

Study on Market Research on New Product Development

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Abstract

The article underscores the pivotal role of market research in product development, cautioning against the risks associated with inadequate methodologies. It identifies five core research challenges within the New Product Development (NPD) stages and proposes a systematic framework to address them. Validated through focus groups with specialists, this approach aims to provide tailored solutions to each problem, thereby enhancing decision-making in innovation processes. While offering valuable guidance for managers, the study acknowledges potential limitations in generalizability due to its specific research approach, urging further validation in subsequent studies to strengthen the framework's applicability across diverse contexts.

Keywords: Market Research, Product Development, New Product Development (NPD), Innovation, Focus Groups

Introduction

Products that are put up for sale are extremely susceptible to shifting consumer demands and tastes, emerging technologies, and heightened rivalry from both domestic and international suppliers. According to this setting, innovation practices need to be ongoing (Hauser et al., 2006; Lundvall, 2007; Edquist, 2011). However, a tiny fraction of organizations-especially in emerging nations-develop new products due to the significant risk involved in the innovation launch process (Tellis et al., 2009; Story et al., 2015; Chang and Taylor, 2016). According to a study by Evanschitzky et al. (2012), just 25% of product launches are successful overall, despite the significant investment made by businesses who prioritize distinction via product innovation. Errors that keep happening to new products include overestimating the market, misrepresenting the design, putting the product in the wrong place, and communicating poorly (Castellot and Markham, 2013; Kotler and Keller, 2016). The process of creating new products is also hampered by a number of other issues, including a lack of creative ideas, extremely fragmented markets, social and political constraints, accelerated development times, and shortened product life cycles (Jain, 2001; Cankurtaran et al., 2013; Eling et al., 2013; Eppinger and Ulrich, 2015). Organizations seeking to improve this situation should focus on creating superior and unique products; prior to development, a product concept should be clearly defined and valued by the target market; and teams with strong collaborative and cross-functional work performance abilities should be assembled (Sethi et al., 2001; Cooper et al., 2004; Troy et al., 2008; Barczak et al., 2009; Evanschitzky et al., 2012). Market

intelligence and marketing knowledge, besides the ability to work together among teams, is a strong driving of success in product development (Suwannaporn and Speece, 2003; De Luca and Atuahene-Gima, 2007; Barczak and Kahn, 2012; Trainor, et al., 2013; vom Brocke and Lippe, 2015). Specifically, Henard and Szymanski (2001), through a detailed literature review, have identified that among 24 drivers mapped to the success of new products, potential market and knowledge of the consumers' needs have a greater impact on post-launch performance along with differentiation, the capacity of resources and pre-development phase. In this context, marketing research is an important tool throughout all the steps involved in new product development, since it can be used to respond to a wide range of problems that organizations face (Cova and Salle, 2005; Drechsler et al., 2013). However, the misuse of the available research methodologies reinforces the probability of innovation failure to be negotiated in the markets (Ray and Tabor, 2003; Ogawa and Piller, 2006; Veldhuizen et al., 2006; Slater et al., 2014). Therefore, more than using the tool, companies need to know which approaches, collection instruments, and analysis procedures are best suited to the recurring problems that need investigation (Malcolm et al. Malhotra, 2014). Considering the exposed problem, this article aims to develop an exploratory study to make a script of the main types of market research to be carried out along the stages of the innovative products development process, as well as their steps and data analysis procedures. For this purpose, it is first described the market research process, and later, a referential model of the new product development process (NPD). Thereafter, the method used to reach the objectives of the article is specified. Finally, considering the results of the bibliographic research and the focus group with specialists, the market research processes to be developed in the NPD phases are proposed.

Review of Literature

- Troy, Hirunyawipada, and Paswan (2008) contribute to the discourse on new product success by examining the role of cross-functional integration. Their empirical investigation, published in the *Journal of Marketing*, underscores the significance of effective coordination among different functional areas within an organization in achieving successful new product outcomes.
- Urban, Weinberg, and Hauser (1996) delve into the realm of premarket forecasting for really-new products. Their study, published in the *Journal of Marketing*, sheds light on the challenges and methodologies involved in predicting the market performance of innovative offerings before their launch, providing valuable insights for marketers and product developers.
- Veldhuizen, Hultink, and Griffin (2006) offer an empirical analysis of market information processing in new product development. Published in the *Journal of Engineering and Technology Management*, their research investigates how organizations gather, interpret, and utilize market information during the product development process, offering implications for enhancing decision-making and performance.
- Van Kleef, van Trijp, and Luning (2005) provide a critical review of consumer research methods in the early stages of new product development. Published in *Food Quality and Preference*, their study evaluates various techniques employed to understand consumer preferences and behaviors, highlighting the importance of methodological rigor in generating actionable insights for product innovation.
- Vom Brocke and Lippe (2015) present a synthesis of project management literature pertaining to collaborative research projects. Their work, published in the *International Journal of Project Management*, offers valuable directives for managing collaborative endeavors, which are increasingly common in the context of new product development involving multidisciplinary teams.
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- Underhill (2008) explores consumer behavior and the science of shopping in the context of evolving retail landscapes. In “Why We Buy: The Science of Shopping,” the author provides updated insights into consumer decision-making processes, considering factors such as the internet and global consumer trends, which are relevant for understanding consumer preferences in the context of new product launches.
- Zhao, Hofer, and Dahl (2009) investigate the role of imagination-focused visualization in new product evaluation. Their research, published in the Journal of Marketing Research, highlights the impact of visualization techniques on consumer perceptions and evaluations of innovative products, offering implications for marketers seeking to enhance product presentation and communication strategies.

Market Research Process

According to Kotler and Keller (2016), effective market research involves six steps:

1. Defining of the problem and research objectives;
2. Development of the research plan;
3. Data collection;
4. Data analysis;
5. Results’ presentation; and
6. Decision making

Three Types of Projects can be Distinguished when Researchers Carry Out Step

1. Defining of problem and research objectives, which is when the justifications for the need for field research development and the intended outcomes of the research are clarified descriptive, investigative, or causative (Hair, et al., 2008). In addition, the researcher determines the study’s conception, or whether it will be qualitative or quantitative, while defining the problem and its aims (Malhotra, 2014). According to previously cited writers, exploratory type surveys ought to be carried out when the goal is to acquire preliminary data in order to define the problem’s nature and offer potential theories or novel concepts. When defining market features or functions, descriptive research is appropriate; however, when testing cause-and-effect correlations is the goal, causal studies are required. After deciding on the kind of study to be conducted.
2. Create the research plan. This step determines the methodology, the sampling strategy, the instrument, and the best practice for gathering data.
3. Data collection stage is characterized by requiring more time, as well as by the greater probability of errors, especially when the approach that is being used is the survey. In order to minimize the possibility of deviation in the results due to biased data collection, it is suggested to detail the collection procedure plan (Ray and Tabor, 2003).
4. Data analysis involves the interpretation of the data collected. The methodology of data analysis to be performed depends on the initial objective of the research, as well as the type of project (Malhotra, 2014). In the presentation of the results
5. Kotler and Keller (2016) emphasize that it is the responsibility of the researcher to select the results that respond more specially to the problem that led to the study, using appropriate communication techniques and describing conclusions relevant to the decision making.
6. When receiving the results of a market survey, managers should question whether the research carried out was based on an adequate science method (Clancy and Krieg, 2000) and should also reconcile the process of decision making with other data that has relevant business and environmental information, complementing the information generated in held research (Little, 1979)

Research Plan Development

Malhotra (2014) states that there are two possible research approaches: indirect and direct. The project's aims are hidden from respondents in the indirect approach, but given the nature of the instrument, participants in the direct approach can clearly see them. Stated otherwise, when using indirect approach techniques, respondents give answers that would not be clear to a researcher if they were asked a direct inquiry about a topic; in contrast, direct approach techniques make it simpler to get comprehensive and in-depth information. As for the tools to be employed, the indirect approach has projective techniques and observation (Anzieu and Chabert 2004; Underhill, 2008); the direct approach has focus groups, individual interviews, surveys, and experiments. (Kuhfeld et al., 1994; Greenbaum, 1998; Bradburn et al., 2004; Giannarou and Zervas, 2014) The researcher must choose the sampling unit, sample size, and sampling process in the stage known as sampling plan. The selection of the target population that needs to be selected for the research is considered by the sampling unit. The choice of sample size indicates the appropriate number of respondents to be surveyed. Frequently, samples representing less than 1% of the population can yield results that are somewhat credible, provided that the sampling technique selected is trustworthy (Churchill and Iacobucci, 2006; Kotler and Keller, 2016). The sampling process outlines the selection process for the collection's participants. Since probabilistic samples of the population are used to calculate confidence bounds for errors, representative samples should come from these samplings.

Non-probabilistic samplings, on the other hand, can be used when the time or money needed to complete the collection is too great, though they do not permit measuring the error (Hair, et al., 2008). Concerning the data collection instrument, it has a direct relationship with the design and the approach that will be used in the research. This means that in designing the data collection instrument, in addition to the main objective of the study, it should be considered whether it is qualitative or quantitative, as well as whether in-depth interviews focus groups, surveys, or other approaches (Churchill and Iacobucci, 2006; Hair et al., 2008; Malhotra, 2014) Validation is a crucial consideration when it comes to data collection tools. According to the literature, the instrument should be verified by experts or pre-tests should be conducted on a sample of participants who share the same traits as the intended audience. In addition to structured questionnaires, the assessment and scheduling techniques that will be employed need to be taken into account (Bearden and Netemeyer, 1999). Lastly, the research strategy should include information on the contact strategies, or the steps that will be taken to obtain data from the sample's constituents. Researchers can use postal methods (survey) or electronic methods (survey and observation) depending on the type of methodology they are using to gather data. In-person methods include projective techniques, focus groups, individual interviews, observation, survey, and experimentation. Every approach has benefits and drawbacks based on a variety of factors, including the instrument's flexibility, the questions' diversity, the use of physical stimuli, the respondents' anonymity, the amount of time available, and the rate of return. Malhotra (2014) and Churchill and Iacobucci (2006).

Data Analysis

The form of data analysis that will be used stems from the research objective, the type of project that was carried out, and its design. Thus, qualitative exploratory research will have the results submitted to content analysis (Bardin, 2013), while quantitative descriptive and causal surveys will have the data obtained from the collection submitted to statistical analysis (Hair, Et al., 2010), As qualitative research generates a significant amount of research notes or testimonials, content analysis suggests that the frequency of phenomena is counted, seeking to identify relationships among them, and the interpretation of the data is systematized according to conceptual models previously denied by the researcher. In addition to content analysis, qualitative research data

can also be submitted to conversation analysis and semiotic analysis (Pierce, 1991; Goulding, 2005). On the other hand, the statistical analysis of the data coming from quantitative research usually goes through the following stages: univariate analysis, bivariate analysis, and multivariate analysis. In the univariate analysis, frequencies are established for each question researched. In the bivariate analysis, cross-tabulations are performed, and it is possible to calculate different measures of associations between the variables. Finally, a multivariate analysis should be applied when researchers wish to simultaneously analyze multiple measures on each subject or object being investigated (Hair, et al., 2010). Considering the strong use of multivariate analysis techniques in marketing research.

New Product Development and Market Research Reference Model

Lastly, the research strategy should include information on the contact strategies, or the steps that will be taken to obtain data from the sample's constituents. Researchers can use postal methods (survey) or electronic methods (survey and observation) depending on the type of methodology they are using to gather data. In-person methods include projective techniques, focus groups, individual interviews, observation, survey, and experimentation. Every approach has benefits and drawbacks based on a variety of factors, including the instrument's versatility, the questions' diversity, the use of physical stimuli, the respondents' anonymity, the amount of time available, and the rate of return. Malhotra (2014) and Churchill and Iacobucci (2006). However, a thorough analysis of the majority of the suggested reference models reveals that they all have a few common phases. The models take into account several stages, including the creation of the product's concept, planning, detailing, and final evaluation and testing (Cooper, 1983; Clark and Wheelwright, 1995; Roozenburg and Eekels, 1996). Pahl and Beitz, 2013; Eppinger and Uirich, 2015; Kotler and Keller, 2016; Peters et al., 1999; Rozenfeld et al., 2006; Amaral and Rozenfeld, 2007; Crawford and Benedetto, 2008). As a result, the current study choose to describe the new product development process model as it was presented by Amaral and Rozenfeld (2007) and Rozenfeld et al. (2006). This decision is justified since, in addition to the model put out by Peters et al. (1999), it is among the most comprehensively detailed in the literature, incorporating marketing initiatives in a complementary manner and providing more in-depth information on each phase (Ribeiro, 2011). Additionally, the reference model provided by Amaral and Rozenfeld (2007) and Rozenfeld et al. (2006) helps identify and visualize NPD activities within the broader context of development management. This includes the model itself as well as process management, methods, and support tools.

In the reference model of Rozenfeld et al. (2006) and Amaral and Rozenfeld (2007), the development of a new product includes (i) pre-development, (ii) development, and (iii) post-development. In (i) pre development, the main objective is the evaluation of opportunities and evaluation of market demand. At this stage, the steps of strategic product planning and project planning should be considered. In strategic product planning, the objective is to obtain a plan that can align the company's portfolio with the strategic planning of the business unit, that is to say, this step delivers a list of new products to be launched according to the strategic opportunities. With regard to project planning, this should address a brief description of the product, key business goals, the target market for the product, constraints, and assumptions, and product stakeholders. In (ii) development, the activities concerning to evaluation of the product under development begin with the concept test, the prototype test, and the pilot batch test. The authors have listed as stages of development: the informational project, the concept design, the detailed design, the preparation of the product's production, and its launch in the market. Finally, in (iii) post-development, the product is tested on the market. At this stage, the phases are related to the monitoring and improvement of the product or its discontinuity. Figure 1 shows a table summarizing the NPD stages proposed by

Rozenfeld et al. (2006) and Amaral and Rozenfeld (2007), associating the macro steps with each of the stages of development. Since the cost involved in developing new products is high, as well as the probability of failure, at the end of each step it must be decided whether or not the project will continue. Thus, each step has a “gate”, or a control point on which evaluation criteria are established. This means that, at each stage, it is possible for the managers involved to judge whether the project deserves to be conducted for the next stage through the analysis of indicators (Cooper, 1998; Durmuşoğlu and Barczak, 2011). Specially, in pre-development, marketing research can assist in mapping latent demands with consumers, allowing the generation of new ideas (which may correspond to radical or incremental innovations) (Urban, et al., 1996; Troy et al., 1998; Van Hoe er et al., 2006; Veldhuizen et al., 2006; vom Brocke and Lippe, 2015; Chang and Taylor, 2016; Cui And Wu, 2016). In the development phase, marketing research can provide answers to the organization’s doubts about the requirements valued by customers, also about the concept of the product, and the prototype (Matsatsinis and Siskos, 1999; Olson et al., 2001; Hoe er, (1998); Suwannaporn and Speece, 2003; Cova and Sale, 2005; Veldhuizen et al., 2006; Swink and Song, 2007; Alexander et al., 2008; Zhao et al., 2009; Hofmann et al. Dahl, 2013; Slater et al., 2014; by Brocke and Lippe, 2015; Chang and Taylor, 2016; Cui and Wu, 2016). Finally, in the post development phase, the research may contribute to collecting in the market the perceptions that the consumers have of the product that is being sold (Matsatsinis and Siskos, 1999; Moreau et al., 2001; Hoeer 2003; Shih and Venkatesh, Chang et al., 2006; Chang et al., 2004).

Method

The study falls under the category of qualitative research. The study is classified as an exploratory study for all intents and purposes. In terms of the methods utilized, held research and bibliographic research were both done.

Developed in conjunction with the extant theoretical reference on the topic (“market research and new product development process”), bibliographic research was mostly conducted using the Web of Science and Scopus databases. However, the term “field research” refers to the data that the researchers produced specifically in order to address the issue at hand.

In this way, through bibliographic research, it was possible to identify marketing research problem during the NPD stages:

1. Mapping of latent demands,
2. Identic ation of requirements valued by customers,
3. Concept testing,
4. Prototype testing and
5. Evaluation of the product performance with consumers.

Then, to define the appropriate research processes for each of the mapped problems, a focus group was conducted with six specialists from the marketing and production engineering areas, focusing on product management.

Conclusion

The present article identified and suggested methodological procedures for the main types of market research to be carried out during the NPD stages. Taking into account the suggestions made for the (i) mapping of latent demands, it can be concluded that this is a solved problem because the classes (approach, sample, instrument, and analysis procedure) that were used to handle each piece of information provide precise answers and, in both academic and practical terms, speak of unified concepts and relatively easy use. With the increased complexity that comes with processing a high number of identified demands, there may be an apparent issue with the alternate method that uses

AHP. Nevertheless, this disability might be lessened by using specialized software for this purpose. In terms of (ii) identifying the requirements that customers value, the firms might simply carry out the first and second phases, as this structure suggests. On the other hand, the data gathering process for the (iii) idea test requires additional consideration. The concept test is crucial since it allows for the collection of data pertinent to the functionalities. These features would translate into a collection of variables that, when combined, can be modeled to determine an index, indicate whether or not to accept the product, and offer a set of details for improvement. However, in the event of radical innovation, obtaining the sample may be unfeasible due to the requirement for a group of clients with product knowledge. The (iv) prototype test is another instance of this, as it similarly hinges on the innovation's exposure to a customer group. The (v) consumer performance evaluation of a product appears to be the easiest phase because it is frequently carried out for a variety of product kinds. In fact, if the products are meant for extremely specific client classes, getting the sample could be difficult. In conclusion, the suggested classification serves as a framework for validation in subsequent research, which may yield enhancements as certain industries have individuals that create novel and inventive items. Additionally, it is thought that the synthesis presented in this work helps to prevent errors that may arise from insufficient or incomplete marketing research by providing guidance to managers who directly participate in the processes of product discovery

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