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Success and failure rates of new food and non-food products introduced on the market

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ABSTRACT

Theoretical and empirical research reveals that despite implementing new product development and management best practices, many projects fail with new product strategies. But what if failure rates as high as 90% are true? This would mean that high costs of product innovation are incurred by many stakeholders who create a specific network of relationships, not just enterprises. The widespread belief that the new product failure rate is 90% is not supported by empirical evidence. The aim of the paper is to present the real market effects of new products, success and failure rates, from the point of view of food and non-food companies representing various industries. The research measures in the field of marketing and sales effects of new products are also proposed. The method used in this paper is a literature review in the area of new product development and management. The author assumes that the review and conceptual nature of this research is dominant.

Practical and social implications of the study, its originality concerns the results that provide the basis for the improvement of enterprises' efforts in the field of a new product strategy. The limitations of the study include a complex character of considered theoretical constructs and they also concern the used secondary data sources on which the considerations in the article are based. The values of the paper reflect the directions of enterprises' conduct in the new food and non-food product development process. Failure and success rates are in fact difficult to quantify. The research contribution to marketing sciences primarily includes the formulation of a set of real success and failure rates in food and non-food industries.

JEL classification: L81, M31, M21

Keywords: food or non-food products, new product, marketing, success and failure rates of new product, new products introduced on the market

1. INTRODUCTION

Inconclusive information about success and failure rates of new products introduced on the market is presented in scientific publications as well as in research reports from consulting agencies and online sources which have been published since the 1960s. It can be assumed that project teams responsible for development and introduction of a new product on the market would not accept such a high risk rate of new product failure (90%) with an extremely low level of business security, including low success rates of new products on the market. It is therefore no surprise that

the effects of new food and non-food product development and management are becoming more and more important issues in the scientific literature and economic practice regarding product innovations. Threats to enterprises and their target markets, such as destabilization and a decline in confidence in their self-regulatory capacity, were identified by various research, advisory and decision-making institutions which in response took regulatory measures to increase market security and sustainable development (Wheelwright & Clark, 1992; Cooper, 1993; Wu, Kefan, Gang, & Ping, 2010; Walker & Russell, 2013; Cooper, 2019; Cooper, 2021).

Literature reports on New Product Strategy, Project Management, Success and Failure Factors contain important conclusions that describe critical issues in the New Product Development Process (NPDP). Empirical research reveals that the New Product Development success rate (NPD) is still low (Crawford, 1979; Griffin, 1997; Stevens & Burley, 1997; Cooper & Edgett 2008; PDMA, 2012; Rutkowski, 2007, 2016). However, for at least two reasons, the literature sources do not provide a complete picture of the safety factors associated with new product development and introduction. First, the vast majority of these studies used non-representative questionnaire research methods in companies, involving only one person in each department or strategic business unit. Second, studies were retrospective in nature, events occurring later in the process are more likely to be recognized as major determinants of NPD project performance than earlier events. Market and business issues dominate the last phases/stages of NPDP (Wheelwright & Clark, 1992; Trott, 2011); therefore, the role of marketing and technology-related success factors for a new product may be underestimated. Therefore, we focus more on cost and time aspects than on the feasibility of new technological solutions and market opportunities (Urbanowska-Sojkin, 2012; Walker, 2013). The results of empirical research also indicate that the market and innovation orientation is positively related to market performance of a new product when an enterprise has sufficient network capacity to manage network dynamics and project managers have high networking competences to effectively mobilize stakeholder support for particular customers. The results also show that NPD performance is highest when the market orientation (entrepreneurship) and maturity of the relationship network are at a high level, which supports the proposed three-way interaction (Rutkowski, 2016; Mu, Thomas, Peng, & Di Benedetto, 2017).

2. FACTA ET FABULAS – DIVERGENT INFORMATION ON NEW PRODUCT FAILURE RATE ON THE MARKET

The common claim that 80–90% of new products fail in the marketplace is a “myth”. Empirical studies do not confirm this belief, popular and often presented in scientific publications and among managers. No matter how many times it is written and talked about or how many managers believe it, it is wrong to say that 80–90% of new products are market failures. The actual failure rate for new products is in the range of 30–40%. Table 1 identifies research work, views from practitioners, consultants, blogs, textbooks, online course materials, and other sources that report high failure rates. Wherever the discussion comes down to new product failure rates, a value of 80% or greater appears. Table 1 is only an illustration of the many reports that may be referred to. This table should not be taken as evidence that the failure rate is 80%, but that it is a common belief that has been disclosed in various sources over the past 60 years.

Table 1

Examples of bibliographic sources containing the common belief that the new product failure rate is high

Bibliographic source	Failure rate
O'Meara, J.T. (1961). Selecting profitable products. <i>Harvard Business Review</i> , 39, p. 83.	80%
Schorr, B. (1961, April 5). Many new products fizzle despite careful planning, publicity. <i>Wall Street Journal</i> , p. 11.	89%
<i>Why do products fail?</i> http://www.theproduct.com/marketing/product_failure.htm	85%
http://faculty.msb.edu/homak/homahelpsite/webhelp/New_Product_Failure_Rates.htm	75%
US Department of Commerce	90%
Hill, Ch., & Jones, G. (2013). <i>Strategic management theory: An integrated approach</i> (pp. 142–144).	80–90%
Gourville, J. T. (2006, June). Eager sellers and stony buyers: Understanding the psychology of new-product adoption. <i>Harvard Business Review</i> , 84(6).	40–90%
Schlossberg, H. (1990). Fear of failure stifles product development. <i>Marketing News</i> , 24(10), 1–16.	95%
University of North Texas. <i>Why do new products fail?</i> . http://courses.unt.edu/kt3650_4/sld003.htm	50–80%
Friedman, H. H. (2011). <i>Product policy</i> . http://academic.brooklyn.cuny.edu/economic/friedman/mmproductpoliy.htm	80%
Dillon, K. (2011). I think of my failures as a gift. <i>Harvard Business Review</i> , 88(3).	80%
Venadar. <i>External innovation</i> . http://www.venadar.com/what_we_do.html	80%
Schneider, J., & Hall, J. (2011, April). Why most product launches fail. <i>Harvard Business Review Magazine</i> . https://hbr.org/2011/04/why-most-product-launches-fail	75%
Copernicus Marketing, Consulting and Research. (2010). <i>Top ten reasons for business failure</i> . GreenBook. http://www.greenbook.org/marketing-research.cfm/top-10-reasons-for-new-product-failure	80–90%
Berman, R. (2010). Why are new products launched?. <i>Rob Berman's Blog</i> . http://www.rob-berman.com/why-are-new-products-launched-part-1-of-4/	81%
Scanlon, S. <i>Why a high failure rate in social media?</i> . You Brand, Inc. http://www.youbrandinc.com/social-media/why-a-high-failure-rate-in-social-media/	80–90%
Neuro-Judge_testowanie-produktow, BlueFox. <i>Przełom w testowaniu produktów</i> . www.bluefox.com.pl	80–95%
Woźniczka, J., Hajdas, M., & Kowal, W. (2014). <i>Zarządzanie marketingiem</i> . Wrocław: Wydawnictwo Uniwersytetu Ekonomicznego we Wrocławiu.	30–80%
Nobel, C. (2011). <i>Clay Christensen's milkshake marketing</i> . https://hbswk.hbs.edu/item/clay-christensens-milkshake-marketing	95%
Schroeder, K. (2017). <i>Why so many new products fail (and it's not the product)</i> . https://www.bizjournals.com/bizjournals/how-to/marketing/2017/03/why-so-many-new-products-fail-and-it-s-not-the.html	80%
Kocina, L. (2017). <i>What percentage of new products fail and why?</i> . MarketSmartNewsletters; https://www.publicity.com/marketsmart-newsletters/percentage-new-products-fail/	80%

Source: Author's elaboration and Castellion & Markham (2013) or Rutkowski (2021).

The sources of references to the failure rate of new products on the market presented in Table 1 are difficult to verify. The New Product Failure Rate is defined as the percentage of new products actually released that do not meet the marketing and trade goals of the business unit that launched

the product within a specified time period. The New Product Failure Rate refers to the percentage of products launched that did not meet sales targets. This indicator is not the same as the indicator showing that new products do not work technically or turn out to be unsafe on the market. Neither does it address the Mean Time Between Failure or Defect (MTFD) or the Production Performance Index (PPI).

After analyzing many literature sources, it cannot be stated whether the authors referred to the failure rates of generated ideas for a new product or a new product on the market¹. The ambiguity between the failure rates of ideas and new products can contribute to continual misinformation that new product failure rates are around 80% (Vardhan, 2020). For example, in a frequently cited article by Stevens and Burley, it is stated that the failure rate is high (Stevens & Burley, 1997). But it is overlooked that these authors referred to generated ideas for a new product, and not to commercialized products. Stevens and Burley suggest that it takes 3,000 “raw” ideas at the start of NPDP to achieve one commercial success. In the same article, they also state that for every two products launched, there is one commercial success: a 50% new product failure rate.

A study by the Product Development and Management Association (PDMA) found that failure rates vary by industry, ranging from 35 percent for healthcare to 49 percent for consumer goods. In contrast, according to Nielsen’s “The Why Behind the Try” study, 63 percent of respondents said that, despite a high failure rate, they had invested in a formal or semi-formal product development methodology such as Stage Gate or Design for Six Sigma (DFSS).

In the structure of marketing offer, new products are important for the financial condition and long-term success of a company. An organization’s ability to systematically create ideas, design, develop, and successfully market a new product is critical to survival in turbulent environment.

3. THE REAL FAILURE RATE OF A NEW PRODUCT

In 1977 and again in 1987, Crawford conducted a literature review, eliminating all reports unsupported by research and reporting only empirically verified failure rates. In both cases, he found that the new product failure rate was approximately 35% (Crawford, 1979, 1987). According to him, *“a new product is not created until it is successfully introduced on the market, that is, until the product achieves, what management expects of it. Until then, it is really just a concept in a temporary physical form. The form is blocked when it is successful: otherwise we try new variants. This means that failure only occurs when management abandons the concept”* (Crawford, 1987, p. 21). Crawford then identifies commonly accepted success factors for a new product, such as technical uniqueness, competitive advantage, market offering diversity, safeguarding market position, sales and profitability. Crawford’s definition was used in later empirical work such as the first Product Development & Management Association (PDMA) study assessing new product practices and performance (Page, 1993, p. 284) and in two subsequent PDMA studies (Griiffin, 1997; Adams, 2004). These studies revealed that the failure rate was 42% for the 1985–1989 period, 40% for 1995, and 46% for the 2003–2004 period. Since then, other empirical work has actually shown that the rate is around 40%. Nineteen peer-reviewed studies from 1945 to 2004 showed that the failure rate was in the range of 30–49%, with some understandable industry differences (Castellion, 2012; Christensen et al., 2018). These studies show failure rates for new products launched by more than 1,000 business units across nine industries. Table 2 presents scientific sources containing the results of empirical research on the failure rates of a new product on the market.

¹ Clayton Christensen is often cited in the above sources as the author of the claim that the failure rate is 95%. He developed the theory of “breakthrough innovation” that was considered the most important business idea of the beginning of the 21st century.

Table 2

Examples of bibliographic sources containing the results of empirical research on the failure rates of a new product on the market

Bibliographic source	Failure rate
Booz, Allen, & Hamilton (1965). <i>Management of new products</i> . New York, NY: Booz, Allen, & Hamilton.	33%
Crawford, C. M. (1987, July-August). New product failure rates: A reprise. <i>Research Management</i> , 30(4), 20–24.	35%
Cooper, R.G. (1979). Identifying industrial new product success. <i>Industrial Marketing Management</i> , 8, 124–135	48%
Cooper, R.G., & Kleinschmidt, E.J. (1986). An investigation into the new product process: Steps, deficiencies and impact. <i>Journal of Product Innovation Management</i> , 3, 71–85.	39%
Cooper, R.G., & Kleinschmidt, E.J. (1993). Uncovering the keys to new product success. <i>Engineering Management Review</i> , 11, 5–18.	33%
Griffin, A. (1997). PDMA research on new product development practices: Updating trends and benchmarking best practices. <i>Journal of Product Innovation Management</i> , 14, 429–458.	40%
Haffer, M. (1998). <i>Determinanty strategii nowego produktu w polskich przedsiębiorstwach przemysłowych</i> (p. 151). Toruń: Wydawnictwo Uniwersytetu Mikołaja Kopernika. (Research 1990–1994).	24–30%
Ernst, H. (2002). Success factors of new product development: A review of the empirical literature. <i>International Journal of Management Reviews</i> , 4(1), 1–40.	30–40%
Adams, M. (2004). <i>Findings from the PDMA Research Foundation CPAS Benchmarking</i> . http://www.pdma.org/shop_pdma_description.cfm?pk_store_product=25	24–46%
Rutkowski, I. P. (2007). <i>Rozwój nowego produktu, metody i uwarunkowania</i> (p. 37). Warszawa: PWE.	41.6%
Barczak, G., Griffin, A., & Kahn, K. (2009). Trends and drivers of success in NPD practices: Results of the 2003 PDMA best practices study. <i>Journal of Product Innovation Management</i> , 26(1).	41%
Product Development Institute. (2010). http://www.stagegate.com/newsletter/article_feb_2011.htm	38–55%
Rutkowski, I. P. (2016). <i>Metody innowacji produktu, macierzowo-sieciowe metody pomiaru dojrzałości procesu rozwoju nowego produktu</i> (p. 36). Poznań: Wydawnictwo Uniwersytetu Ekonomicznego w Poznaniu.	40–44%

Source: Author's elaboration or Rutkowski (2021).

The information difference between Table 1 and Table 2 is extremely important. The widespread belief that the new product failure rate is 80% is therefore not supported by empirical evidence. Table 1 contains biographical sources in which the information about the failure rates of a new product on the market has not been confirmed by empirical studies, while Table 2 contains information about the failure rates of a new product on the market that has been confirmed in empirical studies. Failure rates are in fact difficult to quantify. There are different definitions of success and failure of a new product between companies and between researchers. Empirical evidence may be the result of methodological artifacts built into empirical research. However, multiple studies conducted over such a long period by different researchers reduce the probability of a method error.

A 2004 best practice study by the Product Development & Management Association (PDMA) found differences in failure rates across industries, ranging from 35% for healthcare to 49% for FMCG. When the best business units in the PDMA study were separated from the rest, the study showed a striking difference in failure rates: 24% (the best) versus 46% (the rest). Table 3 shows

the failure rates for new products by sector/industry. For example, consumer goods and services show a higher rate than healthcare or software. While there are some industry differences, no 80% new product failure rate has been identified in any of the industries studied.

Table 3

New product failure rates by industry

Industry	Percentage of failure rate
Chemicals	44%
Other materials	39%
Industrial services	43%
Consumer goods	45%
Consumer services	45%
Investment goods	35%
Healthcare	36%
IT software and services	39%
Technology	42%

Source: Lee and Markham (2016).

As a conclusion from the information in Table 3, the difficulties in developing an industry standard for the success or failure of a product can be cited. There is no real consistency in defining the failure (or success) of a new product. Each new product may have a specific strategic goal. After fulfilling this goal, it is removed from the product line, from the company's offer. For example, you might consider a company that has used a series of new products to make it more difficult for competitors to introduce new products. As soon as a competitor's new product "failed" on the market, the company removed its own new products from the offer. It was a strategic success, not a failure, even though the "new" product was no longer on the market.

To empirically answer the question about the new product success rate level, you can refer to Mintel's global new product database and corporate websites. A sample of new product introductions from 2010–2012 was collected for various food categories. About 1,500 new products were identified from eight food categories: baby food, bread, breakfast cereals, chocolate, dairy, desserts and ice cream, fruit and vegetables, meals and lunch. Mintel's studies defined the failure of a new product if it was not listed on the website at least 18 months after its introduction on the market. When the product was still available on the website in 2013, it was considered as a success. Based on the above definitions, 66 percent of all new products that were tested and reported by Mintel were successful. Success rates have also been calculated separately for eight product categories and there is a significant difference between product categories as shown below (see Table 4).

Table 4

New product success indicators in the food sector

Food product category	Success rate
Baby food	87.5%
Bakery products	70.9%
Cereals	65.1%
Chocolate products	78.2%
Dairy	61.5%
Desserts and ice cream	57.6%
Fruits and vegetables	62.2%
Ready meals / lunch dishes	57.0%

Source: Stanton, (2014).

Research works consistently deal with issues focusing on the processes of new product development, in which the analyzed phenomena are relatively new and perceived as necessary for an effective NPD. Since the 1960s, various phenomena in NPDP have been analyzed in the available literature, and the focus of research is shifting from defining the right process to ensuring its proper implementation, better management, better measurement and continuous improvement.

4. THE SUCCESS MEASURES OF NEW PRODUCT STRATEGY

Measurement of the level of business performance has been an important element of planning and control in the management process for many years (Khosravi, Newton, & Rezvani, 2019). The effectiveness of the control of the new product strategy and new product development process will depend on the adequacy of the measurement instruments used. Historically, companies most frequently and widely used financial measures to monitor the management performance of an organization (Reinertsen & Smith, 2001; Carboni & Russu, 2018). However, financial measures alone do not provide full information about the company's performance. Revenues, profits and other financial resources can be subject to numerous manipulations (limiting expenditure on research and development, training, marketing, falsifying and concealing information). An important problem is what happens over time, when the effects of these "savings" reveal a decrease in competitiveness, a decrease in profits, a loss of growth dynamics and a decrease in the level of success of new products introduced on the market, a decrease in confidence in the company (Rutkowski, 2007).

Effective strategic management also requires the use of non-financial measures. That is why more and more companies measure customer loyalty, employee satisfaction, image, brand reputation and value, competence development and other non-financial aspects of the company's operations. The problem is that many companies fail to link these actions to strategic goals, or establish a relationship between the actions taken and the results achieved (Magnier-Watanabe & Benton, 2017). The consequences are wrong decisions and wasting funds on programs-projects that do not contribute to the improvement of the company's results and its market position. Research has shown that different companies make similar mistakes (Cooper, 2017). Table 5 presents selected goals of the new product strategy which are of different financial, marketing (market) and technological nature and contain detailed criteria in the sense that they significantly determine the overall success of a new product on the market. On the other hand, the level of success of a new product on the market should be treated as a general measure of the company's

competence in the field of product innovation, in particular the effectiveness of the new product development strategy. Table 5 includes both the measures of competence in achieving specific goals in the product innovation process (House-Price model) and the measures related to the level of achieving the goals of new products after the period of commercialization and introduction on the market.

Table 5

Measures of competences in achieving specific goals in the new product strategy

Goals of the product innovation process --- (level of experience and competence)
Specific performance indicators for a new product (e.g. runtime, energy consumption).
Unit production cost.
Time to market TTM – total development time, from the initial stage of development to the start of production.
Time for research and development TRD – time and cost of the research phase to start the development phase.
Break-even point after production launch BEAR – time from the start of production until the investment costs are covered with returns from new product sales.
BET break-even time – the time from the start of the study to the moment when the profits from the product equate with the investment made in a given project.
Rate of return, return on investment RF or ROI – the result of dividing the sum of profit by the sum of investments after commercialization of a new product
Goals of the new product after the commercialization period
Normal break-even point – BEP.
Equalizing capital threshold – the time in which the present value of sales of a new product covers the present value of total expenses.
The threshold for raising capital – the moment when a new product generates a financial surplus that allows for reinvestments that extend the life cycle or support the development of other products.
Net present value – NPV.
Internal Rate of Return – IRR.
Sales of a new product (e.g. in the first 12 months).
The level of profit from the sales of a new product (e.g. in the first 12 months).
Market share of a new product (e.g. in the first 12 months of sales).

Source: Author's elaboration based on: House & Price (1991); Kirsner (2015); Rutkowski (2021).

Previous studies have shown that the success of a new product is determined by the following independent dimensions of factors: related to the recipient of the marketing offer, of a financial nature, related to the effectiveness of the process and technological competences. It should also be remembered that each of these dimensions can also contribute to the failure of a new product. A particularly low level of process efficiency and technological competences can significantly affect the new product failure rate. Therefore, companies often have to sacrifice some level of success in one dimension to be more successful in another. Thus, with the currently available knowledge, there is no ideal process for developing a new product, as evidenced by the long-standing relatively high rate of failure or partial failure of a new product on the market (Castellion & Markham, 2013; Rutkowski 2016; Cooper, 2017).

4. CONSLUSIONS

The statements made in paper are based on examples of bibliographic sources containing the common belief that the new product failure rate is high and published empirical research on the failure rates of a new product on the market. The paper presents the real market effects of new products, success and failure rates, from the point of view of food and non-food companies representing various industries. The useful research measures in the field of marketing and sales effects of new products are proposed.

The indicators presented here are not expected to be fully exhaustive or provide an instant “silver bullet” for the success of product innovations. Different types of managerial bias (e.g., group thinking and confirmatory bias) can make it difficult to access potentially useful information. Nevertheless, the paper discusses direct and significant problems related to the use of established measures of the success of product innovation, also in terms of the food and non-food industries. And at this point, it can be assumed that the indicators of the new product success on markets are better than those presented in the sources referenced in the paper. The research contained in the article provides indicators that can be part of a holistic and effective evaluation of new products on the market.

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