Phases of Product Development: A Qualitative Complement to the Product Life Cycle

Arthur O. Eger[1] and J. W. Drukker

Introduction

The well-known economic product life cycle describes the typical pattern of a product's turnover over time. Although it has become a central concept in product development and marketing, it has severe practical limitations, one of the most important of which is its purely quantitative, descriptive nature. It describes the most probable pattern over time in the relative growth and decline of the numbers of a product sold, from its incubence until its extinction, but it does not say anything about the qualitative changes that the product undergoes during the different phases of its own life cycle. In other words, it is impossible to make predictions about the nature of a product's renewal. In this paper, the six phases of the product life cycle are complemented with a set of six qualitative "product phases," which allows for overall predictions regarding functionality, design, pricing, production technology, promotion strategies, and presentation, as well as the service level and the social behavior of a company.

Product Phases and the Economic Product Life Cycle

The economic product life cycle consists of six phases. The first phase, development, shows (essentially R&D) costs of the product before its introduction. The second phase, the pioneering phase, starts immediately after the product is launched on the market. If the product is not rejected, a growth phase will set in, leading to an increased turnover. From now on, imitation by other producers will lead to increasing competition. Next comes the maturity phase, characterized by decreasing growth rates in sales and the elimination of weaker competitors. During the next two phases, saturation and decline, turnover will reach its peak, after which sales will decrease in absolute terms, due to, for instance, the emergence of substitute products. During the last phase, the product will gradually disappear. Sometimes a residual market will remain and another phase will follow—ossification (see Figure 1). It should be noted that most, but not all, products precisely follow this pattern, and that the pattern itself may be influenced by all kinds of external factors. For example, the mandatory wearing of safety belts in the back of cars

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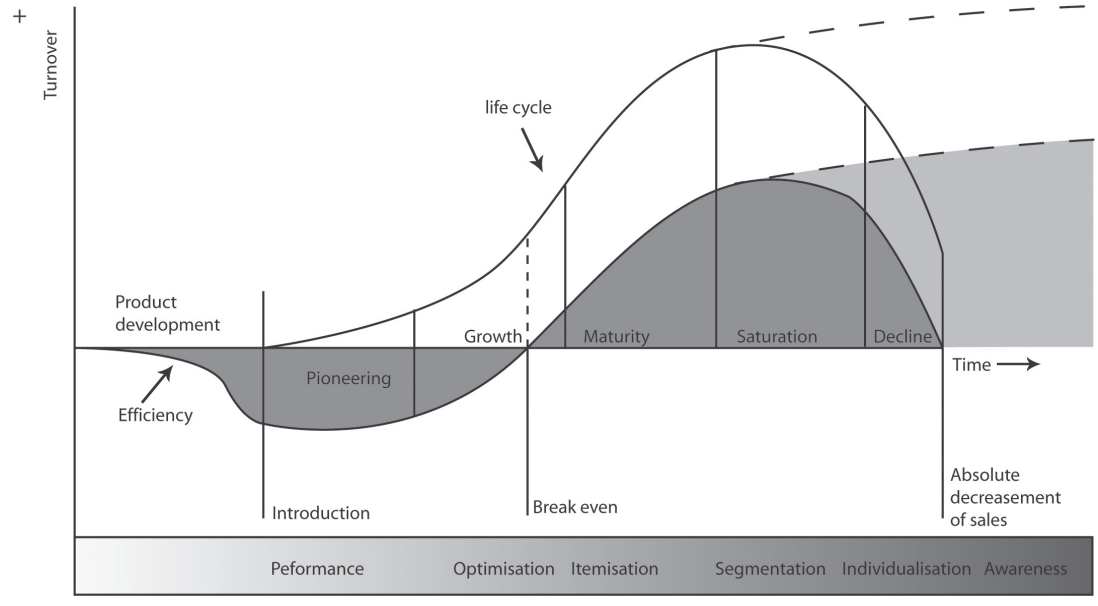


Figure 1
The product life cycle model combined with six qualitative product phases.

may result in doubling sales of safety belts during a short period of time, even if the product itself has reached its maturity phase.

Qualitative Product Phases Can Map the Status Quo of a Product

In industrial design engineering, education and research are generally concentrated in four different fields: ergonomics, marketing, construction, and styling. So far, little has been done to analyze the *relationships* between these fields of research. Introducing six qualitative product phases makes it possible to do so. The physical appearance of a product can be analyzed in relation to its (primary and secondary) functionality, its ergonomic qualities, its production technology, and the marketing techniques that are used to promote it. To demonstrate this, we propose six qualitative product phases—performance, optimization, itemization, segmentation, individualization, and awareness—complementary to the (essentially quantitative) phases of the product life cycle (see Figures 1 and 2). Placed in chronological order, a more or less general pattern reveals itself, which to some extent makes possible predictions about a product's probable future development.

Each product phase can be described in terms of ten product characteristics, of which four apply to the product itself, two to its market, and the remaining four to its production technology, its main promotion instruments, the services that accompany the product, and the ethical aspects of the product in question. The ten product characteristics that we propose are: 1) newness, 2) functionality, 3) product development, 4) styling, 5) number of competitors, 6) pricing, 7) production, 8) promotion, 9) service, and 10) ethics.

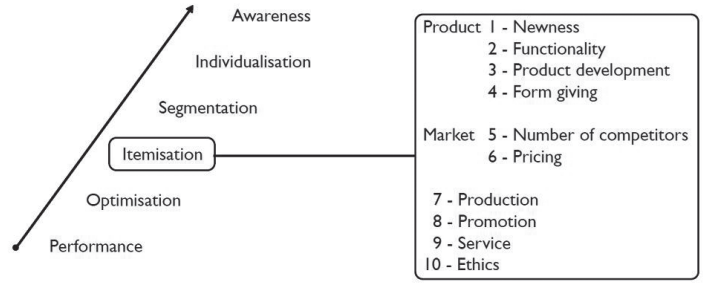


Figure 2
The six product phases with their product characteristics. To keep the figure simple, the product characteristics are only shown at the product itemization phase.

Characteristics of the Product Phases

We state that each of the six product phases displays a typical pattern of product characteristics. In this section, these product characteristics will be made explicit for each product phase.

New products normally suffer from teething troubles for some time when they are put on the market. By implication, improvement of primary functionality (i.e., the technical performance of the product) is the most important aspect of product development in this phase. Christensen states that, in the beginning, new products ("disruptive innovations," as he calls them) perform generally less well than the products they will replace.[2] Technically, new products often start as status symbols, and usually perform worse than the existing alternatives. The first cars, for example, were much less reliable than the contemporary horse-drawn carriages, but despite these shortcomings some people still wanted to own them.[3] According to Eger, the product characteristics of this phase ("performance") can be summarized as follows.[4] The product is, technically speaking, new, and results from a "technology push." The performance of the product is often poor. Product development is primarily aimed at improving the performance. Design in the limited sense of "overall form giving" is unimportant, and therefore product aesthetics are of minor concern. The product is put on the market by a monopolist or a small number of heterogeneous oligopolists, so competition is low, and as a consequence the price per unit can be relatively high. The product is frequently produced by standard machinery equipment, it often has an impractical number of parts, and assembly is mostly done by hand. The product is promoted through fairs, free publicity via public media, and brochures in retail shops, etcetera. There is no proper organized service organization set up by the producer, and the ethical behavior of the producing company is of no concern to the customer.

In the second phase, optimization, product development is broadened to include ergonomic aspects and issues of reliability in use and safety. This phase is characterized as follows. Although the product is, technically speaking, still new, consumer awareness of the product starts to develop. The performance of the product is reasonable, but product development is still aimed at improving performance. Other aspects, like increased reliability, improvement

2 Clayton M. Christensen, *The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail* (Boston: Harvard Business School Press, 1997).

3 Henri Baudet, *Een vertrouwde wereld: 100 Jaar innovatie in Nederland* (Amsterdam: Bert Bakker, 1986).

4 Arthur O. Eger, *Evolutionaire producttontwikkeling: productfasen beschrijven de meest waarschijnlijke levensloop van een product* (PhD diss., Delft University of Technology, 2007). English summary published as: Arthur O. Eger, *Evolutionary product development: How "Product Phases" Can Map the Status Quo and Future of a Product* (The Hague: Lemma Publishers, 2007).

of aspects of ergonomics, and safety are becoming serious considerations. The number of competitors starts to grow. The price per unit is still relatively high, but increasing competition creates a tendency towards lower prices.

Both Windermere Associates and Mann and Dewulf find that when producers have improved their product to the point that they satisfy generally accepted standards of functionality and reliability, the edge of competition shifts to convenience, and so itemization comes to the foreground as the next phase in product development.[5] Buyers will prefer those products that are the most convenient to use and—especially in the business to business market—sellers that are convenient to deal with. With mass produced products, personal selling becomes impossible. The growth of the market is less than five percent and the number of competitors increases. As the product range grows, prices fall and promotion costs increase. Communication channels change from personal selling strategies to direct marketing, and (paid) print, TV, and radio advertising. Product development is aimed at improving performance, reliability, ergonomics, human interfaces, and safety. An endeavor sets in to develop extra features and accessories, including special editions of the product that are developed for different trade channels and target groups. Design—in the limited sense of "styling" (see above)—becomes more important, and product aesthetics become a major concern. The number of competitors is still growing, but the market has usually not yet developed into a perfectly competitive market (homogeneous polypoly). The number of product parts decreases, and mechanical and/or automatic assembly becomes more important. If needed, service organizations are set up to support the product.

In the first three product phases (i.e., performance, optimization, and itemization), the focus was on improved functionality, reliability, ergonomics, and safety. An endeavor to add extra features and accessories, in order to differentiate the product from its competitors, sets in somewhere in the third stage. However, there is an end to these kinds of developments. Actually, there comes a time when the performance offered is actually more than the performance required, and so segmentation—the splitting up of the product in different versions for different groups of users—offers a possibility for extending the product's life cycle. For relatively uncomplicated products, such as furniture and trinkets, the opportunities to add features or accessories are limited. Moreover, for innovators and early adopters, products become less attractive during the latter product phases. The market share is such that the product is considered to be "accepted." Owning the product is no longer distinctive, as it does not offer any form of status. Adding emotional benefits to a product is now a possibility.

During this phase, almost all members of the target group know the product from their own experience or have at least heard

5 Darrell Mann and Simon Dewulf, *TRIZ Companion* (Ieper-Belgium: Creax Press, 2002); Windemere Associates, as quoted in Clayton M. Christensen, *The Innovator's Dilemma.*

of it. As the product, technically speaking, enters the domain of some "dominant design" (or a limited number of "dominant designs"), product development is aimed at adding extra features and accessories, including special editions of the product for different trade channels and target groups. Styling has reached a stage of complete integration of the different parts of the product into a completely unified and recognizable form and design focus shifts from form giving proper to expressive features, aimed at increasing emotional benefits. The market approaches perfect competition. As prices approach average total costs, price decreases come to a halt. Promotion and advertising via various mass media are often costly.

Extrapolation of segmentation (continuous fine tuning of products on ever smaller target groups) ultimately leads to a product well tuned to the individual. In other words, when segmentation comes to its logical end, individualization is the next step. Recent developments in information and production technology make this kind of individualization possible. These developments imply the following changes in characteristics in the product phase "individualization." In order to make the product discernible from its competitors (i.e., to escape in some way from the "dominant design"), product development is deliberately geared to mass customization and co-creation, allowing the customer to influence the final result. The market starts to change from a homogeneous polypoly into a heterogeneous polypoly. Although prices approach average, technical production costs of the dominant design, co-creation, and mass customization make higher prices possible. Interactive media are used to customize the product to the needs of the individual customer. The ethical behavior of the producing company starts to become of some importance for at least some customers.

A problem with this product phase is that individualization is not possible for each product. Complicated products, such as cars, are already customized to some extent, but choice so far is limited. A system in which a customer can submit a RAL-number for the desired color of his car has yet to be developed. For less complicated, low-priced, and mass-produced products (such as diaries, spectacle cases, writing utensils, etc.), possibilities are even more limited, although it is possible to order these products with one's own name printed on them, for example.

In 1997, market research bureau Inter/View studied aspects of so called "responsible entrepreneurship."[6] The results suggested that consumers are willing to contribute to a better environment and to help solving societal problems by changing their consumption patterns, but only if this can be done without much effort, and only if it does not lead to decrease of consumer satisfaction and to an increase in their financial burden. On the other hand, this research also showed that people do expect companies to play an active role in solving common societal problems. According to Hafkamp, a company can successfully tempt consumers—especially those who

6 Paul Sikkema, "Intensive care, geen camouflagepak," *Adformatie* s.a.: 19 (1997): 33–6.

are committed to purchasing luxury products—by offering them the possibility to show their ethical involvement by acquiring products that claim in some way to be more environmentally or socially beneficial than their competitors.[7] This leads to slight changes in the characteristics of the last product phase, "awareness." Design is focused upon the enhancement of expressive features aimed at increasing emotional benefits, but when these benefits start to include ethical concerns, this can lead to a sudden leap into ascetic and sober forms. The market approaches a heterogeneous polypoly. Co-creation and mass customization offer possibilities to realize higher prices. This tendency is further reinforced by product claims regarding societal and environmental issues. The producing company explicitly communicates company ethics in its promotion campaigns. The ethical behavior of the producing company does to some extent influence consumers' choices. The company can, for instance, be successful with products that become more attractive with use ("positive aging").

The Model Empirically Tested

To test the validity of the proposed model, the following questions need to be addressed:[8]

1. Do products generally follow the product phases in the predicted sequence?
2. Do the described product characteristics appear in the order that is predicted by the product phases?
3. To what extent are the product phases an appropriate means to predict the future development of a product based on its history?

As a first attempt to provide at least some preliminary answers to these questions, a number of retrospective case studies and surveys were carried out. Strictly speaking, in a retrospective case study, many aspects of one case are studied, whereas in a survey, one aspect of many cases is studied. In practice, this strict, theoretical distinction is often blurred, namely when—because of a lack of data or for reasons of research efficiency, for instance—a few aspects of some cases are studied. Something similar applies to the testing of this model. A comparative (multiple) retrospective case survey—clearly a hybrid between a survey and a case study—was carried out to test the empirical validity of the concept of product phases, involving five products: shavers, bicycles, mobile phones, shampoo bottles, and—to see whether the development of services also follow the pattern of product phases—holiday arrangements. The case surveys were conducted by the study of literature and interviews with experts. As an example, one of the cases—the bicycle—is discussed in the next section.

A disadvantage of the retrospective case survey is that the products are analyzed by someone who is familiar with the

7 Gertjan Hafkamp, "Bedrijfsleven moet niet zo schromen voor ethiek," *Adformatie* s.a.: 7 (1997): 54.

8 Overall research methods and results were published in detail in: Arthur O. Eger, *Evolutionaire productontwikkeling* and summarized in English in: Arthur O. Eger, *Evolutionary product development.*

model being tested, because a lay person cannot judge whether the product in question meets the formulated criteria. Thus, there is an inherent risk of a self-fulfilling prophecy, namely that the researcher may unwittingly match the results of his research with the theory of product phases. This problem is bypassed in the second test, a method that was used by ten Klooster, among others.[9] While developing a method to design packaging, ten Klooster asked experts to rank consequent steps in the design process, on cards. Unlike interviews, this method prevents the researcher from influencing the results by the way he formulates his questions. Secondly, the cards help the interrogated subjects remember aspects that they would not have thought of by themselves. Finally, this method allows for the reaping of detailed knowledge of experts from different backgrounds in the field involved.

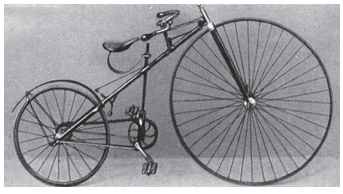
The second test was preceded by a pilot study, to investigate whether the formulations of the product characteristics were clear to the interrogated subjects and whether the method used was appropriate. Test persons were asked to attach stickers with predefined written statements to a field—a large piece of paper with indications of a time line (the product's history since its introduction to the market) and the level of market penetration of the product. The statements were sorted by product characteristics and collected in ten folders, which were offered to the interrogated subjects in random order. In the folders, the statements were also randomized. The subjects were then asked to attach the statements to the field in the order they expected them to take place during the course of a product's life cycle. For the test, subjects were randomly selected from a population of experienced industrial designers, design managers, and marketing managers. Results of the test are summarized in the section following the case study of the bicycle.

Case Study: The Bicycle

In 1839, Kirkpatrick MacMillan designed the first bicycle with a system of pedals and bars used to drive the rear wheel. The Frenchman Michaud was the first to fix the pedals directly to the front wheel. His first bicycles were made of wood. In 1866, however, he put a bicycle on the market that was completely made of steel, and that, after an exhibition in Paris in 1869, became quite successful. Riding a Michaud bicycle was not comfortable at all, and required a lot of force and skill.[10] For the first bicycles, participation in exhibitions (like Michaud's in Paris) and free publicity were the most important promotional activities. The pioneers of the bicycle attracted so much attention by simply riding their own bicycles in public that publications in papers and magazines followed "of their own accord." In 1871, James Starley introduced his "Ariel," a bicycle that would become very successful under the names "high bi" (Figure 3) and "ordinary." The "Ariel" was the first bicycle with

9 Roland ten Klooster, *Packaging Design, a Methodological Development and Simulation of the Design Process* (PhD diss., Delft University of Technology, 2002).

10 Koen van der Wal, "Productfasen Fiets: Onderzoek & Ontwerp" (Unpublished manuscript, Department of Industrial Design Engineering, University of Twente, 2005).



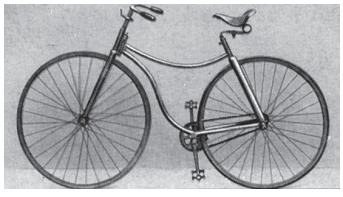


Figure 3 (top)
A so called "high bi" from 1875. Permission to reprint courtesy of Imperial Tobacco UK.

Figure 4 (middle)
Lawson's "Bicyclette" (1879). Permission to reprint courtesy of Imperial Tobacco UK.

Figure 5 (bottom)
"Rover Safety Bicycle"(1885). Permission to reprint courtesy of Imperial Tobacco UK.

spokes. It had solid rubber tires, a front wheel with a diameter of 125 centimeters, and a rear wheel of 35 centimeters.

In the beginning, the bicycle was mainly a product for upper class and higher middle class youngsters, and was used for sports (competitions) and tourism.[11] Riding a high bicycle was not without danger. The center of gravity is located quite high—near the axle of the big front wheel—which creates a great risk of falling over. Moreover, in the course of time, the front wheel was made even bigger to allow faster cycling, which increased the risk.[12]

In order to enlarge the market, a lot of manufacturers tried to solve the balance problem that bewitched the high bi. In the beginning, designers sought—and found—solutions in building cycles with three or four wheels. That these efforts were to some extent successful was illustrated by the 1883 Stanley Show, where 289 tricycles were shown alongside 233 bicycles.[13] Another solution was sought in trying to move the saddle towards the rear wheel. As a result, two cycles became very successful: The "Facile" from Ellis & Co. (1874) and the "Xtraordinary" from Singer (1878).

Another design strategy in these days included cycles that were driven at the rear wheel and with the saddle near the rear axle. Well known examples are the American "Star" (1881) with a small wheel in the front and a bigger one behind, and Lawson's "Bicyclette" (1879) (Figure 4). The latter was the first bicycle driven by a chain on the back wheel. In 1885, John Starley introduced the "Rover Safety Bicycle" (Figure 5), generally considered the last step in the evolution of the bicycle into the ones we know today.

In the product phase "performance," bicycles were exclusively used for sports and tourism. In the later phases, the transportation function slowly crept in. Bicycles enabled people to move to cheaper houses, further away from their work.

Another important development for the bicycle was the invention of the pneumatic tire in 1888 by John Boyd Dunlop. In 1890, about 98% of all tires were solid, while four years later, in 1894, the market share of pneumatic tires had grown to nearly 90%. According to Baudet, it was then that the bicycle reached its final stage: until the early nineties, technical improvements (tires, bearings, transmission, steering, etc.) were quite important, sometimes even of fundamental interest. The bicycle as we know it now reached its form around the year 1895. Fundamental technological innovations, like those in the early stages of development, were not realized after that.[14]

The fact that the dominant design of the bicycle was realized around the end of the nineteenth century does not imply that it was completely impossible to make further technical improvements on the bicycle thereafter. Van der Wal mentions:

The development of the aluminium bicycle by the Frenchman Rupalley (1895).

The introduction of the three speed hub gear by Sturmey & Archer (1902).

11 Henri Baudet, *Een Vertrouwde Wereld.*

12 W. E. Bijker, *The Social Construction of Technology* (PhD diss., University of Twente, 1990).

13 Koen van der Wal, "Productfasen Fiets."

14 Henri Baudet, *Een Vertrouwde Wereld.*

The invention of the derailleur in the 1930s, only becoming a success after World War II.
The introduction of the drum brake (1937).
The development of synchronously operating breaks (1960).

But, overall, during the first half of the twentieth century, the basic design of the bicycle remained unchanged. Men's bicycles had a "diamond frame," while women's bicycles had a so-called "lady's curve" to accommodate the long skirts of their riders. (Nowadays these are known in Holland as the "grandma bike," or "omafiets.") Virtually all bicycles were black. It was not until after World War II that, due to the increasing competition from the new motorized bicycle (moped), new models were introduced: so-called "sports bicycles." These cycles did not look like the present sport bikes at all, but compared to their contemporaries they looked quite dynamic, with smaller wheels (66 cm instead of 71 cm), a shorter wheelbase, and narrow tires. They were furnished with color striping and chromium parts and could be equipped with many accessories: decorated gear cases, white grips, special rear lights, saddles, and handle bars, etc. From the 1920s on, production of bicycles became increasingly mechanized. Manufacturers invested in automated lathes and specialized production halls with functional layouts. Despite that, still a lot of handwork was needed for assembly.

The 1960s marked another period of change in bicycle design, exemplified by the introduction of the "Moulton bike" (1962)—a folding bike with aluminium parts, designed by Alexander Moulton—and the BMX (1971), developed in Los Angeles. The last one developed into the now well known mountain bike or "all-terrain bike" (ATB) in 1976 in California. These developments mark the transition from the "itemization" phase to the "segmentation phase." The 1980s saw the introduction of special bicycles for nearly every purpose: ATBs, shopping bicycles, children's bikes, recumbent bicycles, racing bikes, touring bikes, folding bikes, etc. New materials and production methods gave designers more freedom to vary the designs of frame constructions. In this way, the bicycle slowly turned from a mere means of transportation into a fashion and lifestyle product.

Around 1890, in the Netherlands, the price of an average bicycle equaled several months (three to six) salary of an average workman. Despite rising prices during the first decennia of the twentieth century, prices of bicycles fell dramatically. Around 1935, they reached a minimum in absolute terms. At that time, in nominal terms, a bike cost approximately 14% of its 1890 price (in real terms, about 10% of its 1890 price). After the mid 1930s, prices started to rise again, until an average quality bicycle in 1970 would cost (in nominal terms) the same as in 1890, which still means that in real terms (that is, correcting for changes in the general price level), its price in 1970 was 15% of its 1890 price.[15] Stated in other terms, in 1890 the average

15 Calculations based on Ronald van der Bie and Jan Pieter Smits, *200 Jaar Statistiek in Tijdreeksen 1800–1999* (Voorburg, Amsterdam: Centraal Bureau voor de Statistiek; Internationaal Instituut voor Sociale Geschiedenis, 2001), 111–12.

16 Dutch guilders converted into Euros by the official exchange rate at the introduction of the Euro: 1 € = 2.20371 DFL.

Dutchman had to work three to six months to make enough money for a bicycle. In 1935, this had dropped to one month, and in 1965 to half a month. Between 1960 and 1970 bicycle prices could vary between €90 ($126) and far above €500 ($700) (that is, a range of 1.39 times the average!), due to segmentation.[16] Since then, the price range of bicycles has broadened even more.

Due to its basic design (a frame as a basis to which all other parts and accessories are attached), the bicycle reached the individualization phase soon after its segmentation phase: the typical layout made it very easy to vary parts and to remove, add, or change accessories—and by doing so, to individualize the bicycle. Since about 1985, completely custom-made bicycles have been widely available.

Bicycles entered the awareness phase somewhere around 1980, but for slightly different reasons than the theory of product phases predicts. In this period, the bicycle is rediscovered as a healthy and environmentally friendly alternative to the "unhealthy and polluting" car. However, these qualities were not deliberately developed by manufacturers—for instance, by using environmentally friendly materials and production processes or by committing to social responsibility. These qualities were simply inherent to the product itself since incubation, and would have been realized even if manufacturers had no environmental conscientiousness at all.

The bicycle follows the theory of product phases to a great extent. The first three phases are passed through in accordance with the theory. Despite that, the history of the bicycle is, at some points, at odds with the theory, which can partly be explained by its long and special history. Of course, the development of the bicycle was influenced by historical developments, but in this case this statement could also be reversed in some respects. The process of suburbanization was made possible, among other things, by the bicycle (and later, to a greater extent, by the introduction of the car). Thanks to the bicycle, people could live further away from their work. Some other interference with the theory can be attributed to a lack of materials caused by the Second World War, and the introduction of the car

Figure 6 (below)
Extent to which the bicycle applies to the theory of product phases: + = applies; - = does not apply; +/- = applies only partially.

Product Characteristics	Performance	Optimisation	Itemisation	Segmentation	Individualisation	Awareness
Newness	+	+	+	+	+	+
Functionality	+	+	+	+	+	+
Product Development	+	+	+	+	+	+
Styling	+	+	+/-	+	+	+
Number of Competitors	+	+	-	+	+	+
Pricing	+	+	+	+	+	+
Production	+	+	+/-	+/-	+	+
Promotion	+	+	-	-	-	-
Service	+	+	+	+	+	+
Ethics	+	+	+	+	+/-	+/-

Figure 7
The percentage of the statements that were confirmed by the experts per product phase.
1) The number of statements that were supposed by the test to apply to this product phase.
2) The number of statements that were matched by the experts to this product phase.

Note: The total number of statements in column 1 ads up to 116, while the total number of statements to be matched was 49. This is explained by the fact that most statements were supposed to apply to more than one product phase.

Product Phase	Number of Statements (1)	Number confirmed (2)	Percentage
Performance	15	14	93%
Optimisation	20	17	85%
Itemisation	16	9	56%
Segmentation	21	14	67%
Individualisation	21	13	62%
Awareness	23	13	57%

and the moped. With regard to promotion, the history of the bicycle contradicts the theory of product phases. Until now, the advertising efforts remained rather small. Direct marketing methods are not really utilized and advertising on radio or television is rare.

The product history of the bicycle shows that the product phases appear in the predicted order. Indeed, some minor disruptions are found, but most of the time these can be explained by disruptive external factors. Similar results were found in four other case studies.[17]

A Second Test: Ranking by Experts

A second test was conducted as follows. From the presumed product characteristics in each product phase, a total of forty-nine statements were derived that were supposed to apply to a limited number (one to four) of different product phases. Then seventy-one experts in the field of product development were asked to rank the formulated statements, according to their applicability to the different product phases.[18] The results of the test were mixed, in the sense that the first two product phases were clearly identified, while the results for the other four phases were less convincing (See Figure 7). From the statements about the product performance phase, 93% were confirmed by the experts. For optimization, this percentage reached 85%. Itemization scored lowest, as only 56% of the statements were confirmed by the experts. For segmentation the percentage was 67, for individualization 62%, and for awareness 57%.

Discussion

Both tests suggest that there is at least some empirical evidence for the existence of a scheme of consecutive product phases during the life cycle of a product. However, also some seemingly conflicting findings resulted. It seems that in both tests the first phases were identified with more accuracy than the latter, which suggests that the possible variability of a "product career" increases in the course of its existence. It was also shown (in the first test) that external factors sometimes cause serious disturbances on the "normal"—that is, predicted by the model—course of the product phases. Finally, it appeared that it is sometimes hard to draw a fine line between different, successive product phases, as product phases can—in some cases for quite a long time—sometimes overlap each other.

17 Namely: shavers, mobile phones, shampoo bottles and holidays, offered by travel agencies. C.f.: Arthur O. Eger, *Evolutionaire productontwikkeling*, 95–132. For an English summary of the results: Arthur O. Eger, *Evolutionary Product Development*, 15–20.

18 For full and detailed results of this study, see: Arthur O. Eger, *Evolutionaire Productontwikkeling*, 145–90. For an English summary of the results: Arthur O. Eger, *Evolutionary Product Development* 26–34.

Despite these limitations, the theory of product phases seems to be a promising starting point in trying to apply some structure to the seemingly endless variations in "product careers."

Of course, there are many aspects that warrant further investigation into the theory of product phases. In the first place, analyzing more products could provide more insight into the general applicability, as well as the limitations, of the model. This would also probably provide some hints with regard to the question of whether the last two product phases form a part of the segmentation phase or whether they should be considered as separate product phases, as was supposed in the original model.