

MARKET ORIENTED PRODUCT INNOVATION

Market Oriented Product Innovation

A Key to Survival in the Third Millennium

by

Knut Holt

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MARKET ORIENTED PRODUCT INNOVATION - A KEY TO SURVIVAL IN THE THIRD MILLENNIUM

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Preface

Market orientation is a key to industrial success and the concern of management in more and more companies. It started in manufacturing industries, but service organizations and public institutions have also recognized the importance of being market oriented. Although there are differences between the delivery of physical products and the delivery of intangible service products, they have much in common. The same concepts, models and tools are applicable, and the producers have to develop products that meet the needs of their customers at affordable prices.

The book is based on empirical evidence from extensive library studies and many years of experience from research, consulting and teaching in leading companies in Europe, Japan and the U.S.A. The ambition of the author is to satisfy the needs of the readers for knowledge about product innovation by offering what in his opinion is best for practical purposes.

Most books on product innovation are written from a marketing or technical perspective. In contrast, this book is based on a product viewpoint, considering the product to be a combination of market and technology. From the start to the end, the marketing and technical aspects of the innovation process run in parallel. The focus is on the managerial aspects of the process, being of an interdisciplinary nature including contributions from marketers, engineers, designers, accountants, lawyers, and other functional experts.

The book offers a framework for dealing with the various aspects of market oriented product innovation. First of all, a successful result depends on the people involved. Important human aspects are covered in part I. In part II is dealt with strategic decisions and the change processes related to the development of a market oriented culture. Part III provides a systematic approach to the planning and development of new and improved user-friendly products. The book is illustrated with numerous cases and examples. They come from a variety of sources. In addition to material from own activities come biographies and information from magazines, company reports, etc. Several of the cases refer to companies that have passed the peak, and some are rather old. However, when being faced with solving a problem, they are useful as illustrations by giving inspiration, by showing what can be done, and by indicating possible approaches, that directly or modified, may be considered together with other alternatives. In order to get maximum benefit from the material, one should have a good understanding of the companies involved. This can be obtained by means of the name index at the end of the book.

The book aims at teachers and students taking courses in topics such as business policy, entrepreneurship, design management, new product development, technology management, etc. Together with teacher and student manuals, being under development, the book can be used as an introductory text at the undergraduate level.

The book is also suited for graduate students, practitioners and others who want in-depth

knowledge about specific parts of it. A good point of departure is the comprehensive list of references, mainly based on selected key management books and publications from recognized researchers with the latest advances. Each research publication comprises extensive literature reviews, summaries of past research, and is documented with 20-50 sources, several with even more.

A major target group are executives, managers and staff who are responsible for, or actively participating in product innovation processes. By giving a state-of-the-art depiction of current theory and practice, the book provides a basis for development of a market oriented culture and practice by presenting various approaches and their advantages and disadvantages.

An emerging target group are engineers and scientists who want to establish, or have started, their own business. The background for this development is the growing interest among governments for the promotion of innovation through entrepreneurship. So far the focus has been on the financing of basic and applied research. However, it is now recognized that this does not automatically ensure economic development. Attention must also be given to the commercialization. Therefore, the provision of public venture capital is increasingly becoming part of government policies for innovation. Technical entrepreneurship is a key in this context. Engineers and scientists are stimulated to engage themselves in the commercialization of their results by starting their own business. Success in this endeavour requires that they develop management thinking and skills. The technical entrepreneurs must evolve into market oriented managers. In addition to developing the technical base, they must acquire marketing and management knowledge in order to ensure the continued life of their companies. This can be done by attending special courses, but self development may be the answer for the majority. The book is well fitted for both cases.

The distinction of genders has created a problem. I feel rather awkward in writing "she/he" or "she or he", or the other way around, as one often can see. It is not much better to use one of the terms, e.g. "she", and state that it means "she and he". Finally, I have settled on using both terms, some times "she" and other times "he", albeit not quite a satisfactory solution.

I express my sincere gratitude to the many managers, engineers, marketers, designers and other functional experts in companies throughout the world who have offered their time and shared their experiences with me in connection with a variety of projects and studies. I am especially grateful to Philip Marsilius who have helped with contacts in the U.S.A and to Rintaro Muramatsu who has provided access to Japanese companies.

I also owe a great deal to ISPIM, the International Society for Professional Innovation Management, an organization of motivated academics, business leaders and consultants, devoted to the promotion of innovation management theory and practice. My participation in its many formal and informal activities have helped me to stay in the front line of this rapidly developing field. In particular, I acknowledge the stimulation and support from my contacts with Jens Arleth, Ferdinando Chiaroni, Horst Geschka, Heinz Hubner, Takaya Ichimura, Kazuyoshi Ishii, Arie Nagel, Richard Marsh, and Vilko Virkkala.

In the spirit of the book, the development of products that create satisfied users, the author has organized an advisory group of practitioners, scholars and students. Through constructive comments

they have made important contributions to the development of a user-friendly book. I greatly appreciate their support, most notably from Aage Amundsen, Espen Gressetvold, John Hermansen, Jan Hovden, Steinar Ilstad, Rolf Rolfsen, Olav Solem, Alf Steinar Sætre, and Svein Linge Solberg. I thank Erik Edsberg, Erik Gaustad, Helge Gravås, Curt Hansen, Erling Hove, Ivar Jarle, Kjell Anders Johnsen and Antoinette Olsen who have provided valuable help with figures and processing of the text. Special credit is given to Antoinette, Erling and Kjell Anders for their pioneering work with the conversion of the manuscript to electronic transfer and production.

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Special thanks are due to Ann Holt, my wife, who has supported me by language editing and manuscript checking, and by showing patience and understanding during the many hours the book project has required. I have promised her not to write another book.

Trondheim, May 2002

Knut Holt

Part One - Introduction

In this introductory part of the book are covered scope, history and key concepts related to market oriented product innovation. It concludes with two chapters on important human aspects, the development of creativity and the reactions of people to change.

Chapter I Scope

In highly competitive markets product innovation, the development and commercialization of new and radically improved products, is a critical success factor. The word product covers both physical goods and intangible service products such as education, hairdressing, medical care, transport, etc. They have much in common with regard to concepts, models and tools, but the service companies appears to have fewer steps and shorter time to market (Griffin 1997).

An increasing part, now about 80 per cent, of the working population in the industrialized countries is employed in public and private service organizations. This development is reflected in the book, particularly in Part Three.

1. Product initiation

The development of a new product can be done in many ways. The driving force behind is complex and hard to identify, but painting with a broad brush can be distinguished between by-chance, technology, marketing and product concepts.

The *by-chance concept* indicates that the product is initiated by a chance occurrence, "a happy accident" (Kuhn 1988). This phenomenon is also called serendipity - "accidents happening to the prepared mind" (Crawford and Di Benedetto 2000). The quotation shows that a chance occurrence is not enough; a viable new product idea requires a curious and open-minded person who is capable of perceiving the significance of the event and able to act.

At Aaonson, the dynamic managing director frequently introduces new products, many initiated by chance occurrences. Once, walking through the punch press department, a comment from a foreman resulted in the development of a tool-table. During a sleepless night he got the idea that a kitchen scale would be a good product. During a bridge-party one of the players, a radio producer, suggested that he should start making band-switches. An unexpected order from a dairy company for 150 refrigerators resulted in a line of commercial refrigerators.

Accidental discoveries may lead to innovative products. One example is the origination of the sparkling champagne wine.

The production of champagne started 250 years ago due to an error in the production of white wine at the monastery Le Benedictine Abbaye d'Haitvillers in the Champagne district of France. A young monk, Pierre Perignon, through a mistake, bottled some wine before the fermentation had ended. It continued in the bottles, resulting in a high pressure. Most of the bottles exploded, but in a few the cork blew out and

some wine was left. It was sparkling and tasteful. After experiments with various grapes, bottles and corks, Pierre got a stable, high quality sparkling wine, named champagne. Later it became produced and marketed by Moët & Chandon under the name Dom Perignon.

Plastics is a product that started with a chance event. It has over the years resulted in a number of pioneering innovations that has had a tremendous impact on the design of industrial and consumer products.

Professor Christian Friedrich Schönbein in Basel borrowed in 1846 the apron of his wife to wipe up some sulphur and nitric acid which he had spoiled. Shortly after he put the apron on a drying line; it exploded with a bang. By chance he had invented nitro cellulose, or "guncotton", which led to Parkesine, a cellulose based plastics.

A remarkable event is the invention of penicillin by Alexander Fleming (1881-1955), professor of bacteriology at London university and medical doctor at St. Mary's hospital.

During an experiment in 1928 Fleming observed by chance a blue mould growing on a disk that had been overgrown with colonies of staphylococci. Around the mould was a ring where no bacterial colonies were growing. The mould evidently had produced a lethal substance killing bacteria. Other duties prevented Fleming to follow up his observations, but in 1936 Walter Florey and Boris Chain confirmed the results. They were able to isolate an impure powder of unique killing power toward certain germs. During 1942 a pure yellow powder was produced by Chain and successfully used by Fleming against meningitis. Regular industrial production started soon thereafter. The penicillin was followed by a series of antibiotics, that have revolutionized the treatment of infections.

The Swedish company Pharmacia owes its original success to the accidental discovery that contamination in sugar could serve as a substitute for blood plasma. At DuPont neopren was an accidental by-product of efforts to purify another polymer.

Professor Hideki Shirakawa in the year 2000 got the Nobel Prize for the discovery and development of conductive polymers. This invention, a key element in modern communication technologies, is due to an accidental discovery in 1977 by one of his doctoral students. During an experiment, by a mistake, he used one thousand times too much of a compound, and found, surprisingly, that it could conduct electricity. At 3M the successful Post-it product was the result of a chance occurrence.

During the development of a new glue the prescribed procedure for experiments was not followed. The result was an odd glue that did not stick permanently. This effect came to the mind of an employee who felt the need for a bookmark for a church hymnal that would stick to a page temporarily. After some experimentation the idea was developed to Post-it, one of the most successful products of 3M.

Although many innovations spring from chance occurrences, there are numerous failures. Most successful new products are the result of a systematic approach that starts with a purposeful search for opportunities inside and outside the organization (Drucker 1985).

The *technology concept* refers to products initiated by technological opportunities, often called "technology push". The big jumps ahead are made by visionary inventors who perceive technological opportunities and develop novel products; many represent pioneering advances (Szanto 2001).

The Italian inventor Guglielmo Marcony (1874-1937), who got the Nobel Price in physics for his work on radio-telegraphy, highlights the importance of the technology concept : "Necessity is the

mother of most innovations, but the best comes out of a desire to create something new" (Marcony 1922). This statement can be related to two of the many theories explaining creative behaviour. According to the "need theory", creative ideas originate by information from outside about user needs that are not satisfactorily covered. In contrast, the "achievement theory", assumes that creative behaviour is born out of a desire to accomplish something (Rossman 1964).

Abernathy and Hayes (1982) are critical towards too much reliance on market needs and argue that inventors, scientists, engineers, and academics, in the pursuit of scientific knowledge, gave the world the laser, xerography, instant photography, and the transistor. In contrast, worshippers of the need theory have bestowed upon mankind such products as newfangled potato chips, feminine hygiene deodorants, and the "pet rock". The users can indicate minor improvements, but are not able to suggest new products. Such products are developed by entrepreneurs and innovative companies with high technical competence and a climate that stimulates creative behaviour. When a new solution is found, the product is brought to the market, tested, and a more user-friendly version is developed.

The *marketing concept* states that product innovation starts with the customers; it seeks profits through the creation of customer satisfaction, achieved through an integrated marketing programme (American Management Association 1957). The majority of products are initiated by information from the market about problems and needs of the users, "the need pull". They are usually improvements of the technologies developed by the pioneers. However, a recent development, the utilization of concepts developed by lead users, may result in innovative breakthrough products (see p. 264-266).

Although most successful products come from the market, this does not mean that market orientation is a golden goose. It must not be taken to the extreme. This danger is particularly present in firms that have changed chief executive and got a strong market oriented leader, who naturally tends to surround himself with people with similar attitudes. Other factors, for example technological opportunities and environmental considerations, may easily be neglected.

The *product concept*, also called dual drive (Crawford and Di Benedetto 2000), can lead to technological innovations, as shown by in depth studies in 13 successful Japanese companies. This approach combines technological opportunities and a good understanding of the user situation, resulting in products with high market receptivity and the potential of creating new needs. The product concept driven process often consists of four phases: 1) market insight, 2) product concept construction, 3) concept realization, and 4) mock-up testing or user needs verification. (Orihata and Watanabe 2000).

The technology driven world leader in telecommunications, Nokia, that has introduced a number of first-to-the-world innovations, has become increasingly market oriented. It now appears as a product concept driven organization, retaining its strong technological position, and focusing on evolving market opportunities in cooperation with demanding customers.

The increasing importance of innovation for building and sustaining competitive advantage is brought out in a study of 700 companies across ten industries in 23 countries (Little 1997).

Companies have shifted from cost-cutting to growth strategies with innovation as a critical success factor, comprising 1) product innovation: the creative development and commercialization of new products, often grounded in new technology and linked to unmet user needs, 2) process innovation: the development of new ways of producing products that leads to advantages in cost, quality, or timeliness of delivery, and 3) business innovation: the development of new businesses and new ways of conducting business that provides competitive advantage.

There will be numerous opportunities for companies that are innovative and able to think forward and integrate technology and market in new products and processes. In order to succeed, top management must engage itself visibly, provide adequate resources and continuously develop the organization. Firms that fail to keep their practices up to date will suffer an increasingly competitive disadvantage (Griffin 1997).

2. Market focus

Each year millions of words are written and spoken about market orientation. The importance of it has been demonstrated by numerous research projects, showing that successful product innovation requires a strong market orientation, a product with superior value and unique advantages in meeting user needs, and a market-driven and customer-focused process (Cooper 1993, Arleth and Cooper 2001).

An strong indication of the significance of market oriented product innovation comes from The International Forum 1992-93, organized by the well known Wharton School, where 30 top leaders from Europe, Japan and the USA endorsed 12 commandments for success in the third millennium. One of the major points is market focus; the needs of the users, including service, financing, delivery and guarantee, must be part of all activities (Alexander 1993).

Despite all attention to market orientation, traditionally most companies have done little to realize this concept. In-depth studies in 21 American companies show that in too many places the users are considered a nuisance despite all lip service given to market orientation. A few "excellent companies" are exceptions; they consider it to be of vital importance to get proper information about the needs and preferences of the users. The star performers sacrifice an unproven technology for something that works. However, the satisfaction by being second does not mean that they neglect technological performance and costs. Instead, they focus on making technology work for the user (Peters and Waterman 1982).

Some light on the situation in the USA is thrown by Drucker (1986). He states that many companies fail due to the lack of market understanding. This is particularly true for high-tech companies. They are mismanaged; the founders are still rather 19th-century inventors than 20th-century innovators. They tend to be so infatuated with their technology that they forget what gives value to the user.

A recent compilation of studies on new products shows that the top success factors are a differentiated product with superior customer value, and a strong market orientation reflected in a thorough understanding of the needs and wants of users, the competitive situation, and the market environment.

With equal consistency the studies have demonstrated a failure to assess the needs of the users (Adams et al. 1998).

The situation in Europe appears to be the same. In-depth studies in 36 German, Italian and Norwegian companies show that only a few companies attempt to find out what the needs are. These exceptional companies often demonstrate great creativity in assessing the needs of present and potential users. In contrast, the majority gets need related information rather through chance occurrences, informal approaches, and the intuition of gifted individuals, than through systematic application of specific methods and procedures (Holt, Geschka and Peterlongo 1984).

A study of Norwegian companies shows that most need information is collected from existing business contacts by methods requiring as little resources as possible. If the information differs from the opinion of those involved in the design process, it is mostly neglected. External experts are little used, and their recommendations tend to be met with scepticism (Juhler 1986). The findings above are confirmed by Nilsson (1983) who has studied the Danish industry. In-depth studies in 28 British companies indicate that the majority is not interested in the problems of the users. If even half of the major companies understood and reacted to user needs as well as they should, the entire economy would be far stronger, and the Japanese would be trooping here to find out how it was done (McBurne and Clutterback 1987).

Empirical studies by The Design Innovation Group at the Open University and the University of Manchester demonstrate that successful firms base their product development projects on a full understanding of the user requirements, and achieve this understanding by using a variety of sources of marketing intelligence (Walsh 1992).

A study of 160 service organizations shows that the most common cause of service product failure is the same as for any other product, poor need assessment. Organizations do not find out what their customers want and, therefore, fail to fulfil their needs better than their competitors (Hollins and Hollins 1991).

A well known authority on technology management states that there is evidence from both sides of the Atlantic that market orientation is still woefully absent and that this is a major source of failure even in the most technology advanced companies (Twiss 1992).

The negative pictures from the 1980s are confirmed through own research. There is a lack of user focus in most companies, and much has to be done to get market oriented thinking accepted and applied (Holt 1987, 1988, 1989, 1990, 1992).

3. The fusion model

The underlying philosophy of this book is that product innovation (new product development), is a process where marketing knowledge and technological expertise are integrated for developing new products (physical goods and intangible services) that satisfy user needs at affordable prices.

A viable product idea or a successful product can be considered to be a fusion of a user need and a technological opportunity (Holt 1978, Ichimura and Ishi 1990). This dual relationship is shown for idea generation with a simple model in Fig. 1.

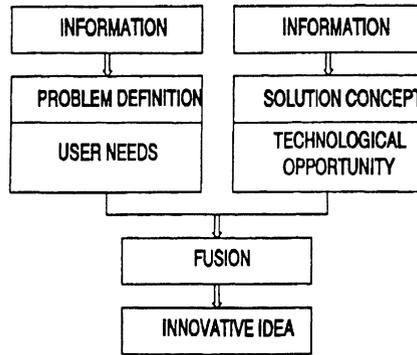


Fig. 1. The fusion model of idea generation

The development of a product is basically a problem solving process. It must be treated as a whole, aiming at an optimization of market and technology. Both aspects are important, but the weight given to them depends on the situation.

In practice the attention most often focus on the solution, that will emerge as a technological opportunity. The character of it depends on the kind of the information that is provided. It may be stored information in terms of knowledge received through studies, practical experience, etc. or information collected through databases, printed material or talking to knowledgeable people.

The definition of the problem depends on market information, first of all about problems and needs of the users. These needs may be new or have existed for some time; they may be unfulfilled, inadequately or inefficiently fulfilled. In some situations the needs may be of a future nature, i.e. they will only emerge when a new technical solution is brought to the attention of potential users. In either case, technology must be integrated with marketing in such a way that it gives a sustainable competitive advantage.

4. Limitations

The market-technology model represents a simplification. In real life the situation is more complex, as illustrated in Fig. 2. For example, an engineer when starting his carrier, is strongly influenced by technology. Later he may develop a broader base for his problem solving activities. Coming out in practise, he will soon realize that economic factors count heavily. Actually, if there are more than one solution to a technical problem, what is always the case, then it is no longer a technical, but a techno-economic problem.

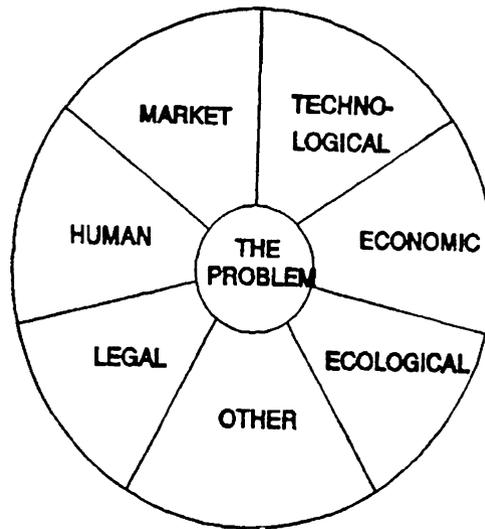


Fig. 2. The multi-faceted problem

The engineer will quickly experience that most problems have human implications both at individual, group and organizational levels. In many cases legal considerations have to be dealt with. Ecological factors are increasing in importance. Last, but not least, comes the market factors; it is an important part of the message of this book that they have to be taken seriously.

The various factors are dealt with and presented where relevant within the overall structure of the book. With the ambition of giving a thorough treatment of the technical and marketing factors and their interrelationship, they will get most of the attention. However, although market orientation with its user focus is a necessary condition, it is not sufficient for survival and growth. The needs of the users must be balanced with the interests of the other stakeholders, the most important are shown in Fig.3.

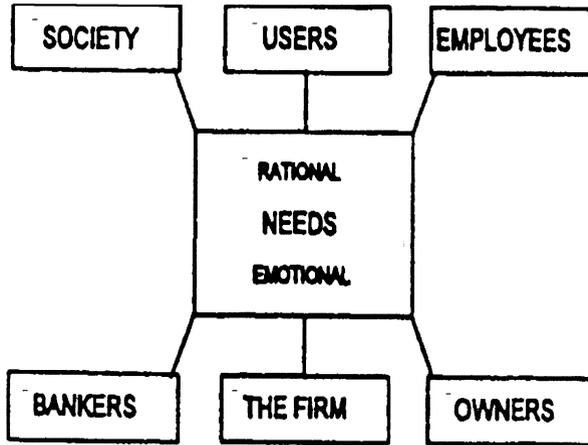


Fig. 3. The multi-interest concept

The weight given to the various stakeholders depends on the situation and the attitudes of those involved. Ideally, one should ask - who are the key stakeholders, what are their rational and emotional needs, and how can I help fulfilling them? In this book the emphasis is on the users and the society, but other stakeholders, particularly the employees, will also get attention.

Another limitation is the conflict between current operations and future activities, between order and creativity. The challenge is to develop an organization that has a certain order and discipline, but at the same time is flexible and stimulates creative thinking and innovative action.

The German philosopher Friedrich Nietzsche claims that human beings are pulled in two opposite directions. The rational impulses are represented by the sun god Apollo. He stands for harmony, reason, judgement and order; the risk of following him is over-organization, one may freeze to death. The irrational impulses are represented by the wine god Bacchus. He stands for inspiration, feelings, vitality and creativity; the risk here is destruction, one may burn to death.

Neither of the extremes will give good results. Successful product innovation cannot be based only on inspiration, fantasy and random ideas. Most cases require a systematic and balanced approach for the generation of new ideas and the development of viable products able to fulfil the needs of the users at affordable prices.

In the technology oriented company the planning of current operations starts at the technical side. Based on techno-economic considerations the engineers decide what should be produced. It is then up to the marketing people to sell and distribute the product. In the market oriented company it is the other way around. Starting with their knowledge of the market situation, the marketers decide what products, and how much, should be produced, and then the engineers follow up with the production of them.

The marketing aspects of current production are well covered in the literature. They will not be

dealt with in this book, which focuses on market oriented product innovation, i.e. the innovative, future oriented activities in connection with the creation of a market oriented culture, and the development of new and improved products.

Ideally, a professional text book should be completely objective. However, even with a determined effort, the selection of the material will be influenced by the background of the author.

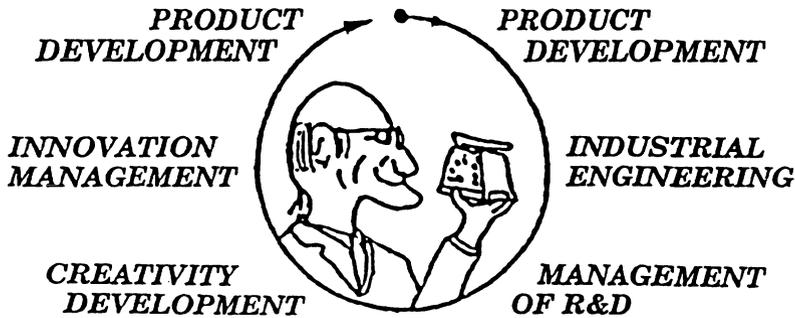


Fig. 4. The professional life cycle of the author

Having obtained a master degree in mechanical engineering, I got the job as a design engineer at Aanon-sen, a company with a variety of products, all with sheet metal as the basic material. My first assignment was: "develop a kitchen scale". First, I stripped competing products to find out what made them work. Having evaluated several technical solutions, by hunch I selected the concept I thought to be best. Drawings were made and a prototype built, tested, modified, tested, and so on, until I found a satisfactory solution. During the whole process my only concern was the technology. It never occurred to me to contact potential users, e.g. house wives, and ask them about their weighing problems. After completion of the kitchen scale project, my next task was to develop a commercial refrigerator for a dairy company that had ordered 150 units for their milk shops. Again, the technology was in focus. No attempt was made to visit the milk shops and observe the sales women in action and question them about their wishes and preferences. Later I got experience from the development of industrial goods and military products. My approach was all the time the same. Having found a physical principle that would provide a useful solution concept, my energy was concentrated upon the techno-economic aspects - selecting proper materials and finding shapes and dimensions of the whole configuration as well of the various parts, allowing for cost effective production. During the process no thoughts were given to the users, let alone their needs and wants. After some years with product development my career changed and I got a rather varied experience. As indicated in Fig.4, I ended where I started, with product development. Although the terms are the same, there is great difference in content. At the start my main concern was the technology, although I soon learned that economic, human and legal factors had to be taken into consideration. During the last 20 years my research, teaching and consulting have been concerned with matching technology with marketing. The focus has been on providing and using relevant information about the users and their needs in product innovation processes, and on developing a market oriented culture.

One should also take into account cultural factors. Much of this book is based on ideas and research findings from the Western world. However, there are great differences between the African, Chinese, Hindu, Japanese, Islamic, Latin American, Russian and Western cultures. During the last 500 years the west has had an overwhelming influence and initiated the process of industrialization

throughout the world. The impact of "Westernisation" is still strong, but the share of the West of economic, political and military power is in decline relative to that of other nations (Huntington 1998). Within the various cultures there can be big variations. For example, despite many similarities, studies in 63 British and 37 American firms reveal significant differences in performance, success rates and product innovation practices (Balbontin et al. 2000). A comparison of American and Korean firms has similar results (Lee, Lee, and Souder 2000). Between the European countries there are cultural variations, leading to different attitudes and practices. Thus, one has negative experiences with techniques such as empowerment and matrix management in Italy, Portugal and Spain: "Southern Europeans cannot cope with conflicting instructions, they need one boss who tells them what to do" (Johnson 1995).

Most of the findings presented are based on studies of an explorative nature. The results are tentative, dependent on assumptions, design and variables in the research models that have been applied. Often the data have been collected from a small sample in one industry. The value may also be limited due to difficulties in obtaining reliable information. An analysis of 47 individual studies of the product innovation process indicates that one can not rely only on one respondent within a company; multiple informants should be used (Ernst and Teichert 1998).

Research findings give important information by indicating new directions and approaches, and providing insight and understanding. However, they can not always be generalized to every company or product. They should be treated with an open, but critical attitude. This is particularly true if they do not support or contradict existing knowledge and beliefs.

5. The future

Although a considerable body of knowledge has been brought forward during the last 30 years, demonstrating the importance of being oriented towards the market, in practice much remains to be done. This is not surprising. It takes many years from a new idea, whether it is concerned with a technology or a management concept, is introduced until it has been adopted by all who will benefit from it (Rogers and Shoemaker 1971, Crawford and Di Benedetto 2000). The researchers, the pioneers and the early adopters have shown what can be done, and the others, more or less reluctantly, follow. The late adopters, and particularly the laggards, i.e. those neglecting the opportunities created by new advances, often run into difficulties, and even vanish. The only thing that is constant is change. The companies that survive will be the ones that understand change and are in front leading, often creating, change. Others will follow with reactive strategies, while still others will disappear, not knowing that change had even occurred (Best 1997).

Looking ahead, it is likely that the gap between what is known and what is put effectively into use, will be reduced. At the threshold of the third millennium there is a growing understanding of the need for market oriented approaches. Several companies have initiated a change process with the aim of developing a market oriented culture where the users and their needs are the focal point in the devel-