European Journal of Sustainable Development (2025), **14**, 3, 503-526 ISSN: 2239-5938
Doi: 10.14207/ejsd.2025.v14n3p503

Sustainable Product Innovation in Business Organizations: Theoretical Insights and Empirical Findings for Long-Term Value Creation

By Katerina Kozludzhova[1]

ABSTRACT:
The paper explores product innovation in business organizations by combining a theoretical review with empirical research findings. The theoretical framework is developed through in-depth review of academic literature that covers six areas of knowledge, related to the concept of "product innovation". Building on literature insights, the conducted empirical study examines business organizations' innovation activities and investigates their experiences, difficulties, and priorities across the various stages of the product innovation process. By empirically validating the literature findings, the paper provides a discussion on the identified key areas of study, outlining the interrelations between them, their practical implications, and potential ways for enhancing the product innovation process. The results reveal how business organizations assess product innovations, identify what they consider critical and highlight what difficulties they face throughout the innovation process, pointing to specific areas for improvement. The paper contributes theoretically by synthesizing diverse perspectives from the literature and presenting a structured view of product innovation that provides a conceptual foundation for the conduction of empirical studies. Practically, the paper offers insights into the organizations' mindset and approaches towards managing product innovations, supporting managers to provide effective tools and practices that foster innovation performances. Finally, the study outlines opportunities for further research studies and necessary actions to improve the effectiveness of the product innovation process.

Keywords: sustainable product innovation, literature review, empirical study, business organizations, innovation activities, challenges, survey results, innovation questionnaire

1. Introduction

Product innovations are widely recognized as a critical driver of business growth, competitive advantage, and long-term sustainability. The dynamic market compels organizations to continuously develop and implement new products that meet evolving customer needs, use emerging technologies, and respond effectively to the competition. Given the strategic importance of product innovations, it is important to gain a deeper understanding of their nature, dimensions, and success determinants.

This paper aims to conduct a comprehensive exploration of the existing literature on several interrelated areas that shape the essence of product innovations. The mentioned areas are proposed by the author of the current paper based on her expertise knowledge and deep research learning. There are six studied areas of focus in the current paper: 1) key aspects of product innovations; 2) types and forms of product innovations; 3) factors that drive product innovations; 4) product innovation barriers; 5) product innovation

[1]Associate Professor, Ph.D. of Business Innovations, Department of Marketing and International Economic Relations, Plovdiv University Paisii Hilendarski, Bulgaria.

process of generating value; 6) role of Design Thinking methodology for fostering successful product innovations.

The paper also seeks to validate and test the relevance of these literature-based concepts within the business organizations. To achieve this, the author conducts an empirical study whose prime task is to uncover which of these literature findings or areas of study are outlined as most important by companies actively engaged in innovation. By comparing the gained theoretical knowledge with the practical views and experiences of business organizations, the study provides valuable insights into what is important for the organizations and how they define the successful product innovation process. Through this dual approach – a literature exploration combined with empirical validation, this paper presents an understanding of the components or the building blocks that contribute to the success of product innovation. The theoretical and empirical key findings explored in the current paper are part of the author's monograph in the field of product innovations.

2. Theoretical Background

In this section, the paper systematically explores the existing body of literature to examine the above-mentioned six research areas. The review of the literature is based on a broad range of scholarly sources and researchers' writings on these topics. In the "Results" section of the paper the author presents both the key literature findings related to product innovations and the empirical results that validate their impact on business organizations and their innovation activities.

2.1. Product innovation: Key Aspects

The overview of the existing literature starts with outlining the core characteristics of product innovations. These are certain elements, which shape the nature of the term and help the understanding of the product innovation concept. It is important to examine and identify the multifaceted dimensions that contribute to the success or failure of the product innovations. The author is putting those aspects into test and focusing to gain the empirical knowledge presented in the next section of the paper. Table 1 shows the reviewed authors whose scientific work has contributed to the exploration and clarifying the core characteristics of product innovations.

Table 1. Reviewed literature: Key Aspects

Product innovation: Key Aspects	**Authors reviewed**
	Rainey, 2009; Krasadakis, 2020; Henderson & Clark, 1990; Larsson, 2017; Farida & Setiawan, 2022; Dogan, 2017; Jové-Llopis & Segarra-Blasco, 2016; Reguia, 2014; Küfeoğlu, 2022; Santos & Zen, 2022; Spacek & Vacík, 2016; Raddats et al., 2022; Sahut et al., 2020; Kahn, 2018; Tabas & Beranová, 2014; Urbancova, 2013; Lindman, 2010; Drucker, 2002; Cooper, 2017; Sayudin, et al., 2023; Lizardo & Furunto, 2020; Dodgson et al., 2013; Annique Un, et al., 2010; Zaefarian et al., 2017; Howlett, 2011; Goffin et al., 2010; Ross, 2009; Wise & Hoegenhaven, 2008; Yang, 2007; Annique Un et al., 2010; Dorin, 2018; Smolnik & Bergmann, 2020; Stošić & Milutinović, 2017; Sorensen & Mattsson, 2016; Cooper, 2011; Verworn & Herstatt, 2002;

Source: Author's own work.

2.2. Product Innovation: Types and Forms

The next literature insights come from exploring the different types and forms of product innovations. This part of the review examines how various authors classify product innovations based on their novelty, degree of changes they introduce, technological intensity, market impact. By analyzing these typologies, the literature review in this field of knowledge provides a clearer understanding of the diverse ways in which product innovations can exist and serves as a major instrument for company's success and response to the changing business environment (Table 2).

Table 2. Reviewed literature: Types and forms of product innovations

Product innovation: Types and Forms	**Authors reviewed**
	Olenick, 2015; Kahn, 2018; Holtskog, 2017; Cooper, 2011; Gunday, et. al., 2011; Tabas, et. al., 2011; Annacchino, 2003; Krasadakis, 2020; Reguia, 2014; Maier, 2018. Sternberg, et. al., 2003; Keeley, et. al., 2013.

Source: Author's own work

2.3. Product innovation: Factors for success

The next literature insights come from exploring the different factors that drive successful product innovation. Many researchers identify and analyze the key factors that contribute to the success of product innovations. These factors range from organizational capabilities, leadership, cross-functional collaborations, parallel activities, multifunctional teams, customer involvement, resource allocation, focus and prioritizing. Table 3 presents the reviewed scientific literature on this area of study.

Table 3. Reviewed literature: Factors for success

Product innovation: Factors for success	**Authors reviewed**
	Chryssochoidis, 2003; Cooper & Edgett, 2019; Rainey, 2008; Cooper, 2011; Evanschitzky, et. al., 2012; Anthony, 2017; Copper & Edgett, 2008; Reguia, 2014; Cooper, Edgett & Kleinschmidt, 2002; Dwivedi et. al., 2021.

Source: Author's own work.

2.4. Product innovation: Barriers

The literature review continues with researching the scientific knowledge on existing barriers to product innovation development. This is an important element in building an effective product innovation process that ensures success and company's growth. Understanding these barriers is crucial, as they determine where the product innovations may fail. Different studies emphasize on what obstacles may arise at various stages of the innovation process, ranging from discovery stage, idea generation, concept and product development to innovation introduction to market. By systematically exploring the literature on various barriers, in the next section of the paper the author identifies main barriers to product innovations and validates which of them are relevant and represents a major obstacle to product innovation development process.

Table 4. Reviewed literature: Product Innovation Barriers

Product Innovation Barriers	Authors reviewed
	Cooper, 2011; Ulwick, 2016; Desai, 2013; Govindarajan, 2016; Carvache-Franco et al., 2022; Pellegrino, 2018; Maldonado-Guzmán et al., 2017; Pachouri & Sharma, 2016; Talegeta, 2014; Jegede & Mustapha, 2022; Christensen et al., 2007; Hippel, 1988; Ulwick & Bettencourt, 2008; Andersson et al. 2009;

Source: Author's own work.

2.5. Product innovation: The process of value

Next, the author explores product innovations as a process of generating value. Innovation creates value. James Womack and Daniel Jones define this value entirely from the customer's perspective as "the right product for the right customer at the right price and at the right time" (Womack & Jones, 1996, p. 16). The product encompasses everything the organization delivers to its customers—both tangible and intangible offerings that are intended to provide value. These products undergo a development process that transforms them from an idea into something the customer can purchase and use to satisfy their needs and preferences. The process of developing a product innovation contains the answers to the questions Why?, What?, For whom?, and How?. A classic and simplified model of the innovation process is represented by three phases: discovery, development, and implementation. In the discovery phase, the company identifies potential opportunities to initiate innovation. The targeted opportunities then enter the development phase, where technical specifications are defined, and the design of the offering is realized. In the implementation phase, the product is introduced to the market. It is precisely this "implementation" that is identified as a core component in the very concept of "innovation" (Kozludzhova, 2018). The conducted literature review outlines product innovation as a comprehensive process of creating value through the implementation of the individual stages of the innovation process, which requires adaptability, flexibility, a specific way of thinking and the use of effective methods and techniques.

Table 5. Reviewed literature: The process of value

Product innovation: The process of value	Authors reviewed
	Koontz & Weihrich, 2015; Kahn, 2018; Reguia, 2014; Varma, 2015; Kano, 1984; Dyer & Furr, 2014; Rainey, 2008; Holt, 2002; Marzi, 2022; Deng et. al., 2022; Algotsson & Öhlander, 2020; Brandtner et. al, 2014; Paju, 2013; Jalonen, 2011; Furr & Dyer, 2014; Trott, 2017; Poppendieck, 2003; Radeka, 2012; Cooper, 2011.

Source: Author's own work.

2.6. Design Thinking

Within academic studies, there is one more area of study, which requires attention and a systematic study – this is the Design Thinking methodology. An approach that helps and stimulates business organizations to stay adaptive, flexible, focus and creative in the product innovation process. Design Thinking is an approach oriented towards customers and giving that central role to the customer in the development process. Studying the

fundamental principles of Design Thinking could enable organizations to gain a deeper understanding and sustainable knowledge on the innovation process in order to improve their effectiveness across each of its stages. Table 6 presents the reviewed scientific literature on this area of study.

Table 6. Reviewed literature: Design Thinking methodology

Design Thinking Approach	Authors reviewed
	Kelly, 2013; Roterberg, 2020; Rösch et al. 2023; Leavy, 2010; Lewrick, 2023; Brenner & Uebernickel, 2016; Brown, 2009; Lockwood, 2009; Rösch, et.al., 2023; Liedtka, 2011; Meinel, et. al., 2020; Eradatifam, et. al., 2020; Wylant, 2008.

Source: Author's own work.

3. Methodology

An empirical study requires identifying the empirical meanings of theoretical concepts. The transition from the theoretical examination of product innovations in innovative companies from the software industry to their empirical analysis presupposes conducting a logical analysis of the key concepts used. For this purpose, it is necessary to implement a fundamental methodological procedure, namely the operationalization of the core concept of product innovation. Operationalization describes the structural characteristics, aspects, and dimensions of product innovations. It breaks down the core concept into empirical indicators and measures, representing a complete set of attributes that define the object of investigation. These indicators enable the registration of data, which reveal the scope of the empirical analysis of the concept of product innovation. Operationalization is the process of transforming this key concept into empirical indicators and requires the construction of a conceptual and a measurement definition. By decomposing the concept of product innovation and presenting the additional aspect-related concepts, the analysis penetrates deeper into its structure, enabling subsequent measurement. A conceptual definition is developed, setting out the meaning of the studied concept, distinguishing it from other related concepts. The conceptual definition reflects the essence of the concept of product innovation. For the purposes of this study, the conceptual definition is presented in Table 7.

Table 7. Conceptual definition

Main Concept	Decomposed Aspect-Related Elements
Product Innovation	Product innovation key aspects Types and Forms of product innovations Factors for product innovations Successful product innovations Unsuccessful product innovations Product innovation barriers Innovation strategy Innovation process Stage–Gate Process Model Strategy "Outcome-Driven innovations" Design Thinking Methodology

Source: Author's own work.

The measurement definition makes it possible to operationalize the conceptual definition by describing the actions that the researcher must undertake in order to assign a measurable value to the studied concept. The developed measurement definition is shown in Table 8.

Table 8. Measurement definition

Measurement Definitions
1. To explore the identified aspects of product innovation.
2. To investigate the relationship between the product innovation's success and the outlined aspects.
3. To analyze the identified factors that drive the development of successful product innovation.
4. To establish whether there is a relationship between the defined factors and the product innovation's success.
5. To collect primary data on the barriers to the development of successful product innovation.
6. To study the relationship between the success of product innovation and the overcoming of the outlined barriers.
7. To determine the dependency between the barriers and the uncertainty in the innovation process.
8. To examine the stages of the product innovation process.
9. To investigate the existing obstacles to the implementation of the stages of the innovation process.
10. To explore the importance and essence of the company's innovation strategy.
11. To establish whether there is a relationship between the application of the "Outcome-Driven Innovation" strategy and the success of product innovation.
12. To determine whether there is a relationship between the application of the "Stage-Gate" process model and the success of product innovation.
13. To explore the applicability of the principles of Design Thinking in the innovation process.
14. To reveal the relationship between the principles of Design Thinking and the product innovation's success.

Source: Author's own work.

The developed conceptual and measurement definitions of the concept of product innovation support the derivation of empirical indicators for studying product innovations in the software industry, presented in Table 9.

Table 9. Empirical indicators for studying product innovations

Decomposed Elements of the Concept of Product Innovation	**Empirical Indicators**
Product Innovation Aspects	Leadership of change Strategic orientation Value creation Uniqueness Diverse knowledge Creativity Multidisciplinary Collaboration Company's competencies Parallel activities Customer focus
Types and Forms of product innovations	Types Dimensions Categories

Innovation activities	Types of innovation activities Successful product innovation
Factors for product innovations	Categories Drivers of product innovations Guidelines for creating product innovations External trends
Product innovation Barriers	Types Degree of influence
Innovation Strategy	Importance of the innovation strategy Core elements of the innovation strategy Barriers to innovation strategy implementation Types of innovation strategies
Strategy "Outcome-Driven Innovations"	Stages of the process Customer needs Growth opportunities Market segmentation Prioritization of growth opportunities Methodology for measuring value
Innovation process	Approaches to innovation Stages of the process Obstacles Managing uncertainty Managing of waste Innovator's skills Flexibility and adaptability
Stage-Gate Process Model	Components of the process Stages of the process Key activities Decision gates
Design Thinking Methodology	Core principles Stages of the process

Source: Author's own work.

The conducted empirical research uses a mixed research strategy that involves the application of qualitative and quantitative data collection methods. The qualitative method is oriented towards recording in-depth and multifaceted information about the opinions and behaviours of the business organizations under observation. The use of the qualitative method aims to obtain data regarding more complex areas related to the concept of product innovation. For its implementation, in-person interviews are conducted with 10 individuals, managers of software companies. The personal interviews are conducted by the researcher using the "note-taking" technique. The discussions focus on gathering primary data related to broader aspects such as challenges of managing the innovation process, the role of the innovation strategy, the practical implementation of "Outcome–Driven Innovation" strategy, the "Stage-Gate" process model and Design Thinking methodology within the organizations. The quantitative method is oriented towards the search for stable, objective and recurrent economic relationships to support the investigation of the empirical knowledge. An online survey is conducted with 20 close-ended questions. The application of quantitative method increases the objectivity and definiteness of the scientific conclusions. For the purpose of the empirical study, the structure of the research methodology is shown in Table 10.

Table 10. Research methodology

Stages	Research Design	Research Strategy	Research method	Research instrument
Stage 1:	Descriptive	Quantitative Method (Structured)	Survey	Online questionnaire
Stage 2:	Descriptive	Qualitative Method (Unstructured)	Survey	In-person interview

Source: Author's own work.

The online questionnaire consists of 20 closed-ended questions, which are made available to respondents in electronic format. The formulated questions are organized in seven groups, shown in Table 11:

Table 11. Online Questionnaire Content

Question Groups	Area of focus
Group 1: Characteristics of software companies in relation to their innovation activities.	Size of the company. Types of innovation activities. Types of companies according to their innovation activities.
Group 2: Product innovation types	Types Forms Categories
Group 3: Product innovation aspects	Importance of the core characteristics
Group 4: Factors for product innovation success	Importance of the factors to business organizations. Drivers for product innovations. External trends for developing product innovations.
Group 5: Barriers to product innovations	Types of barriers. The effect of the barriers on the innovation process.
Group 6: Product innovation as a process	Management of uncertainty. Types of uncertainties within the stages of the innovation process. Difficulties in the execution of the innovation process.
Group 7: Design Thinking methodology	Principles of the process. Importance of the principle.

Source: Author's own work.

The online questionnaire and the in-person interviews follow the logical structure presented in Table 12.

Table 12. Logical Structure of the conducted study

1. Online questionnaire			
Variable	**Levels of Measurement**	**Type of Scale**	**Type of Question**
Company size	Nominal	-	Multiple choice
Innovation activity	Nominal	-	Multiple choice

Share of "product innovations"	Ratio	Rating scale	Scale question
Types	Nominal	-	Multiple choice
Drivers	Ordinal	Matrix scale	Scale question
Aspects	Ordinal	Likert scale	Scale question
Factors	Ordinal	Importance scale	Scale question
Successful product innovation	Ratio	Rating scale	Scale question
Unsuccessful product innovation	Ratio	Rating scale	Scale question
Barriers	Ordinal	Matrix scale	Scale question
Uncertainty	Ordinal	Rating scale	Scale question
Stages of Innovation process	Ordinal	Atribute scale	Scale question
Principles of Design thinking	Ordinal	Matrix scale	Scale question
2. In-person interviews			
Innovation Strategy	The importance of innovation strategy. Selection of an innovation strategy and definition of the appropriate strategic areas. Components of the innovation strategy. Barriers. Winning opportunities for the development of product innovation.		
Strategy "Outcome-Driven Innovations"	Approaches for implementing the innovation process. Common mistakes in developing product innovation. Prioritization of innovation projects. Challenges in selecting innovation projects. Measuring the value of a product innovation. Understanding customer needs. Customer needs as winning opportunities.		
Innovation process	Flexibility and adaptability. Creativity in the innovation process. The essence and significance of the stages of the innovation process. Innovator's skills. Moving an idea to the market. Ineffective activities throughout the innovation process.		
Stage-Gate Process Model	Involvement of top management. The importance of "best practices" for implementing the innovation process. The significance of the "gates". Multifunctionality and parallel activities. Examination of the applicability of the key characteristics of the Stage-Gate model.		
Design Thinking	Examination of the applicability of the Design Thinking methodology. Significance of the core principles of the approach.		

Source: Author's own work.

The conducted study focuses on the innovation activities of companies operating in the software industry for the 3-year period (2021-2023). The population is presented by 85 business organizations, members of a software association. The sample size is 30 units. The sample type is a non-probability sampling, where the researcher has influence over the selection of the study units. There is a typological criterion, set by the researcher: these are business organizations that manage and execute a product innovation process. The sampling model used is a "voluntary response sampling". The author decides to use this sampling model because participants that take part in the survey are interested in the topic and show readiness for a responsible participation, giving their accurate and true answers.

The author's choice to use a non-probability sampling is also explained by the assertion that the study does not aim to obtain representative data or precise estimates of the population. The purpose of the empirical investigation is to include respondents that have an expert knowledge and willingness to provide a reliable data. The selection of respondents for the conduction of both qualitative and quantitative surveys is based on the following criteria: 1) Respondents have an expert knowledge in the field of product innovation; 2) Respondents manage and execute product innovation process within their organizations; 3) Respondents are product managers in software companies; 4) Respondents agree to participate; and 5) Respondents are willing to share their knowledge and contribute to the study of product innovations in the software industry.

In the next section of the paper, the author presents the results of the conducted quantitative study, which is part of a broader research study. The result section does not include insights from the qualitative study. The findings from the in-person interviews will be presented in a separate publication.

4. Results

This section presents the results of the study, beginning with a synthesis of the theoretical knowledge obtained from the literature review on key areas of study that shape the essence of product innovations. As mentioned at the beginning section, the theoretical insights cover six main areas of research: 1) core aspects of product innovation; 2) types and forms of product innovation; 3) factors that drive product innovation; 4) product innovation barriers; 5) product innovation process of generating customer value; 6) role of Design Thinking methodology for fostering successful product innovations. Following the theoretical overview, the result section of the paper proceeds to present the empirical findings based on the data obtained by the conducted primary research study, highlighting which concepts are validated and how they relate to business practices.

The result section of the paper is structured in two parts: first, a presentation of what the theoretical literature reveals about the key areas of product innovation; and second, an analysis of the empirical data collected during the conducted primary research study, illustrating how these theoretical concepts are reflected in practice. The results presentation follows the described in Table 13 structure.

Table 13. Structure of the Results section

1. Research area of knowledge in product innovation concept	What are the areas covered in the study?
2. Theoretical knowledge	What is found in the scientific literature?
3. Empirical knowledge.	What is found in the conducted empirical study?

Source: Author's own work.

4.1. Research area: Aspects of product innovation

The result presentation starts with the first area of study, which is the product innovation aspects. Based on the in-depth literature study the author outlines the following, shown in Table 14.

Table 14. Theoretical knowledge: Aspects of product innovation

Product innovations trigger change.
Product innovations deliver value.
Product innovations support uniqueness and contribute to company's differentiation.
Product innovations play a key role in shaping company's strategic approaches.
Product innovations involve collaborations.
Product innovations focus on a company's strengths and core competencies.
Product innovations integrate knowledge from various disciplines.
Product innovations require creativity.
Product innovations involve parallel activities.
Customer plays a central role in the innovation process.

Source: Author's own work.

The empirical knowledge evaluates these core characteristics of product innovations, as identified in the theoretical framework. These aspects are validated based on the responses from the conducted empirical study, using a scale ranging from extremely important to extremely unimportant. The findings, summarized in Table 15, reflect the degree to which the observed business organizations agree with each aspect. The results validate their relevance, confirming their importance in practical business contexts and aligning closely with the theoretical insights derived from the literature.

Table 15. Empirical knowledge: Importance of the Product Innovation Key Aspects. Data is in percentages.

Key aspects	**Absolutely Agree**	**Agree**	**Neither, Nor**	**Disagree**	**Absolutely disagree**
Product innovations trigger change.	50.0	38.9	11.1	0.0	0.0
Product innovations deliver value.	11.1	77.8	11.1	0.0	0.0
Product innovations support uniqueness and contribute to company's differentiation.	11.1	77.8	11.1	0.0	0.0
Product innovations play a key role in shaping company's strategic approaches.	77.8	16.7	5.6	0.0	0.0
Product innovations involve collaborations.	38.9	38.9	11.1	5.6	5.6
Product innovations focus on a company's	22.2	50.0	27.8	0.0	0.0

strengths and core competencies.					
Product innovations integrate knowledge from various disciplines.	22.2	50.0	27.8	0.0	0.0
Product innovations require creativity.	33.3	50.0	16.7	0.0	0.0
Product innovations involve parallel activities.	16.7	22.2	33.3	5.6	22.2
Customer plays a central role in the innovation process.	83.3	11.1	5.6	0.0	0.0

Source: Author's own work.

4.2. Research area: Types and forms of product innovation

Next, the paper presents theoretical and empirical knowledge on the various types and forms of product innovations. The literature outlines several ways to classify product innovations based on criteria such as novelty, technological complexity, market orientation, and customer value. These are diverse approaches business organizations may adopt to develop product innovations. Table 16 presents the main literature knowledge in this field of exploring product innovations.

Table 16. Theoretical knowledge: Types and forms of product innovation

Types of product innovations
Implementation of new products
Implementation of improved products
Implementation of new product lines
Extension of existing product lines
Cost reductions
Entering new markets
Forms of product innovations
New to market.
New to the organizations
Categories of product innovations
Incremental innovations
Radical innovations
Disruptive innovations

Source: Author's own work.

The empirical findings on product innovation's types and forms are shown in Table 17. It illustrates how business organizations apply these types and forms of product innovations in practice and which are most commonly implemented and considered most relevant within their innovation activities.

Table 17. Empirical knowledge: Types and forms of product innovation

Types of product innovations	**Share of companies %**
Implementation of new products	25.5
Implementation of improved products	25.5
Implementation of new product lines	9.1
Extension of existing product lines	16.4
Cost reductions	7.3
Entering new markets	16.4
Forms of product innovations	
New to market.	48.0
New to the organizations	52.0
Categories of product innovations	
Incremental innovations	57.7
Radical innovations	38.5
Disruptive innovations	3.8

Source: Author's own work.

4.3. Research area: Key factors that drive product innovation

Next, the paper discovers the theoretical and the empirical knowledge on the key factors that drive the development of product innovations. Table 18 presents the theoretical knowledge in this field grouped in two parts: external trends and main factors.

Table 18. Theoretical knowledge: Key factors that drive product innovation

External trends to foster product innovations
Technology growth
Changes in customer needs
Shortening of the product life cycle
Increasing the competition
Globalization
Internet
Main factors
Preliminary project evaluation
Time to market

Clear definition of the product
Spiral development
Effective management of the product portfolio
Support of the top management
Choice of the right innovation strategy
Focus on the right innovation projects
Flexibility of the product innovation process
Organizational climate and culture for innovations

Source: Author's own work.

It is essential to validate which factors for creating product innovations are defined as important for the business organizations participating in the study. This allows a comparison between the theoretical framework and the practical perspectives of the observed business organizations, helping to identify which factors are most valued in the product innovation processes. The empirical results, presented in Table 19, illustrate the respondents' evaluations based on a scale from extremely important to extremely unimportant, offering insight into the significance of each factor in the context of product innovation success.

Table 19. Empirical knowledge: Key factors that drive product innovation. Data is in percentages.

External trends to foster product innovations	**Extremely important**	**Important**	**Neither, Nor**	**Unimportant**	**Extremely unimportant**
Technology growth	33.3	38.9	22.2	5.6	0.0
Changes in customer needs	50.0	33.3	11.1	5.6	0.0
Shortening of the product life cycle	0.0	16.7	33.3	27.8	22.2
Increasing the competition	5.6	27.8	22.2	38.9	5.6
Globalization	0.0	38.9	27.8	27.8	5.6
Internet	27.8	38.9	16.7	11.1	5.6
Main factors					
Preliminary project evaluation	33.3	38.9	16.7	11.1	0.0
Time to market	11.1	44.4	33.3	11.1	0.0
Clear definition of the product	22.2	27.8	38.9	11.1	0.0
Spiral development	44.4	33.3	22.2	0.0	0.0
Effective management of the product portfolio	16.7	50.0	27.8	5.6	0.0

Support of the top management	55.6	38.9	5.6	0.0	0.0
Choice of the right innovation strategy	38.9	38.9	16.7	0.0	5.6
Resource Allocation and Focus on the right innovation projects	38.9	50.0	5.6	5.6	0.0
Flexibility of the product innovation process	33.3	50.0	16.7	0.0	0.0
Organizational climate and culture for innovations	33.3	44.4	16.7	5.6	0.0

Source: Author's own work.

4.4. Research area: Barriers to product innovation

The next area of research is related to the barriers to product innovation. The theoretical review suggests the following barriers given in Table 20. Understanding these barriers is crucial, as they could significantly affect the innovation process at various stages.

Table 20. Theoretical knowledge: Barriers to product innovation

Lack of accurate preliminary assessment of the innovation project
Lack of understanding customer needs
Lack of focus
Lack of multifunctional teams involved in the innovation process
Innovation development takes too long
Uncertainty of the innovation process
Unstable product specifications and project scope
Lack of a methodology for collecting, evaluating, and selecting ideas
A dominant mindset that favors the past and rejects risk-taking
Difficulty in recognizing growth opportunities

Source: Author's own work.

Table 21 presents the empirical insights and validation of these barriers based on the responses collected during the survey. Participants are asked to assess the extent to which each barrier affects the development of product innovations within their organization. The results reveal which barriers are most commonly experienced and considered most critical by the observed business organizations.

Table 21. Empirical knowledge: Barriers to product innovation. Data is in percentages.

Barriers to product innovation	**Extremely High**	**High**	**Neither, Nor**	**Low**	**Extremely Low**

Lack of accurate preliminary assessment of the innovation project	16.7	44.4	16.7	16.7	5.6
Lack of understanding customer needs	16.7	38.9	22.2	11.1	11.1
Lack of focus	22.2	33.3	11.1	22.2	11.1
Lack of multifunctional teams involved in the innovation process	5.6	38.9	16.7	11.1	27.8
Innovation development takes too long	16.7	22.2	33.3	22.2	5.6
Uncertainty of the innovation process	5.6	27.8	33.3	27.8	5.6
Unstable product specifications and project scope	5.6	27.8	33.3	27.8	5.6
Lack of a methodology for collecting, evaluating, and selecting ideas	0.0	22.2	27.8	33.3	16.7
A dominant mindset that favors the past and rejects risk-taking	0.0	0.0	33.3	44.4	22.2
Difficulty in recognizing growth opportunities	11.1	11.1	33.3	27.8	16.7

Source: Author's own work.

4.5. Research area: The product innovations process

The next area of research focuses on the innovation process and its stages. It is important for the author to examine and identify which stages are considered most challenging. Understanding where difficulties arise is an important step towards understanding the innovation process itself and finding ways to support the successful execution of the process. Table 22 presents the key stages of the innovation process based on the conducted literature study.

Table 22. Theoretical knowledge: Stages of the product innovation process

Discovery
Collection of information
Generation of ideas
Product Concept development
Product Development
Validation
Note: The implementation stage is not subject of the current research study

Source: Author's own work.

The empirical findings, presented in Table 23, give insights into the extent to which companies experience difficulties across the different stages of the innovation process. Respondents are asked to evaluate each of the stages and indicate the scale of difficulties they encounter, using a predefined scale ranging from extremely high difficulty to extremely low difficulty.

Table 23. Empirical knowledge: Stages of the product innovation process. Data is in percentage

Stages of the innovation process	Extremely High	High	Neither, Nor	Low	Extremely Low
Discovery	0.0	22.2	22.2	38.9	16.7
Collection of information and opportunity analysis	5.6	33.3	33.3	22.2	5.6
Generation of ideas	0.0	0.0	33.3	61.1	5.6
Product concept development	5.6	16.7	33.3	38.9	5.6
Product Development	0.0	22.2	22.2	50.0	5.6
Validation	0.0	33.3	33.3	33.3	0.0
Note: The implementation stage is not subject of the current research study.					

Source: Author's own work.

4.6. Research area: Design Thinking methodology

The final research area presented in this paper addresses the adoption of the main principles of Design Thinking within the innovation process. Table 24 outlines the key principles of the Design Thinking methodology.

Table 24. Theoretical knowledge: Principles of Design Thinking methodology

Focus on the customer
Acquisition of knowledge throughout the product innovation development process
Generation of new and unique ideas
Rapid implementation of selected ideas
Doing Experiments
Involvement of many people in the process
Building multidisciplinary teams

Source: Author's own work.

The empirical findings, presented in Table 25, provide valuable insights into the application of Design Thinking principles in product innovation. Respondents are asked to what extent they believe these principles could apply in the product innovation process. The data highlights which aspects of the methodology are most embraced by companies and contribute to the success of their innovation efforts.

Table 25. Empirical knowledge: Principles of Design Thinking methodology. Data is in percentage.

Principles	Extremely Applicable	Applicable	Neither, Nor	Inapplicable	Extremely Inapplicable
Focus on customer	66.7	27.8	0.0	0.0	5.6
Acquisition of knowledge throughout the product development process	27.8	44.4	27.8	0.0	0.0
Generation of new and unique ideas	11.1	61.1	22.2	5.6	0.0
Rapid implementation of selected ideas	22.2	44.4	22.2	11.1	0.0
Doing Experiments	33.3	27.8	27.8	11.1	0.0
Involvement of many people in the process	27.8	11.1	22.2	22.2	16.7
Building multidisciplinary teams	27.8	27.8	27.8	11.1	5.6

Source: Author's own work.

5. Discussion and Conclusion

Considering the six areas of research presented in the current paper, in the discussion and conclusion section the author outlines the key insights and findings based on the obtained results. The author synthesizes theoretical knowledge with empirical evidence to highlight which of the aspects, factors, types and forms, barriers, stages of the product innovation process are most critical for business organizations regarding the development of product innovations.

5.1. Discussion: Product innovation key aspects

The analysis confirms their fundamental role in developing successful product innovations. Both theoretical knowledge and empirical data validate that customer focus, collaborations, diverse knowledge and multidisciplinary teams are widely recognized as critical components. The research highlights that organizations place high importance on the product innovation as a driver for change and adaptation, the product innovation as a foundation for strategic decision and directions, and the importance of using the company's strengths and leading positions when developing product innovations. The observed organizations strongly support the statement that product innovation is about creating value for the end user and highlight the uniqueness in the context of product innovations. Regarding the parallel activities, business organizations appear uncertain in their responses. This may indicate difficulties in executing parallel activities or a lack of experience in managing those activities effectively.

5.2. Discussion: Types and forms of product innovation

The empirical data collected through the study offers a valuable perspective on the types and forms of product innovations implemented by business organizations over

the examined three-year period (2020–2022). When comparing the theoretical understanding with the actual business practices, several key insights emerge. The findings indicate that companies place equal emphasis on the development of entirely new products and improvements of existing products, both present the biggest share of the developed product innovations. Both radical innovations and incremental improvements are central to a company's innovation strategy. Only 3.8% of the studied organizations develop disruptive innovations, which confirms that most organizations tend to pursue lower-risk innovation paths with more predictable outcomes, serving existing customers. Extensions of existing product lines and entry into new markets each account for 16.4 % indicating that organizations pursue diversification and market expansion strategies through developing product innovations. Cost reduction as a type of product innovation is less represented (7.3%), which could suggest that value creation rather than cost efficiency may be the primary focus of product innovation efforts. Regarding the forms of product innovations (new to the organization, and new to the market), there is a relatively balanced distribution which supports the understanding that organizations innovate not only to compete externally into the market but also to enhance their internal capabilities and offerings.

5.3. Discussion: Key factors that drive product innovation

The empirical results offer a deep understanding of the extent to which different external and internal factors influence the development of product innovations. The data shows that "changes in market needs" are perceived as the most influential driver of product innovations. This finding confirms the statement that customer needs are a primary trigger for product innovation, especially in competitive and dynamic environments.

The findings also confirm the technological capability as a key competitive differentiator. Business organizations recognize the significance of the "technology growth" for innovations**.** In contrast, "shortening of product life cycles" appears to be a less significant factor. "Increasing competition and globalization" receive more neutral ratings. This could be due to the fact that the studied business organizations operate in niche or local markets where these global pressures are less intense.

The obtained primary data also identifies "customer focus" as the most crucial success factor. This aligns with theoretical knowledge which highlights the importance of customer-centered innovations. "Support from top management" is also highly rated. This underscores the strategic role of leadership in providing direction, inspiration, and fostering a culture that favours the development of innovations. In terms of the "spiral development", respondents rate this factor as extremely important, which confirms its growing relevance in managing uncertainty and incorporating user feedback throughout the product innovation process. Other factors that respondents outline as extremely important are: "preliminary evaluation of innovation projects", "creativity in the innovation process" and "implementation of unique products". These findings demonstrate that organizations recognize the necessity of strategic foresight, creative capabilities, and uniqueness as key for successful product innovation. On the other hand, factors such as "time to market" and "clear product definition" receive moderate evaluations. Only 11.1% of respondents rate "time-to-market" as extremely important.

This figure could be explained by the fact that the studied business organizations operate in an environment where market competition is moderate and product lifecycles are relatively stable. Business organizations may also focus on quality and customer-fit innovations over speed. The studied business organizations also outline the "Choice of the right innovation strategy", "Focus on the right innovation projects", "Flexibility of the product innovation process", "Effective management of the product portfolio", "Organizational climate and culture for innovations" as key success factors for developing product innovations. These findings highlight that strategic alignment, innovation project prioritization, organizational flexibility and adaptability are recognized as critical drivers of sustained innovation success. Together with a strong customer orientation and top management support they form the foundation for building an effective innovation capability within the business organization.

5.4. Discussion: Barriers to product innovation

One of the strongest barriers identified by the studied business organizations is the "Lack of accurate preliminary assessment of the innovation project". Business organizations outline the importance of this factor but struggle in overcoming the obstacles when evaluating innovation projects. The data suggests that many organizations may not employ a systematic evaluation framework when evaluating innovation projects, which leads to inefficient resource allocation and unrealistic expectations throughout the innovation process. This could be another area of research where scholars could contribute by enhancing theoretical knowledge and developing frameworks for effective evaluation of innovation projects.

Similarly, highly rated is the barrier "Lack of understanding customer needs". This barrier emerges as a major constraint. Customer focus is considered a crucial factor for product innovation success. But business organizations still struggle to understand needs and they lack effective tools and methodologies to properly define those needs. The data also points to another barrier to product innovations, this is the "lack of multifunctional teams". Those teams are really hard to manage and lead. Business organizations first need to create certain environment that fosters those multifunctional collaborations and then have the experience and good practices to manage those teams. An obstacle such as "Unstable product specifications and project scope" is also recognized as a significant issue in terms of developing product innovations. Barriers, such as the "Lack of a methodology for collecting, evaluating, and selecting ideas", "A dominant mindset that favors the past and rejects risk-taking" are not perceived as major issues. However, a substantial proportion of respondents report the "Lack of focus" as a barrier to product innovations. This could be due to the fact that organizations nowadays are surrounded by numerous innovation opportunities and potential areas for success. As a result, they are often distracted and tend to reallocate resources in pursuit of the next promising project.

5.5. Discussion: Difficulties in executing the product innovation process

According to the data collected about the difficulties business organizations experience when executing the innovation process, several important insights emerge. The stage where organizations seem to experience the least difficulty is the "Generation of ideas". This suggests that companies are relatively confident in their ability to come up

with new and unique ideas. It can be said that business organizations use proper techniques and practices to foster creativity and encourage the generation of diverse ideas.

In contrast, more significant difficulties appear in the stage "Gathering of information and opportunity analysis". Business organizations may be able to generate ideas, but they show less confidence in assessing market potential, gathering data and aligning the available resources to the new opportunities. This stage requires both qualitative and quantitative analysis, cross-functional expertise, access to relevant primary and secondary data. A similar trend is observed in the "Product concept development" and "Product development" where one in four organizations report difficulties to a "rather high" degree. These stages require translating ideas into actionable product blueprints and involve cross-functional collaboration, multidisciplinary teams, prototyping, doing experiments and involving customers in the innovation process.

In terms of "Product validation", a third of organizations report experiencing difficulty to a "rather high" degree, and no respondents reported it as "extremely low." This stage, which includes testing the product, collecting user feedback, and ensuring that the offering aligns with real customer needs, is crucial for developing successful product innovations, ones that are accepted by the market and satisfy customer needs. The difficulty here may be related to insufficient customer involvement or inadequate tools for testing and validating the innovations before launch.

Regarding the "Discovery" stage of the innovation process, it appears less problematic, but still one in four organizations still experience difficulties. The overcoming of those difficulties requires the establishment of a clear innovation strategy, knowledge on a company's products, knowledge on markets, capabilities in environmental scanning, identifying customer needs and recognizing long-term innovation potential.

In summary, the data reveal that there is just one stage of the innovation process that business organizations do not experience difficulties and feel quite confident – this is the "Generation of ideas" stage. All other stages of the innovation process require scientific focus and systematic efforts in deeply understanding the innovation process and how it changes over time and suggesting relative methodologies that reduce uncertainty and increase the process predictability.

5.6. Discussion: Design Thinking principles

The data on the application of Design Thinking principles in developing product innovations shows a strong emphasis on "Customer focus" as the most significant and playing an extremely high role in the product innovation processes. This highlights how businesses organizations increasingly recognize the need of understanding and addressing customer needs to drive successful product innovations. Another important principle is the "Acquisition of knowledge throughout the product development process". This suggests that business organizations value continuous learning and adaptation throughout the innovation process. The innovation process is a learning process. You do not need to have and know the whole picture before starting the innovation. When it comes to "Generation of new and unique ideas" respondents acknowledge its importance at a rather high or extremely high level. This data underscores the recognition that creativity and idea diversity are critical to differentiating products and staying competitive in dynamic markets. "Rapid implementation of selected ideas" also emerged as a relevant principle,

This indicates an awareness of the need to accelerate innovation cycles to respond quickly to market demands. Regarding the "Experimentation", a significant share of respondents give neutral responses or indicate lower importance and application of the principle. This is a very interesting area to further scientific exploration. The experiments in the innovation process take a central place and reduce the risk and uncertainty. The experiments are tools to check the product value before launch. If organizations could increase the experiments they do, they will definitely increase the success of their innovations. But why is there still a considerable share of business organizations that undervalue the importance of the experiments in the innovation process? This could be a major research question.

Interestingly, the principle "Involvement of many people in the process" receives more divided opinions. Business organizations are not united in their responses. It is widely mentioned that the innovations require the "WEQ", not the "IQ". Factors such as multidisciplinary teams and multi-functional collaborations are defined as key for successful product development. Regarding "Building multidisciplinary teams ", the principle is considered important by slightly more than half of the respondents, however, a considerable share of respondents remain neutral or low in their assessment. Again, the involvement of multidisciplinary teams is considered important but having in mind the multidisciplinary teams as a challenge organizations are experiencing, the reason for this data could be found in the notion that the multidisciplinary is still not so widely implemented in the innovation process. The challenges organizations face in managing multidisciplinary teams could explain this gap between perceived importance and actual application. Overall, these findings reflect a strong alignment with the foundational principles of Design Thinking. Those findings underline the importance of the Design Thinking methodology and its application in the product innovation process.

5.7. Conclusion

This paper explores product innovation in business organizations by combining a thorough theoretical review with empirical research finding. The theoretical part explores six areas of research related to product innovations, which is the theoretical contribution of the paper. Based on the overviewed academic literature, the author identifies specific fields of knowledge which are subsequently examined by the conduction of an empirical research study. The empirical research validates the theoretical findings by examining the real-world experiences of business organizations over the three-year period.

The paper discovers certain gaps and suggests specific directions for further research mainly related to: 1) development of frameworks for preliminary evaluation of innovation projects; 2) development of methodology for managing multidisciplinary teams involved in the innovation process and 3) development of methodology for implementing parallel activities within the innovation process. Turning these priorities into actionable practices demands improved governance structures, clearly defined roles, and mechanisms for continuous learning. Organizations should start by implementing transparent evaluation criteria, enhancing effective cross-functional collaboration, and strengthening multidisciplinary teams through regular training, fostering an environment that supports parallel activities and encourages iterative learning.

The main limitation of the research study is related to the focus on a specific sector, this is the software industry and the conclusions may not fully reflect practices in other industries. The author suggests that future researches extend to manufacturing, services, and public sectors, employing the probability sampling. Other limitation comes from the defined by the author six areas of research which may not cover other knowledge in the field of product innovations. The author emphasizes the significance of expanding the research to include broader multi-industry samples and employing experimental designs to establish connections between governance mechanisms and innovation outcomes. Additionally, the author stresses the importance of exploring causal pathways by measuring factors such as time to learning, adoption rates, and portfolio resilience across various contexts. The use of non-probability sampling and voluntary response sampling model is another limitation of the study as it may overrepresent innovation active companies.

Funding: The article is funded by The Department for Scientific Research at Plovdiv University "Paisii Hilendarski", Project N: ПП25-ФИСН-004.

References

Annacchino, M. (2003). New product development: From initial idea to product management. Butterworth-Heinemann.

Anthony, S. (2017). The little black book of innovation: How it works, how to do it. Harvard Business Review Press.

Carvache-Franco, O., Carvache-Franco, M., & Carvache-Franco, W. (2022). Barriers to Innovations and Innovative Performance of Companies: A Study from Ecuador. Social Sciences, 11(2), 63.

Chryssochoidis, G. M. (2003). Factors affecting product innovations: A literature review. Agricultural Economics Review, 4(1), 47-62.

Cooper, R. (2017). Winning at new product: Creating value through innovation. Basic Books.

Cooper, R. G., & Edgett, S. J. (2008). Maximizing productivity in product innovation. Research-Technology Management, 51(2), 47–58.

Cooper, R., Edgett, S., & Kleinschmidt, E. (2002). Portfolio management for new products. Basic Books.

Desai, J. (2013). Innovation engine: Driving execution for breakthrough results. John Wiley & Sons.

Dogan, E. (2017). A strategic approach to innovation. Journal of Management, Marketing and Logistics (JMML), 4 (3), 290–300.

Dwivedi, R., Karim, F., & Starešinić, B. (2021). Critical success factors of new product development: Evidence from select cases. Business Systems Research, 12 (1), 34–44.

Dyer, J., & Furr, N. (2014). The innovator's method: Bringing the lean start-up into your organization. Harvard Business Review Press.

Eradatifam, M., Heydarabadi, S., & Shahbazi, A. (2020). The impact of design thinking on innovation. Journal of design thinking, 1(1), 49-60.

Evanschitzky, H., Eisend, M., Calantone, R. J., & Jiang, Y. (2012). Success factors of product innovation: An updated meta - analysis. Journal of product innovation management, 29, 21-37.

Farida, I., & Setiawan, D. (2022). Business strategies and competitive advantage: The role of performance and innovation. Journal of Open Innovation: Technology, Market, and Complexity, 8(3):163.

Govindarajan, V. (2016). The three-box solution: A strategy for leading innovation. Harvard Business Review Press.

Gunday, G., Ulusoy, G., Kilic, K., & Alpkan, L. (2011). Effects of innovation types on firm performance. International Journal of production economics, 133(2), 662-676.

Holtskog, H. (2017). Forms of innovation—Insights from product development. Journal of the Knowledge Economy, 8(1), 63-76.

Jové - Llopis, E., & Segarra - Blasco, A. (2016). What is the role of innovation strategies? Evidence from Spanish firms. IO: Productivity.
Kahn, K. (2018). Understanding innovation. Business Horizons, 61 (3), 453–460.
Keeley, L., Walters, H., Pikkel, R., & Quinn, B. (2013). Ten types of innovation: The discipline of building breakthroughs. John Wiley & Sons.
Kelly, D. (2013). Creative confidence: Unleashing the creative potential within us all. Harper Collins Publishers.
Krasadakis, G. (2020). The innovation mode: How to transform your organization into an innovation powerhouse. Springer Nature.
Kozludzhova, K. (2018). Understanding Customer Needs – The Key To Innovation Success (An Empirical Research Of Software Companies In Bulgaria). Economy & Business Journal, International Scientific Publications, 12(1), 327-340.
Küfeoğlu, S. (2022). Innovation, value creation and impact assessment. Sustainable Development Goals Series, 1–40.
Leavy, Brian. (2010). Design thinking – A new mental model of value innovation. Strategy & Leadership, 38, 5-14.
Lewrick, M. (2023). Design Thinking and Innovation Metrics: Powerful Tools to Manage Creativity, OKRs, Product, and Business Success, John Wiley & Sons.
Marzi, G. (2022). Uncertainty-driven Innovation: Managing the New Product Development Processes in an Unpredictable Environment. Palgrave Macmillan.
Maier, D. (2018). Product and process innovation: A new perspective on the organizational development. International Journal of Advance Research and Innovative Ideas in Education, 3(6), 132–138.
Maier, D., Maftei, M., Maier, A. & Biţan, G. E. (2019). A review of product innovation management literature in the context of organization sustainable development. Amfiteatru Economic, 21(Special No. 13), 816–829.
Meinel, M., Eismann, T. T., Baccarella, C. V., Fixson, S. K., & Voigt, K. I. (2020). Does applying design thinking result in better new product concepts than a traditional innovation approach? An experimental comparison study. European Management Journal, 38(4), 661-671.
Pellegrino, G. (2018). Barriers to innovation in young and mature firms. Journal of Evolutionary Economics, Springer, 28(1), 181-206.
Poppendieck, M., & Poppendieck, T. (2003). Lean software development: An agile toolkit. Addison-Wesley Professional.
Rainey, D. L. (2008). Product innovation: Leading change through integrated product development. Cambridge University Press.
Reguia, Ch. (2014). Product innovation and the competitive advantage. European Scientific Journal, 10 (10), 140–157.
Rösch, N., Tiberius, V. and Kraus, S. (2023). Design thinking for innovation: context factors, process, and outcomes. European Journal of Innovation Management, 26(7), 160-176.
Roterberg, Ch. (2020). Handbook of Design Thinking. John Wiley & Sons.
Santos, C. A. F., & Zen, A. C. (2022). Value creation and capture in innovation ecosystems. International Journal of Innovation. 10 (Special issue), 483–503.
Sayudin, S, Nurjanah, A., & Yusup, A. (2023). Innovation strategy and product development to increase company competitiveness in digital era. Journal Eduvest. 3 (5), 966–973.
Smolnik, T., & Bergmann, T. (2020). Structuring and managing the new product development process – review on the evolution of the Stage-Gate process. Journal of Business Chemistry, (1).
Sternberg, R. J., Pretz, J. E., & Kaufman, J. C. (2003). Types of innovations. The international handbook on innovation, 158-169.
Tabas, J., Beranová, M., & Polák, J. (2011). Classifications of innovations: approaches and consequences. Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis, 59(2), 399-406.
Trott, P. (2017). Innovation management and new product development. Pearson.
Ulwick, A. (2016). A new perspective on strategy. Strategyn.
Womack, J. P., & Jones, D. T. (1997). Lean thinking: Banish waste and create wealth in your corporation. Journal of the Operational Research Society, 48(11), 1148–1148.
Yang, K. (2007). Voice of the customer: Capture and analysis. New York: McGraw Hill.