example we assume a firm that is aiming in the long-range to build up a new core competence in the field of nutraceuticals, which should not be limited (in terms of the potential leverage) on the current range of products.

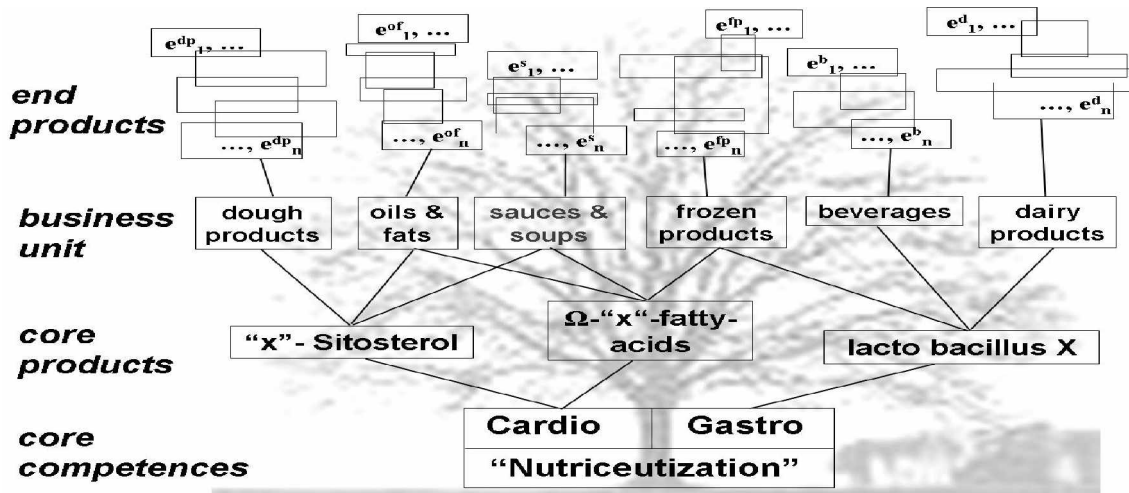


Fig. 3: An idealized Leverage of Nutraceutical Core Products

Thus, the core competence can be described as the abstract capacity to combine basic nutrition solutions (traditional competence) with pharmaceutical solutions (we call it Nutriceutization) that correspond to the objective of preventing cardiovascular diseases or gastro intestinal diseases. Thus, a nutripharm core competence can be divided up into two parts. Each part is embodied in a small number of core products like "x"-Sitosterol, Ω -"x"-fatty acids (Cardio) or probiotical bacteria. These core products are applied in different business units, e.g. dairy products which comprise n end products (e^d_1, \dots, e^d_n).

Leverage in Practice: Lessons from three cases

The Case of Unilever

We assume that Unilever is aiming in the long-range to build up a new core competence Nutriceutization, which should not be limited (in terms of the potential leverage) on the current range of products. In this regard Unilever is currently the sole enterprise in Germany with a proved health claim labelling.

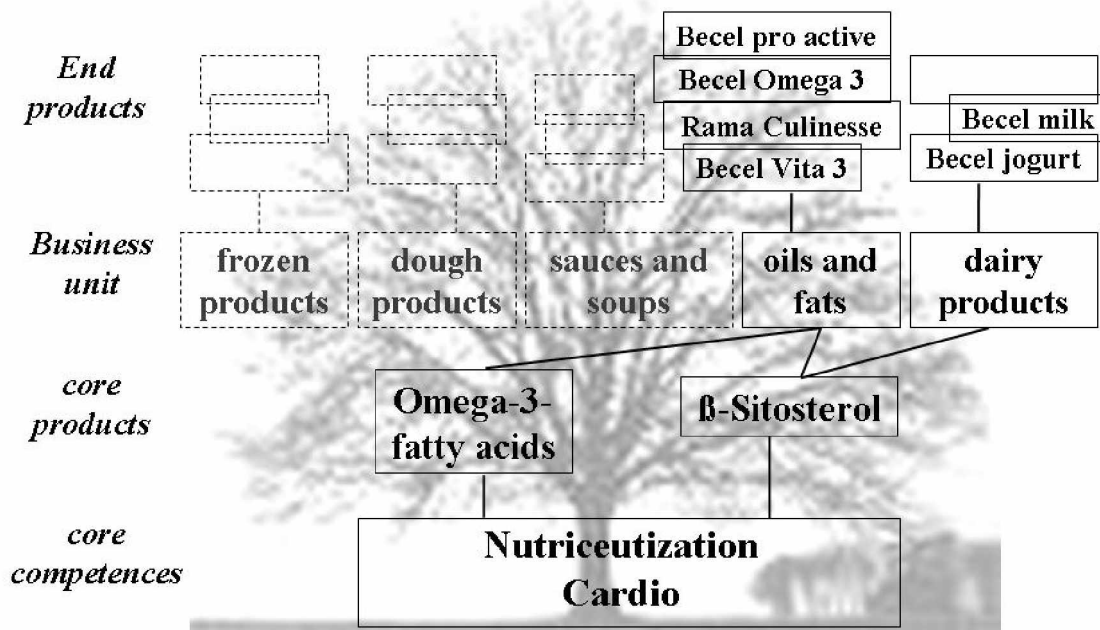


Fig. 4: Core Competencies of Unilever

Over the years Unilever developed two core products that conform to the core concept of cardiovascular strengthening ingredients (β -Sitosterol and Omega-3-fatty acids). Up to now, these are leveraged very moderately to three business units (margarine, milk and yogurt). In the business unit of margarine Unilever is present on the market with two proper end products (Rama Omega-3 and Becel pro active) that fulfill the health claiming requirements.

The case of Danone

Among the big food processing corporations Danone is recognized as a firm with a bounded diversified organizational structure and a specialization in dairy products like cream, pudding and so on. However, in the last years Danone expanded its divisional structure with the acquisition of Evian Water and LU Biscuits. In 2008 the long planned take over of the dutch baby food producer Numico was conducted. One could evaluate these actions as preliminary stages of a long-term corporate core competence strategy.

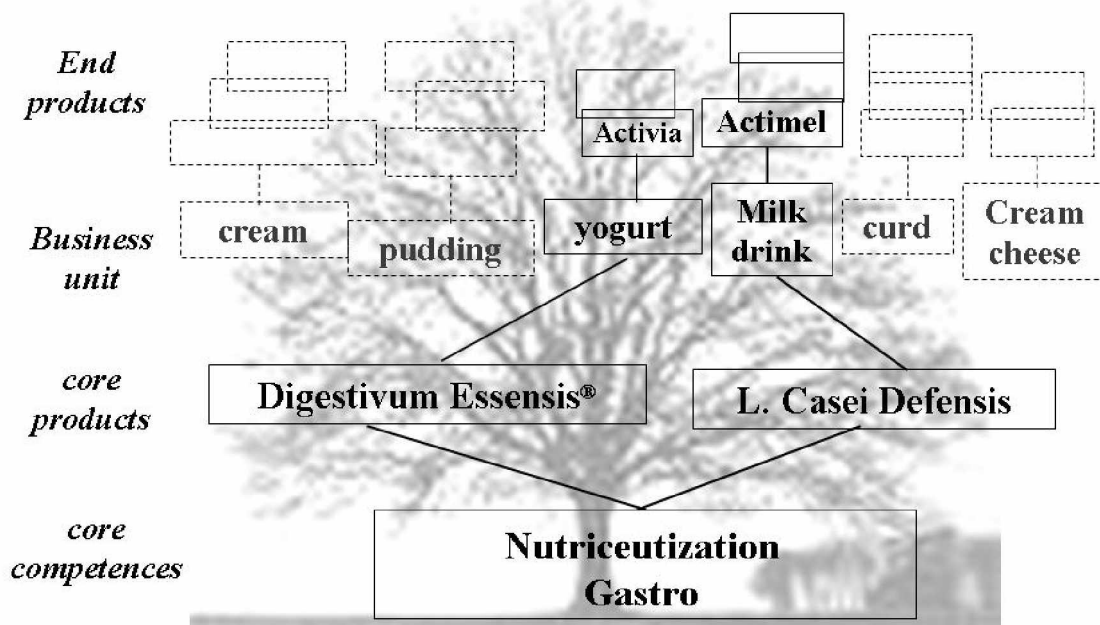


Fig. 4: Core Competencies of Danone

Also Danone may establish a core competence field in the area of FF by combining basic nutrition solutions with pharmaceutical solutions. In Contrast to Unilever the objective seems not to be the prevention of cardiovascular diseases but of gastro intestinal diseases (Nutripharm-Gastro). In this regard Danone developed two core products (Digestivum Essensis® and L. Casei Defensis) that are also applied in two business unit (yogurt and milk drinks) and two end products (Activia and Actimel). Both core products belong to the probiotics and are utilized in diary products.

The Case of Nestlé

In contrast to the focussed R&D activities of Unilever or Danone Nestlé is positioned broader. The strategy of knowledge acquisition was not limited to one single way but includes a variety of different measures. Nestlé has conducted the development of health related issues (in-house) as well as using the competence of combining focal knowledge with external knowledge of a complementary market. In this context, the business unit of medical nourishing from the Swiss pharmaceutical producer Novartis was acquired from Nestlé in December 2006.

The definition of the core competency concept also corresponds to the combination of basic nutrition with pharmaceutical solution but is not limited to the objective of preventing cardiovascular and gastro intestinal diseases. Nestlé is the only FF player who tries to implement both aspects in its corporate core competence strategy. The assigned core products are Ω -3/ Ω -6-fatty-acids, β -Glucan (including secondary plant Compounds and vitamins) and Lactobacillus LC1. Up to this point Nestlé seemed to perform with the most extensive leverage effect, for the first instance.

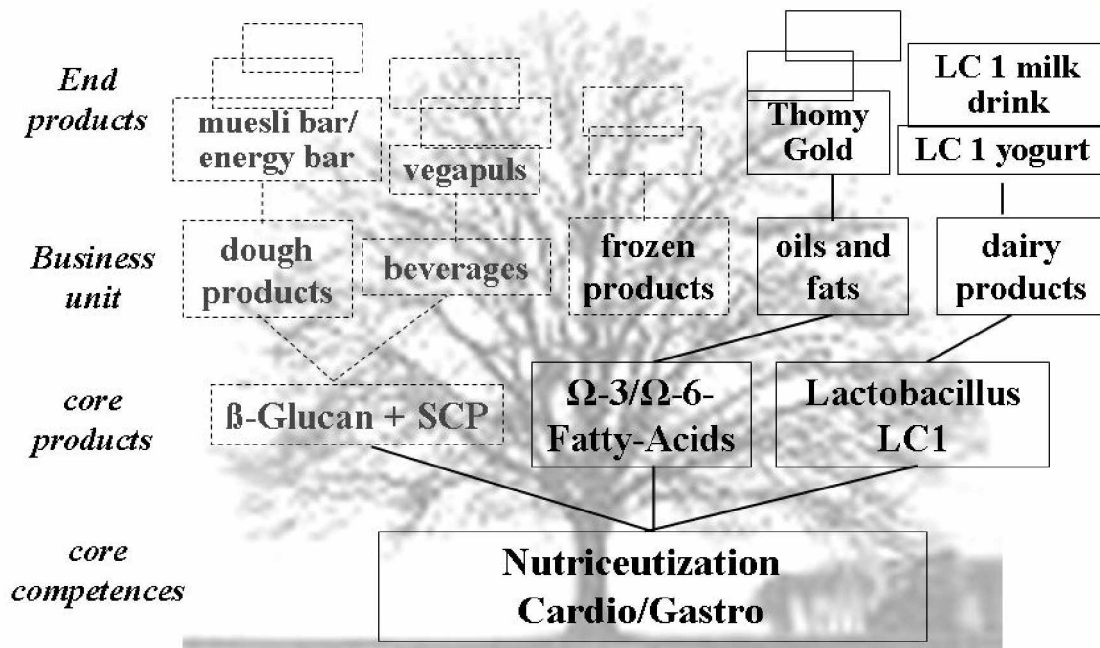


Fig. 5: Core Competencies of Nestlé

In a more detailed view it becomes obvious, that the fatty acids are used in the business unit oils/fats in just one end product (Thomy Gold) whereas lactobacillus LC1 belong to the probiotics and are utilized in just two dairy products (LC1-milk and LC1-yogurt). In 2005 Nestlé introduced the product-line Nutrel, which was strongly advertised as combined nutrition and wellness food. The distribution was limited to pharmacies and drugstores. The underlying core product of Nutrel was applied also in only three products (the wellnessdrink vegapuls, muesli bar and energy bar). After a short period of time the complete Nutrel division was taken out of the market, because the chosen distribution channels could not achieve the necessary sales volume. Thus, also in the case of Nestlé the leverage effect has not been carried out very successfully.

Conclusion

The aim of this study was to carry out a review on the core competence literature and to analyse competencies required in the processes of new product development in converging markets. For this purpose we selected the product field of Nutraceuticals. We finish the paper with a brief summary of the main results. A critical examination of competencies in processes in new product development disclosed the relevance of (1) combining customers knowledge with technological know-how, (2) architectural competence, and (3) combining focal knowledge with those of the complementary market. Furthermore, we presented in three case studies the different approaches of the development of nutraceutical products in the context of the corporate core competence strategies of multinational food processing groups. All cases provide differences in the underlying innovation strategy but have a very moderately leverage effect in common.

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