BUSINESS DEVELOPMENT AND BRAND MANAGEMENT – A RECIPROCAL RELATIONSHIP

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Abstract

Business development and brand management are core functions of a business that fuel corporate growth and drive value for consumers, for companies, and for society. Integrating the two business areas promises synergistic added value that goes beyond their individual impact spectrums. While academic research has collectively advanced our understanding of brand management, research in business development is relatively underrepresented. As a management concept that is of great importance in the corporate world today, the relevance of business development cannot be denied in academia. Moreover, the interrelationship between business development and brand management has been widely neglected. Both business fields benefit from each other, suggesting an exigency for a deeper integration between the two. Towards that goal, this dissertation presents a comprehensive overview of the reciprocal relationship of business development and brand management that further stretches the academic knowledge space.

Throughout the doctoral thesis, the author structures this interrelationship, enhances theory for both business areas and their integration, suggests managerial implications and identifies future research directions that require scholarly attention. The doctoral thesis aims to align business development and brand management theory and practice with the realities of the business world.

In three research papers, this thesis develops an analysis of the reciprocal relationship of business development and brand management. For this purpose, a variety of methods ranging from a systematic literature review and qualitative work to empirical research employing structural equation modeling and experimental studies are applied. Theoretically, business development, innovation management, brand management and sustainability inform the frame of this work. Finally, this research project aims at contributing to (sustainable) business and brand growth.

Preface and Acknowledgements

The research of this thesis has been developed during my work at the Chair of Marketing and Media Research at the Bauhaus-Universität Weimar. With these introductory words, I would like to thank all the people who have significantly accompanied and supported me on this path. I want to express my special thanks to my supervisor, Prof. Dr. Jutta Emes, who trusted me with the competence and skills to take on this research project and repeatedly gave me the opportunity and freedom to develop myself both professionally and scientifically. During my doctoral studies, I benefited greatly from her professional supervision and her results-oriented approach to the tasks to be solved. I am also very grateful for the guidance, advice, and substantive support of my second reviewer, Prof. Stéphane Ganassali, Ph.D., who supervised my third doctoral thesis paper during my Ph.D. research stay at the research laboratory IREGE (Institut de Recherche en Gestion et en Économie) at the Université Savoie Mont Blanc (USMB) in Annecy, France.

In addition, I would like to express my thanks to the staff and colleagues at Bauhaus-Universität Weimar and the USMB, especially Jun.-Prof. Dr. Christopher Buschow, for the constructive exchange from which my work has benefited. Thanks also go to Thomas Schäfer, Daniela Hein, Miriam Köble, Rowena Mathew, Juliane Seeber, Marie Kohlschreiber, and Timo Janson. I would also like to thank my student assistants for their active support. A general thank you also goes to the numerous students who have supported and challenged me in ever exciting projects.

My biggest thanks, however, go to my circle of friends and my family. I would like to thank my friends in Weimar, in Germany, and abroad, who have accompanied me with great composure through all the ups and downs of the doctoral period. They always believed in me and gave me the strength needed for this journey. To name just a few of them: Nico, Stefanie, Florian, Jördis, Theresa, and Quentin – thank you for always being there for me. I thank my parents Mathilde and Gerhard, my sister Jana, and my brother Johannes for their boundless support and care. Without their support and the security they give me, I would not have reached this point.

I dedicate this work to them from the bottom of my heart.

Jonas Manuel Steffl

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A. Introduction

1 Motivation and Purpose

Companies are increasingly confronted with new and more demanding customer needs as well as volatile and/or saturated market conditions (Kotler, 2011). Globalization, digitalization, regulatory shifts, hyper competition, and shortened product life cycles are changing the way of how business is done. In order to face these business conditions, to maintain their own market position and generate long-term growth, companies are continuously developing new business areas (Voeth et al., 2018). In addition, preserving and recreating a strong brand is relevant in times of macroeconomic changes (Louro & Cunha, 2001). Against this background, business development and brand management have been established as strategic core functions of a business (Kapferer, 2008; Voeth et al., 2018). Numerous companies in various industries are relying on both business fields to cope with the opportunities and risks of the transformational business ecosystem.

The state-of-the-art business development function is an evolving management concept that is primarily responsible for shaping the future of an enterprise. For instance, tobacco companies like British American Tobacco are facing saturated market conditions and shrinking consumer demand for their core business – cigarette products. The industry, therefore, is shifting its focus towards so-called 'next generation products', e.g., e-cigarettes or heated tobacco products. These new business fields are growing with an expected global compound annual growth rate (CAGR) of 30.6 percent from 2023 to 2030 (Grand View Research, 2021). The new business opportunities come along with additional consumer benefits, e.g., harm-reduced, and more sustainable products, with a potential positive impact on a company's reputation and brand image as well as on society's welfare.

The relevant topics of this thesis (business development, innovation management, corporate growth, and environmental sustainability) are of elementary importance for companies, highlighted by various studies on (future) management priorities of board executives. According to McKinsey & Company, 'business building' is listed among the top three priorities 2022 of more than half of the surveyed top executives. While green technologies are regarded as the breeding ground for business development (Hatami & Hilton Segel, 2022). In the same vein, CEO's surveyed by Gartner ranked *growth* as the number one top strategic

business priority area for 2022-2023. Moreover, environmental sustainability reflects a significant increase of interest among business leaders and as such is listed for the first time in this top 10 business priorities (Wiles, 2022). The Gartner 2023 Board of Directors Survey further highlights that 64 percent of boards are willing to increase their risk appetite with 46 percent expecting to take greater risks in expanding product lines to realize corporate growth opportunities in 2023-2024. In the same timeframe, sustainability initiatives are expected to increase for 80 percent of the surveyed board members (Perri, 2023).

The main assumption of this doctoral thesis is that business development initiatives impact and benefit a firm's brand and, at the same time, a brand supports business development. The aim of this work is to illuminate the reciprocal relationship of business development and brand management in order to generate relevant findings and implications for theory and management practice. These insights demonstrate to managers how business development is best used to strengthen a brand and, conversely, emphasize the importance of the brand for the success of business development initiatives. Both business development and brand management aim to generate corporate growth (Keller, 2003; Voeth et al., 2018). This research project combines business development and brand management to make a step beyond previous research undertaken in isolated silos (Brexendorf et al., 2015).

2 State of the Literature and Research Question

2.1 Business Development and Innovation Management

Business development is a frequently used term among practitioners and as such, is of increasing relevance for enterprises (Voeth et al., 2018). Still, business development receives little attention in scientific research resulting in a scattered understanding of this phenomenon (Kind & zu Knyphausen-Aufseß, 2007; Voeth et al., 2018). However, there is consensus on the goal of business development to realize growth opportunities (e.g., Davis & Sun, 2006; Hamilton, 1974; O'Sullivan, 2002; Simon & Tellier, 2018; Voeth et al., 2018). Therefore, business development is the established and evolving management concept to achieve corporate growth by exploring and implementing something *new* to the firm (Voeth et al., 2018). In doing so, business development takes a comprehensive perspective of the corporation and its business environment including customers, partners, employees, stakeholders, shareholders, competitors, and the natural environment (e.g., Burgers et al., 2008; Eidhoff & Poelzl, 2014; Voeth et al., 2018). The development of a business and reaping the growth potential can be realized by diverse internal and external business activities, e.g., innovation development (e.g., Giglierano et al., 2011; Ito, 2018; Sørensen, 2018), or partnering and cooperation (e.g., Davis & Sun, 2006; Scaringella, 2018; Uittenbogaard et al., 2005).

Innovation is a key dimension of business development. Due to the broad scope of business development and the importance of innovation in this field, the business development research focus in this dissertation is on innovation management. Innovation management is a broad research field itself that spans diverse types of innovations, each with their specific characteristics and distinguishing features (Damanpour et al., 2009; Porter, 1985). Therefore, the business development approach to innovation is comprehensive. Innovations add to the firm's value and realize growth potential (Aaker, 2007; Chimhundu et al., 2010; Drucker, 1954). Accordingly, a wide range of brands incorporate innovation into their brands' values and claims in order to highlight their status as innovation leader. Examples are Philips ("innovation + you"; Philips, 2013) and Fujifilm ("Value from Innovation", Fujifilm Holdings, 2023). According to EY, innovation is listed among the top 3 of Americas board priorities 2023 (Pederson, 2023).

Next to the innovation management perspective, we specify the business development focus by exploring co-branding. Co-branding can be regarded as a combination of business

development activities, namely, innovating new versions of existing products (Giglierano et al., 2011) and creating partnerships (Scaringella, 2018). Thus, this work uses business development as a strategic framework for the integration of these business activities.

Lastly, as business development is leading change by altering the status quo of the business (Duke, 2011; Littler & Sweeting, 1987), its focus can also lay on the natural eco-systems. A business development focus on environmental concerns and sustainability offers an opportunity for companies to grow in a new direction. An increasing number of brands develop green product innovations that help to embed green values and society-improving mission into business development (Xie et al., 2019).

2.2 Brand Management

Swaminathan et al. (2020) distinguish three key theoretical perspectives in branding literature: society, firm, and consumer. The society perspective presents brands in societal (e.g., brands as portable containers of meaning) and cultural contexts (e.g., consumer culture theory). Both approaches emphasize how consumers are affected by social forces, structures, and institutions. A key implication is that the role of brands is shifting to a mission or purpose to act in a sustainable way that can help society achieve its goals.

The firm perspective looks at brands as assets and examines the various functions and roles that brands perform for companies. This perspective compiles both strategic and financial approaches, e.g., growth of brands, the management of brand portfolios, or co-branding partnerships. Swaminathan et al. (2020) highlight that brand partnerships, in the future, will be at the very core of a brand's value creation.

The consumer perspective also considers two approaches: the economic approach and the psychological approach. In the context of the economic approach, brands function as market signals (Erdem & Swait, 1998). One elementary question of this research stream is how firms can brand new products (Swaminathan et al., 2020). The psychological approach relies on brands as mental knowledge cues. The customer-based brand equity concept constitutes one key construct of this literature stream (Keller, 1993).

The management of brands has become a strategic priority to ensure future corporate growth (Keller, 2003). By doing so, companies seek to develop strong brands that are characterized by high brand equity and brand value. The premise of both concepts is that the

power of a brand lies in the minds of consumers. Firms exploit this brand added value to gain several benefits. Scholars have empirically demonstrated the superiority of high equity brands. High brand equity translates into attitudinal outcomes, e.g., consumer attitudes (Hoeffler & Keller, 2003), consumer preference, purchase intention (Cobb-Walgren et al., 1995), and purchase loyalty (Aaker & Jacobson, 1994). Brand equity also contributes to consumer behavior outcomes, such as willingness to pay higher prices or word-of mouth recommendation (Veloutsou et al., 2013). Further, it affects consumer perceptions of product quality (Dodds et al., 1991), the credibility of product information (Erdem & Swait, 1998), and resilience to product-harm crisis (Dawar & Pilltula, 2000). Overall, brand equity increases the consumer benefits of the product and of the brand (Erdem & Swait, 1998), and thus supporting brand extensions (Pitta & Katsanis, 1995). From a financial side, scholars demonstrate the effect of brand equity on long-term revenues and future profits (Srivastava & Shocker, 1991); market share (Agarwal & Rao, 1996) and stock prices (Simon & Sullivan, 1993). Thus, brand equity enhances competitive advantage (Bharadwaj et al., 1993) and supports mergers and acquisitions activities (Mahajan et al., 1994).

Next to brand equity, brand value embodies another relevant brand concept for firm value creation. Early conceptualizations of customer perceived value are based on Zeithaml's (1988) notion of the consumer's overall assessment of what is received from and given to the brand. The consumer perceived brand value affects consumer outcomes, e.g., brand trust, brand loyalty (Steenkamp, 2014), word-of-mouth (Huang, 2022), and the consumers' attitude towards a brand, particularly, willingness to purchase (Kim et al., 2004). Further, market outcomes like market share and market share growth profit from a strong brand value (Steenkamp, 2014). Lastly, it translates into financial outcomes, e.g., stock performance (Hsu et al., 2013), shareholder value (Madden et al., 2006), price premium and profit margin (Steenkamp, 2014).

In summary, developing a strong brand is a strategic priority to reap the full potential of the firm's value.

2.3 The Interdependencies of Innovation Management and Brand Management

Apart from acknowledging the importance of innovation and branding, only a few studies have looked at the interdependencies between them. The interplay of innovation and brand management are discussed in literature from different viewpoints. Some authors link innovations to branding in a positive reciprocal relationship. The seminal work of Brexendorf

et al. (2015) conceptualize the nexus of innovations and brands in the brand-innovation virtuous cycle framework (Figure A.1). The authors propose that:

(1) brands provide strategic focus and guidance to innovations,
(2) brands support the introduction and adoption of innovations, and
(3) innovations improve brand perceptions, attitude, and usage.

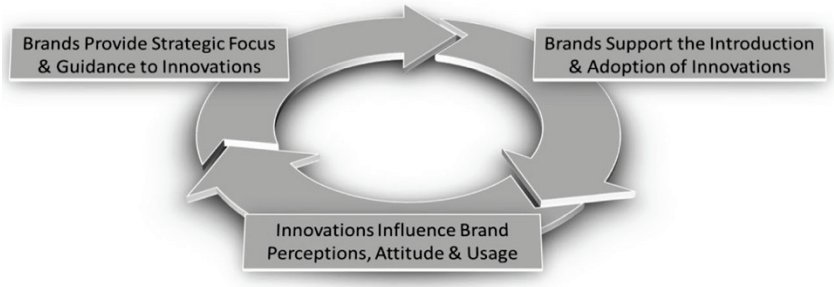


Figure A.1 The brand-innovation virtuous cycle by Brexendorf et al. (2015, p. 550)

In this dissertation, the conceptual assumptions of the pillars (2) and (3) are empirically validated, with a focus on innovation adoption and brand perceptions. An important implication of this framework is that innovations that change consumer brand perception in the short term can have an indirect impact on the success of future innovations and other marketing activities in the long term, and thus on the general success of the brand. Strong brands enable companies to apply a broader range of corporate strategies (Barone & Jewel, 2013, 2014). Furthermore, brands facilitate the introduction of a wider spectrum of new innovations (Brexendorf et al., 2015). Similarly, innovations have the potential to revitalize (Beverland et al., 2010) and reinvent (Kapferer, 2008) a brand by strengthening brand attitudes and perception (Aaker & Jacobson, 2001). Innovations that update the brand's offer provide benefits to customers which, in turn, secure the brand's competitive position (Ward et al., 1999). The development of an innovative offering must therefore be closely coordinated and linked with the development of its brand (Beverland et al., 2010).

According to Paswan et al. (2020) the end goal of all business activities is value creation. Innovation and branding are two business functions that are complementary and have a synergetic effect on the firm's value (Aaker, 2007; Brexendorf et al, 2015; Lee et al., 2016). Yet, the interplay of innovation and branding has potential for conflicts, embodied by the paradoxical dichotomy inherent in the objectives of both organizational functions (Paswan et al., 2020). On the one hand, companies have to offer novel value by constantly introducing innovations. On the other hand, firms have to secure a consistent brand identity and brand experience throughout their brand touchpoints (Paswan et al., 2020). Paswan et al. (2020) propose a strategic typology that integrates innovation (anchored in an exploration capability)

and branding (anchored in an exploitation capability) from an organizational ambidexterity perspective:

(1) Cruise control strategy: low branding × low innovation,
(2) Market-maven strategy: high branding × low innovation,
(3) Dexter's lab strategy: low branding × high innovation, and
(4) Trail-blazer strategy: high branding × high innovation.

From a theoretical perspective, the proposed typology helps reconcile the paradoxical dichotomy of innovation and brand management. It suggests that the dominant strategic orientation of firms is depending on conditions such as consumers, needs and demand, markets, and resources.

The state of the literature reveals that existing scientific work on the interplay of innovation and branding is primarily of conceptual nature (e.g., Aaker, 2007; Brexendorf et al, 2015; Paswan et al., 2020). Based on theoretical considerations, this dissertation aims to empirically analyze the conceptual reciprocal relationship of innovation and branding. Specifically, research is needed that empirically explores: (1) how do innovations influence brands, especially, brand perceptions; and (2) how can brands support innovations, for instance, by facilitating the consumers' innovation adoption?

In order to address these issues, this dissertation applies a business development approach and answers mainly from a psychological consumer perspective. Further conditions and perspectives like different markets/ industries (technology, fashion), consumer needs and demands (greenness), strategic brand management (co-branding partnerships), and strategic product management (Limited-Edition products) are investigated. The focus is on the integration of both brand orientation and innovation orientation as a prerequisite for superior brand performance (Lee et al., 2016). This dissertation aims to contribute to both areas.

Therefore, the general research question of this thesis is:

GRQ: Under what conditions and in what contexts does the reciprocal relationship between business development and brand management come into play (or not)?

To answer the overarching research question, the aim of this thesis is therefore threefold: First, to clarify the academic understanding of business development and derive innovation

dimensions. Second, to investigate these innovation dimensions as antecedents of brand success and brand equity as well as brand innovativeness as factors for innovation adoption behavior. Third, to research the ability of green product innovations with different product branding strategies (Limited-Editions and/or co-branding) for 'greening' the parent brand to realize brand value creation.

Therefore, we use the integrated business development framework (Figure A.2) in order to dive deeper into the relationships between innovation management, corporate partnerships, sustainability development, and brand management.

3 Structure of the Thesis

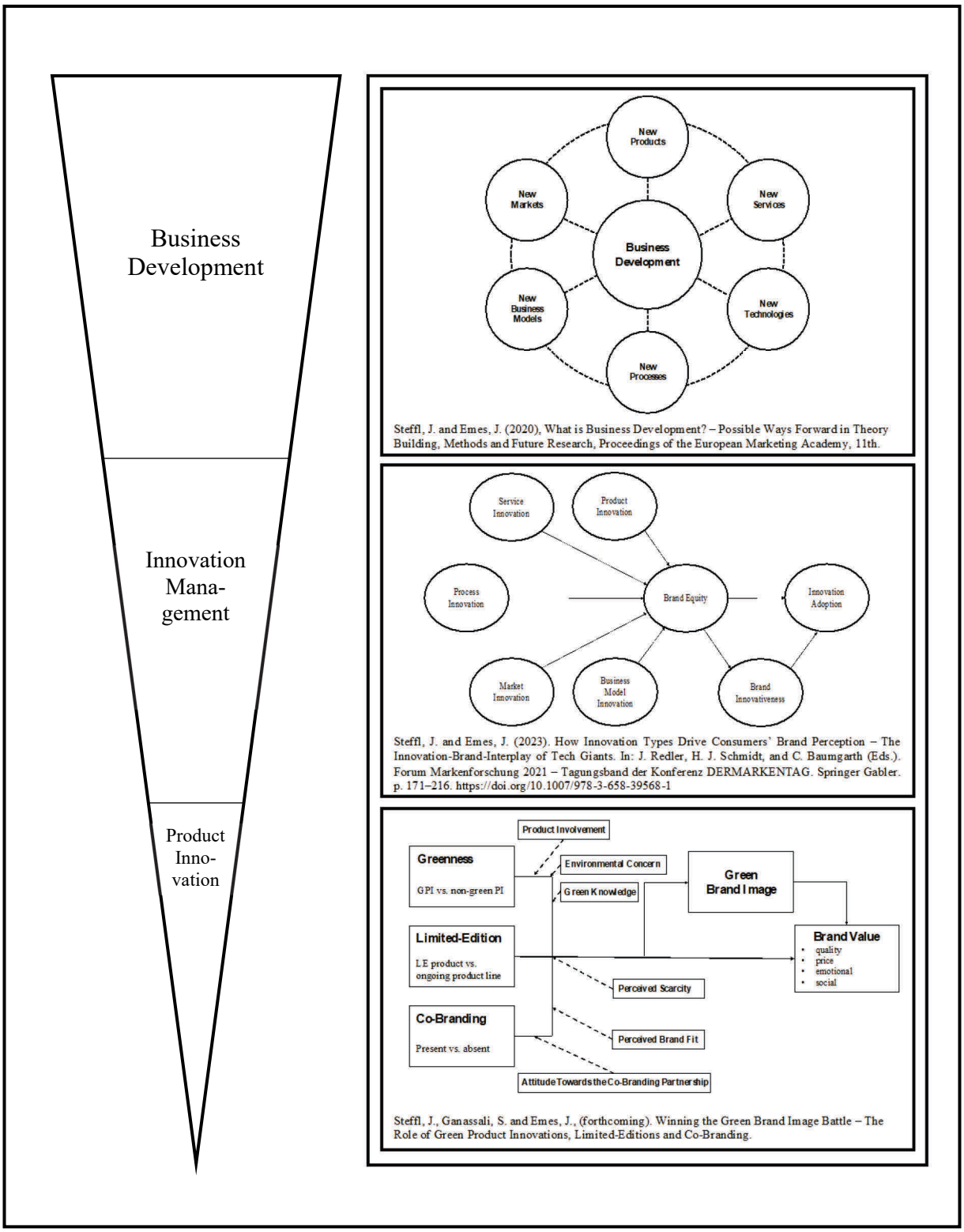
3.1 Overview

To holistically grasp the interdependencies of business development and brand management, the work at hand relies on various approaches and topics relevant to both research and business fields. This dissertation addresses relevant research gaps by (1) identifying the most important issues in business development using a systematic literature review. Second, (2) its focus shifts to innovation types that characterizes the scope of business development and linking them to customer-based brand equity as a central brand management indicator utilizing survey data. Third, this dissertation (3) empirically examines the extent to which green product innovations, Limited-Edition products, co-branded products, and a combination of these product branding strategies contribute to the consumers' (green) brand perception. The level of abstraction deepens from one research paper to the next with correspondingly theoretical and managerial implications spanning from a meso-level to a micro-level.

The data sources include peer-reviewed journal articles and online survey data. Methods and analyses applied in this research project are a systematic literature review with a mixed-method content analysis approach, structural equation modelling (SEM), and between-subjects factorial experiments analyzed by *t*-tests, ANOVAs, MANOVAs, and SEM.

Figure A.2 depicts the research scheme of the dissertation at hand. The remainder of this chapter introduce the dissertation's research papers. The papers are presented in the context of the respective research focus, the applied method, and a short summary of relevant results. In addition, the chapter includes information about the publication state of the articles and the author's contribution.

Figure A.2 Research scheme – research foci and central conceptual models



3.2 Study 1: What is Business Development? – Possible Ways Forward in Theory Building, Methods and Future Research

Published in:
Steffl, J. and Emes, J. (2020). What is Business Development? – Possible Ways Forward in Theory Building, Methods and Future Research, *Proceedings of the European Marketing Academy*, 11th, (84719)

History:
An extended abstract of this paper was presented at the European Marketing Academy (EMAC) Regional Conference 2020 in Zagreb, Croatia (online) and published in the respective conference proceedings.

Authors:
Jonas Steffl, Jutta Emes

This literature review served as the first conceptual anchor for the overarching doctoral research project. Due to the exploratory nature of the research field of business development, a systematic literature review based on the approach of Basias and Pollalis (2018) was applied. This paper provides an overview of the current state of business development research by applying a mixed-method content analysis approach based on 36 articles. It is important to note that literature offers vague definitions of business development. Therefore, we have defined the scope of business development literature through a combination of inclusion and exclusion criteria. A consistent definition of business development is therefore not the starting point. Its formulation is rather an objective of the first study to bring structure to the highly dispersed literature. We present the synthesis of results alongside three perspectives. With the component-oriented perspective we analyze the main tasks and activities in business development. The associated tasks and activities determine the scope of business development. The literature review undercovers (1) new products, (2) new services, (3) new technologies, (4) new processes, (5) new business models, and (6) new markets as key action spaces for business development. This further informs the model examined in study 2. Combining these tasks define the business developer as 'integrating generalist' (Sørensen, 2012). The organizational-oriented perspective describes the organizational implementation of the business development function and its linkage to other business functions. The organization of business development

is in its majority institutionalized (Kind & zu Knyphausen-Aufseß, 2007) and cross-functional (Voeth et al., 2018). The process-oriented perspective reveals business resources, predefined conditions, and success factors as determinants for business development. Especially, we want to highlight that a well-known brand is regarded as an important factor for business development success (Ito, 2018), which already indicates its linkage to brand management. Additionally, this process-oriented perspective undercovers the objectives of business development. The main goal of business development is to generate corporate growth (Sørensen, 2018; Voeth et al., 2018).

Table A.1 Personal contribution Study 1

1. **Intellectual input:**

☐ Less than 25% ☐ 25% - 50% ☐ 51% - 75% ☒ 76% - 100%
Comments:
This research idea stems from the author's business experience in a business development department with a focus on corporate brand development and sustainable product innovation. Additionally, it results from the author's and co-author's joint observation that a concise literature review in the research field of business development is missing. Thus, I conducted the literature review in order to define the field of research.

2. **Empirical set-up and results:**

☐ Less than 25% ☐ 25% - 50% ☐ 51% - 75% ☒ 76% - 100%
Comments:
The execution and the interpretation of the results of the literature review happened by myself accompanied by consultations with my co-author.

3. **Writing process:**

☐ Less than 25% ☐ 25% - 50% ☐ 51% - 75% ☒ 76% - 100%
Comments:
The development of the paper was conducted solely by me.

3.3 Study 2: How Innovation Types Drive Consumers' Brand Perception – The Innovation-Brand-Interplay of Tech Giants

Published in:

Steffl, J. and Emes, J. (2023). How Innovation Types Drive Consumers' Brand Perception – The Innovation-Brand-Interplay of Tech Giants. In: J. Redler, H. J. Schmidt, and C. Baumgarth (Eds.). Forum Markenforschung 2021 – Tagungsband der Konferenz DERMARKENTAG. Springer Gabler. p. 171–216. https://doi.org/10.1007/978-3-658-39568-1

History:
This paper was presented at the conference DerMarkentag 2021 in Mainz, Germany (online), and published as book chapter in the respective conference proceedings.

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Jonas Steffl, Jutta Emes

The second paper of the dissertation focuses on the scope of business development elaborated in the first paper by proposing a practical business development innovation type taxonomy. It illuminates five innovation types (product, service, process, market, and business model innovation) to explore their reciprocal relationship to the consumers' brand perception of three tech giants: Apple, Amazon, and Google. These companies perform a trail-blazer strategy by applying both high levels of innovation efforts as well as high levels of brand management efforts (Paswan et al., 2020). By integrating the research streams of innovation management and brand management, this paper provides novel insights into both business fields (Brexendorf et al., 2015). Structural equation modelling was applied to empirically validate our conceptual research framework. The results demonstrate that product, process, and business model innovations have a positive impact on customer-based brand equity. Thus, the positive perception of some innovation types (product, process, and business model innovation) strengthen the brand's equity, while others (service, and market innovation) are not able to do so. However, company-specific differences can be observed as these results differ along the brands studied. These findings suggest that innovation and brand managers can use specific combinations of innovation variants to increase brand equity. The reciprocal relationship between innovation and brand performance perception is also reflected in the fact that

customer-based brand equity drives consumers' innovation adoption behavior. Furthermore, we show that customer-based brand equity is a determinant for consumer perceived brand innovativeness, while the latter has no significant effect on the consumers' innovation adoption behavior and thus does not act as a mediator.

Overall, our paper demonstrates that innovations can transform the perception of brands which in turn affects innovation-related consumer behavior. Therefore, we call simultaneously for an innovation-led brand management and a brand-led innovation management approach. Both can be realized in an integrated business development perspective on the interplay of brand and innovation management. The complex and complementary interweaving of both business fields plays an important role in building an organization's competitive advantage (Lee et al., 2016).

Table A.2 Personal contribution Study 2

1. **Intellectual input:**

☐ Less than 25% ☐ 25% - 50% ☐ 51% - 75% ☒ 76% - 100%
Comments:
The idea for this research project was inspired by the preceding literature review. The second study's conceptual framework builds on findings of study 1 and aims to connect them with brand management concepts. It further results from the authors' observation of a gap in the marketing literature.

2. **Empirical set-up and results:**

☐ Less than 25% ☐ 25% - 50% ☐ 51% - 75% ☒ 76% - 100%
Comments:
Outside of discission and consultation with my co-author, the idea for the empirical set-up and method was developed by myself. The analysis, interpretation and discussion are my contribution.

3. **Writing process:**

☐ Less than 25% ☐ 25% - 50% ☐ 51% - 75% ☒ 76% - 100%
Comments:
The version of the paper was written by myself.

3.4 Study 3: Winning the Green Brand Image Battle – The Role of Green Product Innovations, Limited-Editions and Co-Branding

Submitted to: *Journal of Product & Brand Management*

History:
An early version of this paper was presented at the research seminar of the research laboratory IREGE (Institut de Recherche en Gestion et en Économie) at Université Savoie Mont Blanc, in Annecy, France. This was possible during my research stay at IREGE in 2022. The full paper is under review at the *Journal of Product & Brand Management*.

Authors:
Jonas Steffl, Stéphane Ganassali, Jutta Emes

In light of growing sustainability awareness, green product innovations as extensions of an existing brand are understood as green marketing activities. This involves exploiting the existing brand name to introduce a green product within a product line or beyond, using resources to reduce environmental damage throughout its life cycle (Olsen et al., 2014; Varadarajan, 2017). This strategy aims to provide new business opportunities in terms of product line extensions and differentiation from similar but non-ecological alternatives (Kumar & Christodoulopoulou, 2014). Such green product innovations can achieve two goals at once: first, they meet the demands of environmentally conscious consumers; second, such a product can have a reciprocal effect on the parent brand (Jung et al., 2020; White et al., 2019). Numerous companies rely on the possibilities of "greening" the parent brand, whose value can be increased through a positive green image (Olsen et al., 2014). Our study provides empirical evidence for such a reciprocal effect of ecology-oriented product innovations by conducting two experimental studies. Study 1 examines the impact of non-green vs. green product innovation on green brand image and brand value. We demonstrate that green product innovations enable brands to enhance their green image and brand value perception. Further, we show the relevance of the moderators product involvement, green knowledge, and environmental concern having an effect on the consumers' perception of green brand image. In addition, green brand image functions as a mediator upon the four brand value dimensions (quality, price, emotional, and social). Study 2 applies a 2 × 2 between-subjects factorial experiment with product line

characteristic (Limited-Edition vs. ongoing) and co-branding (present vs. absent) as factors in order to compare different green product branding strategies. Our experiment found no differences in green brand image perceptions across different green product branding strategies (green product innovation, green Limited-Edition product innovation, green co-branded product innovation, and green Limited-Edition co-branded product innovation). We show that a green Limited-Edition co-branded product innovation is the superior product branding strategy in strengthening the price and emotional value of the brand. Furthermore, we identify positive moderator effects of perceived product scarcity, perceived brand fit, and attitude towards the co-branding partnership. The paper enriches theoretical knowledge and proposes practical implications for brand and innovation managers by showing the most effective product innovation variants for enhancing consumers' (green) brand perception.

Table A.3 Personal contribution Study 3

1. **Intellectual input:**

☐ Less than 25% ☐ 25% - 50% ☐ 51% - 75% ☒ 76% - 100%
Comments:
This research idea stems partly from thoughts gained during a research project at the Bauhaus-Universität Weimar, and in consultation with my co-authors. It further results from the identification of an empirical research gap.

2. **Empirical set-up and results:**

☐ Less than 25% ☐ 25% - 50% ☐ 51% - 75% ☒ 76% - 100%
Comments:
The idea to use a panel dataset did not stem from me. The experimental set-up was co-developed with my co-authors. The analysis, interpretation and discussion of the results were executed by me.

3. **Writing process:**

☐ Less than 25% ☐ 25% - 50% ☐ 51% - 75% ☒ 76% - 100%
Comments:
The writing process in this research project was conducted by me.

4 General Conclusion

4.1 Summary and Learnings

Brands take an active role in shaping the future business and cultural landscape. In this light, the overarching research question of this doctoral thesis concerns the reciprocal relationship between business development initiatives and branding. The present research project aims to address this interplay in three studies through the lens of business development, further specified in an innovation type taxonomy, and different brand management perspectives: (1) society (with a focus on sustainability), (2) firm (with a strategic approach in regard to co-branding), and (3) consumer (considering the psychological approach represented by the concepts customer-based brand equity, green brand image and perceived brand value).

The initial systematic review of the business development literature undercovers business development as a complex phenomenon stemming from diverse disciplines and theoretical research perspectives. Our findings reveal, besides other insights, that business development aims to search for, develop and/or realize (1) new products, (2) new services, (3) new technologies, (4) new processes, (5) new business models, and (6) new markets. A connection between business development and brand management did not emerge from this literature research. Only Ito (2018) names an organization's brand as an important determinant for business development projects within the firm. This is a first indicator in the interplay of business development and brand management, which is (partly) reflected in pillar 1 of Brexendorf et al.'s (2015) framework, describing that brands provide strategic focus and guidance to innovations.

With this in mind, and in order to fill the identified research gap, the second research paper of the dissertation proposes an innovation type taxonomy that includes the aforementioned six dimensions. These six dimensions further define the scope of business development. Research to date pays no attention to the effect of different innovation types on the consumer perception of brands. In the same vein, the impact of brands and their perception on innovations and the related consumer behavior remains little understood. Study 2 enriches the innovation-brand literature by examining the effect of innovation types on brand equity of tech giants that apply a trail-blazer strategy (here: Google, Amazon, Apple) (Paswan et al., 2020). The work shows (1) firm-related differences and (2) innovation-type-related differences on the effect of innovations on customer-based brand equity. The results demonstrate that the

significance of innovation types varies under different patterns of contextual factors, with specific combinations leading to high-level brand equity. These findings suggest that researchers and practitioners should identify key combinations of innovation types that strengthen the consumers' brand perception. The reciprocal innovation-brand relationship is demonstrated by the finding, that high-equity brands, in turn, enhance the likelihood of consumers' adoption of innovations. Hence, the thesis at hand not only empirically confirms the theoretical notion by Brexendorf et al. (2015) that (2) brands support the adoption of innovations, and (3) innovations improve brand perceptions. Additionally, the results reveal specific contexts and conditions under which the reciprocal relationship between innovation and branding comes into play; or does not come into play.

In line with prior research (e.g., Nørskov et al., 2015; Sriram et al., 2007; Zhang et al., 2013), product innovation is in general a significant driver for brands, and based on our findings, it is also the most important innovation type for the innovation-brand relationship. The research focus of the third doctoral paper, therefore, is narrowed down to product innovations. More precisely, to green product innovations and diverse product branding strategies (Limited-Edition and/or co-branding). Our findings, once again, support the general premise of the brand-innovation virtuous cycle proposed by Brexendorf et al. (2015), that an innovation can significantly improve brand perception. We proof this effect in a green brand-innovation context with a different industry setting. Moreover, the findings of the first experimental study of this paper present the evidence, that green product innovations can be regarded as the superior alternative to regular product innovations without green characteristics. Not only to strengthen a green brand perception construct (green brand image), but additionally general brand perception constructs (e.g., quality value, price value, emotional value, and social value). Accordingly, we give a clear recommendation to product and brand managers: launch green product innovations instead of non-green alternatives to benefit the brand and the environment. To this end, we provide practical guidance on the best product branding strategies, marketing factors and consumer factors to consider and apply. We recommend launching green Limited-Edition co-branded product innovations with actively communicating its scarcity appeal and to target consumers with high product involvement, pronounced green knowledge and environmental concern that have a positive attitude toward the co-branding initiative and evaluate the partnership as a good fit.

Overall, the studies use various perspectives to show that, on the one hand, business development and brand management as individual corporate functions are future-oriented and profitable for companies. On the other hand, that the interrelations of these areas offer added value for the firm and for its various stakeholders.

4.2 Limitations and Future Research

The findings highlighted not only show applicable practical implications, but also indicate a promising field of research. In order to produce further insightful results, the limitations of the doctoral thesis and overarching future research directions will be presented.

While this doctoral thesis yields decisive insights into the reciprocal relationship of business development and brand management, it is not able to cover all areas of this research field. Besides having a focus on the innovation management activities inherent in business development, the thesis primarily investigates the innovation activities and tasks of business development based on their internal and market development, hence, from an outcome-oriented perspective. As we investigate product, service, process, market, and business model innovations as end results of internal business development, different phases of the business development process as well as a wide range of external business development activities are excluded from the investigation (Lorenzi & Sørensen, 2014). Future research can illuminate the reciprocal relationship in regard to diverse process phases in business development and brand management, for instance, internal analysis, external analysis, strategy development or planning. In regard to external development activities, the doctoral work sheds light on partnering and cooperation activities, namely co-branding. A promising research direction in the interplay of business development and brand management can be the investigation of external development activities as new market entry modes, e.g., mergers and acquisitions, and their effects on brand preference and performance (e.g., Chu et al., 2021).

To understand the reciprocal relationship of business development and brand management, this research project focuses on two pillars, and on specific aspects of these pillars, of the brand-innovation virtuous cycle by Brexendorf et al. (2015): how innovations improve brand perceptions; and how brands support the adoption of innovations. Further research can rely on Brexendorf et al.'s (2015) conceptual framework to empirically investigate how innovations improve brand attitude and usage, as well as how brands support the introduction of innovations. In this way, both pillars can be comprehensively represented. The

first pillar of the brand-innovation virtuous cycle is not considered in this doctoral thesis: brands provide strategic focus and guidance to innovations by (1) identifying brand potential, (2) defining brand boundaries and cohesiveness, and (3) optimizing brand timing and sequence of market entry (ibd.). This strategic branding approach can be combined with the forementioned strategy development and planning phase in business development to streamline branding and business development and reap synergetic effects. Further, the strategic approach can be covered by Paswan et al.'s (2020) typology from an organizational ambidexterity perspective. This enables researchers to investigate and compare the innovation-brand-interplay of enterprises that apply the cruise control strategy, market maven strategy or dexter's lab strategy[1].

Furthermore, the paradoxical dichotomy of innovation and branding offers fruitful research directions (Paswan et al., 2020). Even though the research findings demonstrate a positive reciprocal relationship between business development and branding, it also shows indictors for the need of a differentiated view. For instance, this study's result demonstrates a negative link between Google's market innovation perception and its customer-based brand equity (even though this negative effect is shown to be non-significant). Future research should, therefore, point to contexts and conditions under which the interrelations of business development and branding is a source of frictions that leads to possible negative outcomes. In a similar line of thinking, the dark side of this reciprocal relationship can be illuminated.

The empirical research of the doctoral thesis is focused solely on the German market. This certainly sets limitations on the possibility to draw generalizable conclusions in a cross-national and cross-cultural way. Moreover, different markets, industries, and firms (e.g., start-ups, SMEs) as investigation objects provide promising avenues for future research.

In conclusion, the doctoral thesis at hand offers answers to the questions of whether, when, and how the reciprocal relationship of business development and brand management contributes to the value for society, the firm, and the consumer.

[1] Cruise-Control strategy: Low levels of innovation efforts; low levels of brand management efforts. Description: these firms operate in a commoditized market where the demand is consistent, price sensitive, and stable and the consumer assessment of value focuses primarily on the core functional benefits (Paswan et al., 2020, p. 759).

Market-Maven strategy: Low levels of R&D/innovation efforts; high levels of brand management efforts. Description: these firms operate in a market where demand is relatively consistent, but a significant part of consumer assessment of value includes augmented benefits and consumers are willing to pay more for such augmentations (Paswan et al., 2020, p. 759).

Dexter's lab strategy: High levels of R&D/innovation efforts; low levels of brand management efforts. Description: these firms are creative hot-shops, innovation, and R&D labs, think tanks and R&D firms that come up with ideas or solutions that are often radical (Paswan et al., 2020, p. 759).

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B. What is Business Development? – Possible Ways Forward in Theory Building, Methods and Future Research

Abstract

More and more companies have established business development units in their organization. Still, little is known about what actually characterizes business development. The aim of this paper is to explore and analyze the scope and nature of business development and thus propose a uniform understanding and definition as well as possible advancements in theory building, methods, and suggestions for future research. Therefore, based on mixed-method content-analysis approach, we conduct a systematic literature review with a dataset of 36 research publications. Our insights indicate seven main topics describing, structuring, and defining the scope and status quo of business development in academia: (1) tasks and activities, (2) people, (3) tools and instruments, (4) organization and responsibility, (5) involved stakeholder and interaction, (6) influencing and success factors, as well as (7) business development objectives. Future research in business development should focus on a consumer- and market-oriented perspective in order to gain new, enriching insights in a previously understudied research field.

Keywords: *business development, business developer, corporate growth, strategic management, strategic marketing, marketing research*

1 Introduction

Growth is a pivotal challenge for companies in an era characterized by globalization, increased competition, and sophisticated customer needs (Kotler, 2011). Many markets have reached a high degree of saturation. The average lifespan of publicly traded North American companies lasts about 10 years (Daepp et al., 2015). Consequently, companies have to identify new opportunities, need to innovate, and adapt to new market demands. Against this background, business development (BD) has emerged as a professional role and corporate function in order to face these challenges and shape the futures of companies. The concept of business development is well established within companies in the practitioner world. The offering of business development jobs is growing remarkably (Turgeon, 2015). In addition, the rising relevance of business development is underlined by the establishment of professional associations – e.g., Business Development Special Interest Group (SIG) – (ibd.) or university study programs specialized in the field of business development (Achtenhagen et al., 2017). Whereas academia still lacks an understanding and consensus of business development. Despite a growing body of research, business development still receives little attention (Kind & zu Knyphausen-Aufseß, 2007; Voeth et al., 2018).

The aim of this paper is to yield insight into the scope and nature of business development deriving from existing literature. Our research makes a notable contribution to overcome the exploratory stage of business development research by means of a systematic literature review. It offers new perspectives by exploring the updated state of business development, the main (dis)agreements and gaps in literature. The systematic literature review helps to illuminate a previously understudied research topic in order to identify the scope and a modern understanding of business development by synthesizing insights across different streams of literature. Furthermore, it consolidates definitions of business development to propose a functional definition for future research.

First, we introduce the research framework followed by a short description of the dataset and the most important findings of the systematic literature review. Based on these results, we propose advancements in the theorization of business development. Furthermore, the results show limitations and research gaps. On this basis, ways forward in terms of future research, methods and research designs are suggested. Additionally, managerial implications can be derived.

2 Systematic Literature Review (SLR) Research Framework

Basias and Pollalis (2018) outline the importance of an effective literature review for progress in research. This study follows their methodological framework for systematic literature review. This framework allows to provide an exhaustive summary of academic knowledge of business development. Hence, we describe the main steps of the systematic literature review in regard to the search process for relevant academic publications, which will be included in a content analysis.

2.1 Basic Steps of a Systematic Literature Review

Initially, the relevant literature has to be determined and both inclusion criteria as well as exclusion criteria are specified. Following Basias and Pollalis (2018), inclusion criteria are predetermined to narrow down relevant studies: the review focus lies on English academic journals, conference proceedings and business development books retrieved via EBSCOhost and EconBiz. No restriction in terms of publication date was made. The investigation expired at the end of October 2019. Only studies that address business development with their main topic and research interest are included. Therefore, a frame of reference in the understanding of business development has to be specified. As the term ‘business development’ is used in diverse fields and context, we derive exclusion criteria from a negative definition. Hence, business development is not developing aid or other areas on a national economy level, e.g., ‘small business development’. Business development is performed rather on an organizational level. Publications discussing topics with further misleading terms containing ‘business development’ like ‘service business development’ do not focus on business development with their main topic. In the following, a two-step approach for finding relevant academic literature was implemented (see Figure B.1).

First, a list of publications from relevant academic resources was generated. Therefore, the databases were screened with the search term: “business_development”. The complete phrase “business development” was restricted only to the title. This search strategy resulted in a sample of 871 publications. Based on the review of abstracts and the consideration of duplicates, 778 publications were excluded. Out of the remaining 93 publications, full texts were completely read and again assessed for matching the inclusion criteria. A total of 25 articles was included.

Second, business development literature has to be found that does not contain the term "business development" in its title. Thus, relevant experts in the specific research field of business development were identified and backward snowballing was conducted which implies finding citations and references in papers (Jalali & Wohlin, 2012). Consequently, the reference lists of the previously 25 included studies were screened which resulted in 11 additional studies included in this systematic literature review. In total, 36 publications are eligible for analysis.

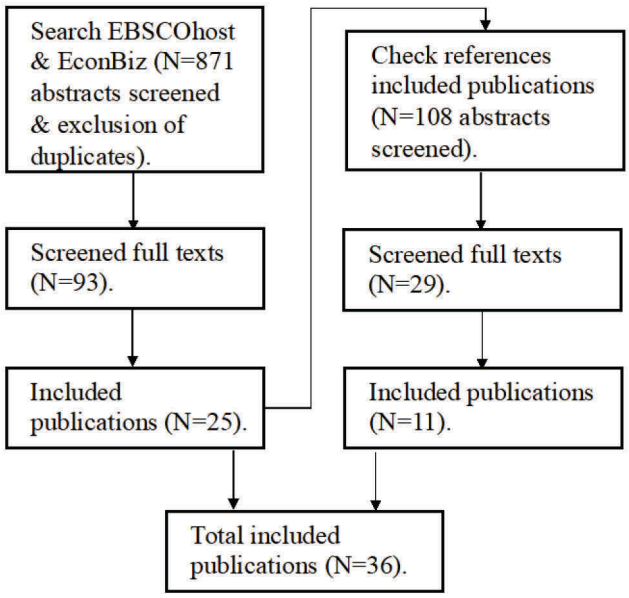

Figure B.1 Flow chart for selection of publications for systematic literature review

2.2 Content Analysis

The systematic literature review implies content analysis as an effective tool which can be applied both in qualitative and quantitative form as well as in combination (Seuring & Gold, 2012). Our systematic literature review follows a mixed-method approach complementing a qualitative synthesis of results by a quantitative-descriptive cross-check. An essential step of content analysis is the classification of the reviewed material. Thus, dimensions – respectively analytic categories – can be developed by either a deductive approach or an inductive approach. Due to the novel research interest in business development and its scare theorization, categories for classification were inductively derived from the material by employing an iterative process of category building, testing and revising (Eisenhardt, 1989; Mayring, 2000). On this basis, in the following we apply a mixed-method content-analysis based systematic literature review.

3 Analysis of Dataset Characteristics

Within this chapter we offer a short overview of the analyzed dataset. For descriptive, bibliographic purposes, we perform a systematic categorization of the final dataset – by year of publication and journal. Table B.1 reports the number of articles published in academic journals, conference proceedings and books that constitute the business development research body.

Table B.1 Journals by year and number of papers related to business development

Journals*	**Total Amount**	**IJEIM**	**LRP**	**RTM**	**Other Journals****	**No Journal*****
Year						
1972	**1**		1			
1974	**1**				1	
1976	**1**		1			
1983	**1**				1	
1984	**1**					1
1986	**1**				1	
1987	**1**				1	
2002	**3**			2	1	
2003	**1**				1	
2005	**1**				1	
2006	**1**				1	
2007	**1**				1	
2008	**4**		1		2	1
2009	**1**					1
2011	**2**				2	
2013	**1**					1
2014	**3**				3	
2015	**3**				2	1
2016	**1**					1
2017	**1**				1	
2018	**6**	4			1	1
Total	**36**	**4**	**3**	**2**	**20**	**7**

* IJEIM = International Journal of Entrepreneurship and Innovation Management; LRP = Long Range Planning; RTM = Research-Technology Management.

**"Other journals" aggregates 20 journals, each with a single article in our dataset: Business Horizons, Computers in Industry, Creativity and Innovation Management, Industrial Marketing Management, Innovative Marketing, International Journal of Economic Practices and Theories, International Journal of Marketing Studies, Journal of Business Chemistry, Journal of Business Management and Economics, Journal of Commercial Biotechnology, Journal of Management & Organization, Journal of Small Business and Enterprise Development, Marketing Intelligence & Planning, Omega, Futures, The Journal of Technology Transfer, Schmalenbach Business Review, South Asian Journal of Business and Management Cases, Strategic Management Journal, Symphonya. Emerging Issues in Management.

***"No journal" aggregates four books/chapters in books, two magazine articles and one conference proceeding: Förderverein für Marketing & Business Development e. V. at the University of Hohenheim, Gower Publishing Limited, Harvard Business School Background Note, ild Schriftenreihe Logistikforschung Band 7, Project Management Development – Practice and Perspectives – Fifth International Scientific Conference on Project Management in the Baltic Countries, Sloan Management Review, Verlag Dr. Kovac.

Our final dataset of 36 articles covers a period of almost 50 years (1972–2019). While investigating the 23 journals, the number of articles varies from a single token article in 20 journals to a maximum of four articles in 'International Journal of Entrepreneurship and Innovation Management'. Three journals ('International Journal of Entrepreneurship and

Innovation Management', 'Long Range Planning', and 'Research Technology Management') contribute to the business development research field with nine articles (25% of the sample). Altogether, management and marketing journals are predominating. With regard to the authors of the publications, the analysis identifies 71 researchers with one of whom is represented with three articles (Eidhoff) and nine of whom are with two articles each (Arnegger, Karol, Littler, Loeser, Poelzl, Sørensen, Sweeting, Tait, Voeth).

In sum, it can be stated that research in business development itself is in the development stage carried out by a small number of researchers. Business development is covered in a plurality of scattered, interdisciplinary business journals without an anchorage in an own scientific field.

4 Main Results and Theoretical Contributions

Our research approach is highly explorative. This corresponds with the inductive derivation of categories using qualitative content analysis. The categories emerged from the data material by paraphrasing with the help of selection and generalization in order to achieve a higher level of abstraction. In essence, by developing the category system we reduce the material to its essential content (Mayring, 2010).

The understanding of the business development phenomenon is presented from a component-oriented, organizational-oriented, and process-oriented perspective. Hence, the qualitative synthesis of results of the dataset is presented alongside the following seven inductive categories:

a. Component-oriented perspective: *(1) tasks and activities, (2) people,* (3) *tools and instruments.*
b. Organizational-oriented perspective: *(4) organization and responsibility, (5) involved stakeholder and interaction,*
c. Process-oriented perspective: (6) *influencing and success factors, (7) business development objectives.*

We present our results in three steps. First, we analyze how researchers define the main tasks in business development, what kind of competencies and education the business development personnel have, and which instruments they are applying. Second, we describe how the business development function is organized in the company and how it interacts with other business

functions. Third, we illustrate factors for business development and its desired outcome. Consequently, we can explore and analyze what characterizes business development. By synthesizing the insights alongside these seven categories across the 36 papers, we make a notable contribution to advance theory building and offer a holistic understanding of business development. Afterwards, these categories are used to examine further need for research.

4.1 Component-Oriented Perspective

Tasks and activities. The scope of business development can be described by its assigned tasks (Eidhoff & Poelzl, 2014). We conduct a descriptive analysis to identify the activities and tasks business developers are carrying out, based on seven dimensions of practices: *internal development, external development, market development, business functions, strategy, internal analysis* and *external analysis.*

Within this diversity and extent of task dimensions, some practices receive more attention than others. The most studied *internal development* tasks are the following ones: ‘new product development’ [29 articles], ‘new business development’ [26], ‘innovation development’ [18], ‘new business models’ [17], and ‘new technology development’ [16].

The most mentioned activities in regard to *external development* are the following market entry modes: ‘acquisitions’ [23], ‘partnering and cooperation [23], ‘mergers processes’ [17], ‘joint ventures’ [13], and ‘alliancing/alliance management’ [13].

The dimension of *market development* is subsumed by the following tasks: ‘entry in new market(s)’ [22], ‘market development’ [17], and ‘market-exit-strategies’ [3].

What is more, business developers have to complete tasks related to other business areas. The most commonly described ones are: ‘marketing strategies and activities’ [11], ‘project management’ [10], ‘commercialization’ [9], ‘due diligence’ [9], and ‘sales’ [7].

The most named practices for business development in regard to *strategy* are: ‘resource management’ [17], ‘generation, development and qualification of new ideas’ [13], ‘(corporate) strategy development and execution’ [13], and ‘planning’ [13].

Business development tasks also include aspects of *internal analysis*, namely: ‘provide the board/top management with data and presenting opportunities/ report the progress’ [8],

‘ongoing tracking and evaluation of the firm’s current position’ [7], and ‘implementation of internal efficiency measures’ [3].

Lastly, a large number of the contributions focus on one of the following *external analysis* practices: ‘identification, exploitation, evaluation and actualizing of new business opportunities/areas’ [28], ‘market analysis’ [23], ‘growth opportunities’ [15], ‘customer research’ [13], and ‘analysis of competitors’ (10).

The outlined 48 tasks (see Table B.2 and Table B.3 in the appendix) cover an enormous range and scope of practices indicating a cross-functional and highly responsible role of the business developer in the enterprise. To explore and implement something ‘new‘ seems to be one of the core activities of business development. It is worth mentioning, that business development tasks and practices vary mightily among firms (Eidhoff & Poelzl, 2014), according to the different phases of the business development process (Lorenzi & Sørensen, 2014) and by job level (Turgeon, 2015).

The associated tasks and activities determine the understanding of business development. Our results reveal six key dimensions within the scope of business development, namely (1) new products, (2) new services, (3) new technologies, (4) new processes, (5) new business models, and (6) new markets (see Figure B.2). Hence, business development tries to search for, develop and/or realize these dimensions. The broad scope defines the uniqueness of the business development function.

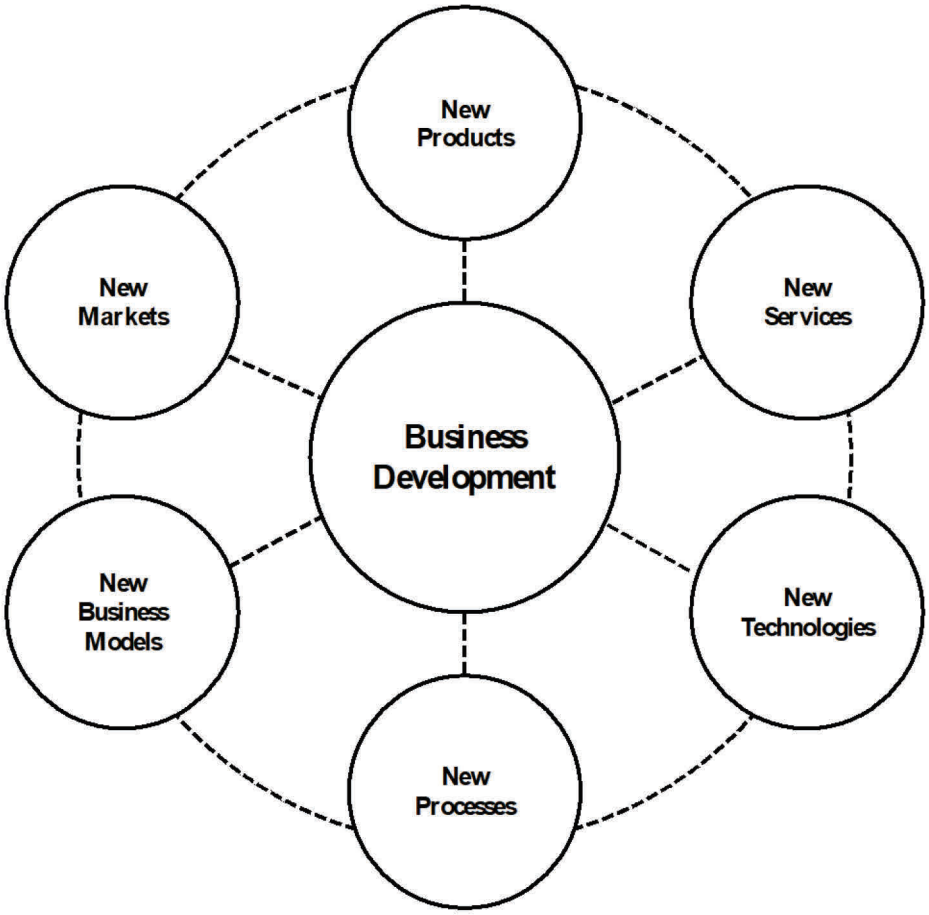

Figure B.2 Key dimensions of the scope of business development

People – staffing requirements and desired competencies/ qualifications. The role of the business development manager is linked to many skills, expectations and requirements. Employing staff should possess practical knowledge regarding the technology (Davis & Sun, 2006), product (Eidhoff & Poelzl, 2014), customer (Lorenzi & Sørensen, 2014), market (Daubenfeld et al., 2014) and industry dynamics (Valentine, 2003). Specialists knowledge from multiple business functions, e.g., marketing (e.g., Simon & Tellier, 2018; Voeth et al., 2018), sales (e.g., Austin, 2008; Ito, 2018), management (e.g., Eidhoff & Poelzl, 2014; Lorenzi & Sørensen, 2014) and law (Koppers & Klumpp, 2009) are expected. Additionally, expertise such as scientific expertise (Valentine, 2003), intercultural expertise (Koppers & Klumpp, 2009), and consulting (Voeth et al., 2018) are requirements for business development managers. Besides these skills, people responsible of carrying out business development must have an academic background (e.g., Daubenfeld et al., 2014; Davis & Sun, 2006) and preferably previous experience in business development (Eidhoff & Poelzl, 2014).

Desired competencies that companies expect from business development managers include interpersonal skills (Davis & Sun, 2006), methodological and analytical skills (Eidhoff & Poelzl, 2014), self-management (Turgeon, 2015), and communication skills (e.g., Austin, 2008; Voeth et al., 2018). Furthermore, capability to think individually (Davis & Sun, 2006), conceptually (Lorenzi & Sørensen, 2014), abstract (Daubenfeld et al., 2014), and strategic (Davis & Sun, 2006) is appreciated. Moreover, an established industry/business network is seen as a positive factor for business developers (Daubenfeld et al., 2014; Lorenzi & Sørensen, 2014). International experience including (full) bilingualism is shaping the business developers' profile additionally (Turgeon, 2015).

Overall, the demonstrated profile of business developers corresponds well to the previously discussed tasks and Sørensen's (2012) understanding of business developers as 'integrating generalists'. The required abilities for business development are diverse and reflect competencies characterized by highest standards and skills as well as varied knowledge and experience underlining the diversified character of business development. The mentioned attributes are subject to the business development job level and can differ regarding entry level (Turgeon, 2015).

Tools and instruments. Voeth et al. (2018) claim that instruments used in business development are mainly originated in strategic management, strategic marketing, finance, and corporate entrepreneurship. Furthermore, instruments specifically developed for business development activities are mentioned.

Typical tools in strategic management are business plans (e.g., Austin, 2008; Davis & Sun, 2006; Hartlieb & Silvius, 2016), SWOT analysis (e.g., Karol et al., 2002b; Pearson, 1976), or business model innovation canvas (Eidhoff & Poelzl, 2014; Sørensen, 2018).

Some instruments subsumed under the area of strategic marketing are: market analysis (Eidhoff & Poelzl, 2014), industry structure analysis – e.g., Porter's 5 Forces (Karol et al., 2002b; Voeth et al., 2018), or competition analysis (Eidhoff & Poelzl, 2014).

Applied tools and methods regarding finance are, for instance, key performance indicators (KPIs) (Voeth et al., 2018), discounted cash flow analysis (Littler & Sweeting, 1987), and investment valuation (Eidhoff & Poelzl, 2014).

Prototyping (Karol et al., 2002b) is one method originated in corporate entrepreneurship.

Tools and methods particularly created for business development are customized internal reports, self-designed checklists, trend scenarios, industry specific models, risk-bearing capacity analysis (Voeth et al., 2018), and structural frameworks like the 'business initiative process' (Karol et al., 2002a; Karol et al., 2002b).

The quantitative study of Voeth et al. (2018) offers some insights regarding the frequency of tool usage by business development practitioners. Their results reveal that the most used instruments are business plans followed by KPIs. The variety of applied tools and instruments (all in all 51 are identified) as well as its anchorage in diverse business fields underline once again the comprehensiveness of business development activities and functions.

(1) Tasks and activities, (2) people, as well as (3) *tools and instruments* are identified as components of business development. These components are illustrated in detail in Figure B.3. In its combination, they are defining the scope of the business development function.

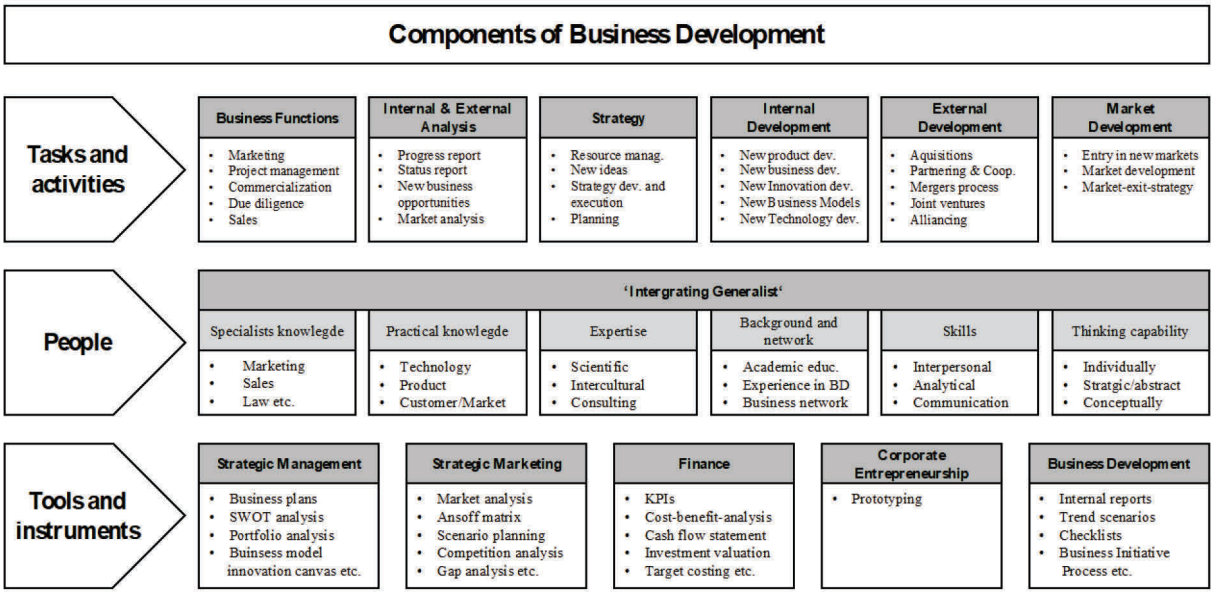

Figure B.3 Components of an integrated business development model

4.2 Organizational-Oriented Perspective

Organization and responsibility. Kind and zu Knyphausen-Aufseß (2007) clarify three organizational implementation forms of business development in the biotech industry: implicit (no official description, no planned effort), established (official label, recognized relevance), and institutionalized (organizational unit).

The systematic literature review also reveals that business development is carried out in different ways within a company. This refers especially to the organization of business development activities and processes. It shows that different actors in different compositions and interrelations are responsible for business development in the firm. On the basis of the dataset, it becomes clear that business development appears within a distinct department, unit or team [26]. In this context one can speak of an institutionalization of business development within a company (Kind & zu Knyphausen-Aufseß, 2007), mostly as a staff function (Eidhoff & Poelzl, 2014).

Apart from that, there are individual executives who are responsible for business development. In this case, the relevance and mission for business development are officially recognized but are not part of an institutionalized team/ unit (Kind & zu Knyphausen-Aufseß, 2007). In the dataset, this form of the business development function – which is described as 'established' by Kind & zu Knyphausen-Aufseß (2007) – is shown in 9 cases. These individuals can be a single business development manager, the CEO of a company (e.g., Sørensen, 2018) or entrepreneurs (e.g., Piispanen & Paloniemi, 2015; Scaringella, 2018).

Furthermore, business development can be performed within temporary structures by different, mostly cross-functional teams or projects (e.g., Burgers et al., 2008). Thus, business development functions extend across other functional units, such as, for instance, marketing or innovation management (e.g., Daubenfeld et al., 2014). These different departments and activities are driven by and aligned to the business development goals. The temporary structures occurred in 8 cases.

In addition, business development projects are mentioned. In two cases (Forsman, 2008; Kraushar, 1985) it is not evident whether these have an established character, are exercised by institutionalized functions or by cross-functional teams.

Valentine (2003) also mentions outside consultants [1] who can additionally support business development staff.

In conclusion, our results confirm the findings of Kind and zu Knyphausen-Aufseß (2007) with regard to the established and institutionalized forms and the results of Voeth et al. (2018) in terms of a cross-functional organization of business development.

In contrast, other aspects are remaining largely unclear, which in turn reveals a research gap. There are assumptions that the organizational form of business development is depending on the enterprise size (e.g., Davis & Sun, 2006). Still there is no empirical evidence yet. Moreover, the implicit organizational form of business development mentioned by Kind and zu Knyphausen-Aufseß (2007) could not be identified by the systematic literature review as it is offering neither an official description nor a planned effort. It is more likely that the implicit form is found in other research fields like marketing or product development where business development activities are taking place without explicitly naming them like that. Thus, research in business development should not only focus on its own research field but rather complement it with other research streams. An understanding of what characterizes business development is vital in order to identify business development activities and functions in these different research fields. Hence, our elaboration marks an appropriate starting point. The level of responsibility taken by the stakeholders responsible for business development differs regarding the organizational form. Nevertheless, the systematic literature review is not able to reveal the level of responsibility of business development personnel in charge across companies and industries. In Figure B4, based on the current knowledge, we bring an assumed relation of organizational form and level of responsibility in business development together.

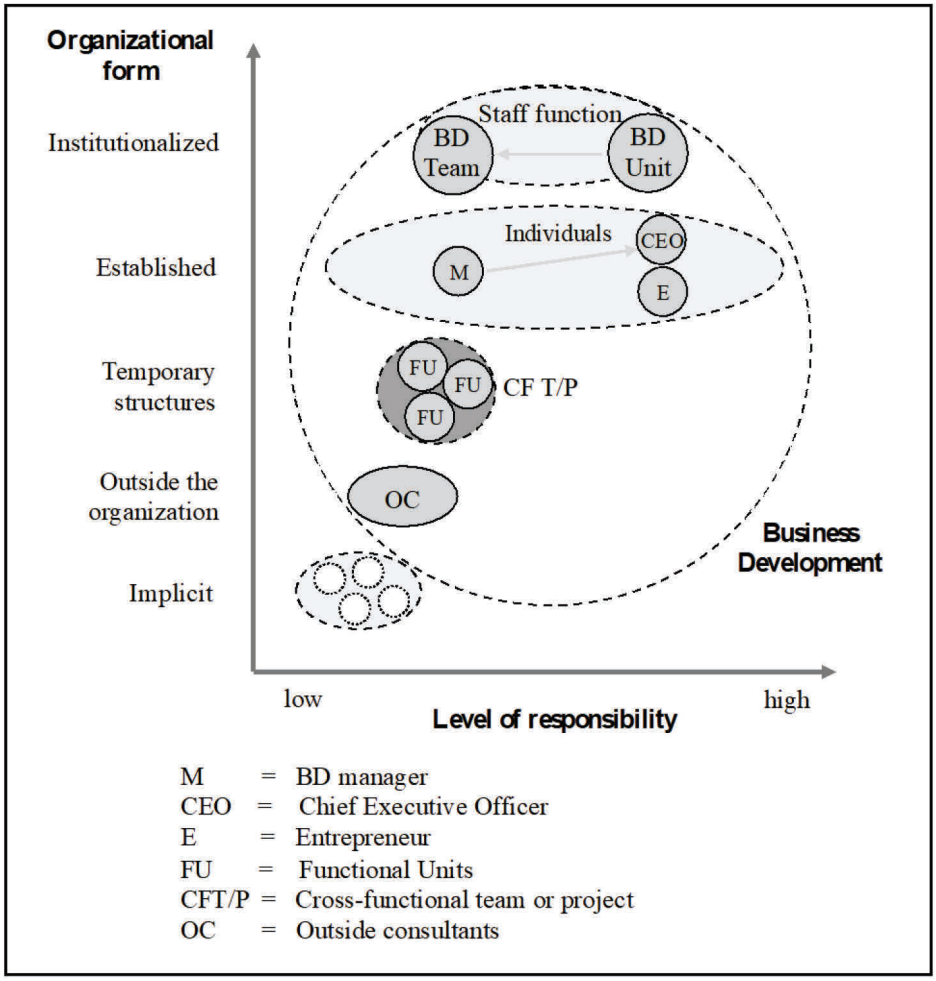

Figure B.4 Organization and responsibility of business development

Involved stakeholder and interaction. Successful business development requires close cooperation between business development and many other divisions or areas of authority of the company. The systematic literature review reveals four main corresponding corporate stakeholders: (1) management, (2) line function, (3) staff function, and (4) external experts.

(1) Management subsumes the board (e.g., Voeth et al., 2018), the CEO (e.g., Bussgang, 2013), top management (e.g., Lorenzi & Sørensen, 2014) or senior management (e.g., Koppers & Klumpp, 2009).

(2) Line function includes divisions like marketing (e.g., Davis & Sun, 2006; Duke, 2011; Eidhoff & Poelzl, 2014; Simon & Tellier, 2018), or sales (e.g., Austin, 2008; Koppers & Klumpp, 2009; Lorenzi & Sørensen, 2014; Turgeon, 2015).

Among the (3) staff function are R&D (e.g., Kind & zu Knyphausen-Aufseß, 2007; Ito, 2018), the human resources department (e.g., Koppers & Klumpp, 2009; Simon & Tellier, 2018), the law/ legal department (e.g., Daubenfeld et al., 2014; Eidhoff & Poelzl, 2014), and logistics (e.g., Karol et al., 2002b; Koppers & Klumpp, 2009).

Lastly, (4) external experts, e.g., marketing research agencies, consultancies (Koppers & Klumpp, 2009), or academic researchers (Simon & Tellier, 2018) can be fruitful partners of business development staff.

In sum, the business development function is involved in a cooperation with up to 36 other departments/ stakeholders. Hence, business development can be seen an important organizational link between all relevant internal and external segments of a firm.

4.3 Process-Oriented Perspective

Influencing and success factors. The majority of the papers [31] name factors that influence or determine business development. Especially resources are mentioned in this context (e.g., Forsman, 2008, Lorenzi & Sørensen, 2014; Keil et al, 2008; Voeth et al., 2018). Investment of (financial) capital (e.g., Achtenhagen et al., 2017; Voeth et al., 2018), or physical capital (Duke, 2011) are influencing business development efforts. Another important factor are the human resources of an enterprise (e.g., Achtenhagen et al., 2017). Thus, personnel with entrepreneurial spirit and a risk-taking attitude (Littler & Sweeting, 1983; Wilemon & Hulett, 1972), or so called 'champions' (Burgers et al. 2008; Littler & Sweeting, 1983) initiating business development are having an influence on business development operations. Another important resource is seen in the time (Kind & zu Knyphausen-Aufseß, 2007; Valentine, 2003), and the interrelated investments (Kind & zu Knyphausen-Aufseß, 2007; Lorenzi & Sørensen, 2014). Furthermore, the recombination of resources is mentioned as an influencing factor (Scaringella, 2018).

In addition, business development is depending on predefined conditions within a company. Business development has to act within the constraints and show a fit with the given corporate strategy (Littler & Sweeting, 1983; Littler & Sweeting, 1987). The corporate culture (Uittenbogaard et al., 2005, Valentine, 2003), managerial preferences (Littler & Sweeting, 1987), the integration of the enterprise and linking of its services and products with all the value networks, strategic partners and constituencies (Koppers & Klumpp, 2009) also set the scene for business development.

Moreover, business development requires a process (Uittenbogaard et al., 2005, Valentine, 2003), planning and control procedures (Littler & Sweeting, 1983), as well as an appropriate communication structure (Uittenbogaard et al., 2005). Nevertheless, it needs a certain amount of autonomy (Burgers et al., 2008; Davis & Sun 2006), and an organization with new ways of working (Burgers et al., 2008).

The overall influencing factors are followed by success factors explicitly having a positive impact on business development. In addition to the previously mentioned factors such as capital, human resources in the form of business development experts, corporate culture, the overall strategy fit and autonomy, other factors come into play. These are business development strategy (Uittenbogaard et al., 2005), realistic BD objectives (Valentine, 2003), progress control (Uittenbogaard et al., 2005), and timing (Arnegger, 2015). Visionary leadership (Valentine, 2003), and organizational (Simon & Tellier, 2018), or environmental support (Burgers et al., 2008) are further fundamental to the success of business development. In addition, strong reputation (Uittenbogaard et al., 2005), and a well-known brand (Ito, 2018) are mentioned. Forsman (2008) describes five dimensions of success for business development projects: (1) entrepreneurial success, (2) project preparation success, (3) change management success, (4) project management success, and (5) project success. The lack of these success factors provides challenges or a facility for failure of business development initiatives.

Business development objectives. 31 papers in our dataset describe business development objectives. These objectives are various but with a central, overall aim. Business development tries to maintain the company‘s leadership (Uittenbogaard et al., 2005), earn the highest possible market share (Forsman, 2008), gain competitive advantage (Eidhoff & Poelzl, 2014; Lorenzi & Sørensen, 2014; Daubenfeld et al., 2014), accomplish market-driving activities (Giglierano et al., 2011), develop new and existing business areas (Arnegger, 2018), and expand/extend the business (e.g., Davis & Sun, 2006; Kind & zu Knyphausen-Aufseß, 2007). Furthermore, business development is aiming to alter the status quo of business (Austin, 2008; Duke, 2011; Littler & Sweeting, 1987) by improving the firm‘s innovative performance (Lorenzi & Sørensen, 2014; Uittenbogaard et al., 2005), and its product portfolio (Koppers & Klumpp, 2009; Valentine, 2003). This in turn helps to increase the firm‘s profit, production or service potential (Kind & zu Knyphausen-Aufseß, 2007), the valuation and shareholder value/ return (Valentine, 2003), generate sales growth (Forsman, 2008), and revenues in the long-term (Giglierano et al., 2011; Uittenbogaard et al., 2005).

Additionally, the business development's objective consists of the creation of value (Kind & zu Knyphausen-Aufseß, 2007), and new knowledge (Burgers et al., 2008; Keil et al., 2008) to achieve a more effective and efficient way of doing business (Forsman, 2008). Consequently, a goal is to maintain long-term economic success (Eidhoff & Poelzl, 2014), foster long-term orientation (Voeth et al., 2018), and sustainability of the organization (Turgeon, 2015). Thus, the overall and most mentioned objective of business development is corporate growth (e.g., Davis & Sun, 2006; Hamilton, 1974; Karol et al., 2002a; O'Sullivan, 2002; Simon & Tellier, 2018; Voeth et al., 2018).

The influencing factors equal determinants and objectives equal outcomes of business development. Hence, we combine these factors and establish a process model (see Figure B.5).

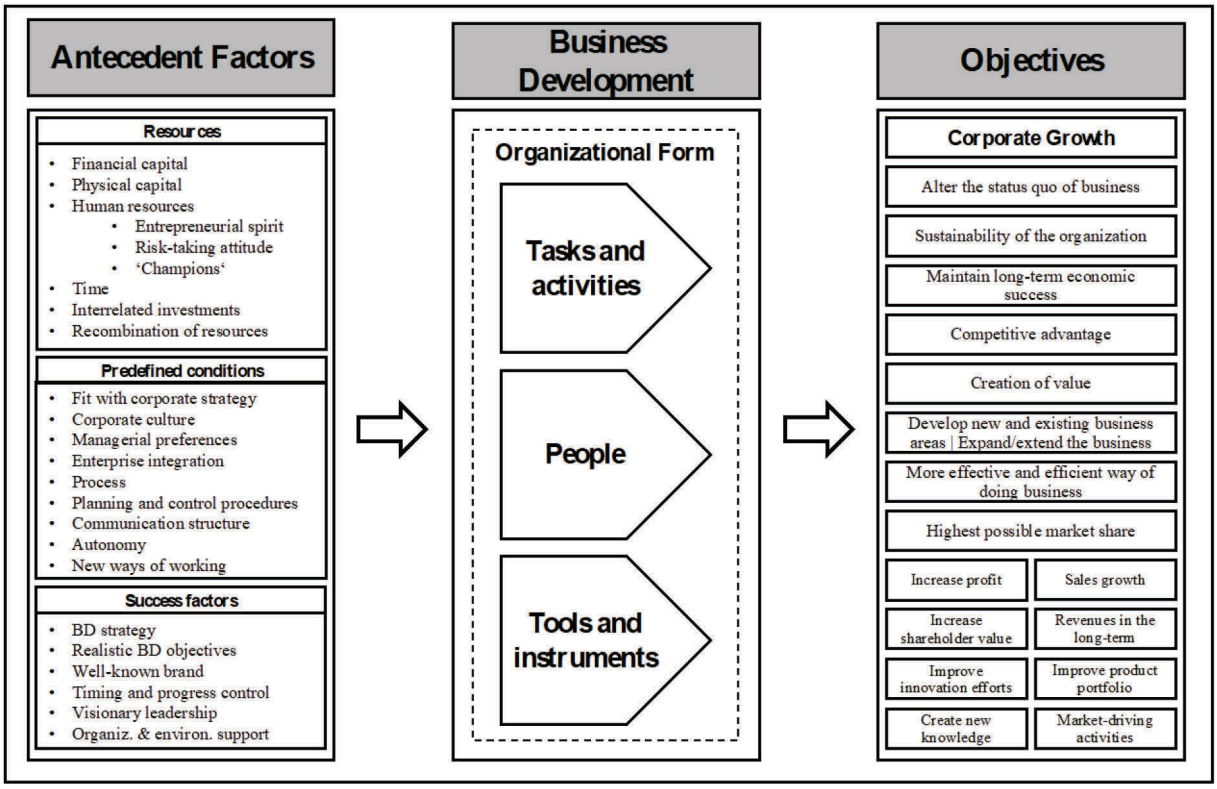

Figure B.5 Business development influencing factors and objectives

5 Analysis of Business Development Perspectives and Definitions

Authors of 12 articles formulate an own definition of business development. Further definitions, in the form of citations, can be found in 5 papers. All definitions are listed in Table B.4 found in the appendix. The majority of papers in the dataset [19] does not provide any business development definition. These findings indicate that the understanding of business development is communicated poorly across the papers and is inconsistent in academia. On the basis of the insights offered by the systematic literature review, we further aim to shape the understanding of the business development phenomenon. Hence, we present the existing disagreements in the business development literature followed by formulating a uniform definition of business development.

The findings of the systematic literature review show the broad spectrum and scope of business development. The divergent perspectives in this field complement each other and contribute to an extended knowledge base. In addition to these consistent overlaps and further extensions, the summary of the database also reveals some disagreements. Lorenzi and Sørensen (2014) advise to be careful with the terminology of business development. Following their argumentation, discrete projects (Burgers et al. 2008) are actually not business development; neither are observations from practice regarding a tendency to re-label well-established phenomena like ‘sales’ to ‘business development’. There is a trend that researchers consider business development as part of corporate entrepreneurial practices (Davis & Sun, 2006, Simon & Tellier, 2018), as a marketing activity (Giglierano et al., 2011), as a commercialization function (Turgeon, 2015), as a strategic function (Valentine, 2003), or as an empirical manifestation of a capability (Kind & zu Knyphausen-Aufseß, 2007). Hence, a certain kind of disagreement of what business development actually is, is still existing. In addition, academia lacks a concrete distinction of business development to terms often used interchangeably like corporate development (e.g., Wilemon & Hulett, 1972), or corporate venturing (e.g., Keil et al., 2008).

The same applies to the processes in which business development is involved. For some researchers, business development links a process from the ideation to the commercialization phase (e.g., Davis and Sun, 2006). Sørensen‘s (2018) business development process spans from analyzing selected growth opportunities to the integration of the growth opportunity until it becomes business-as-usual. For Klumpp and Koppers (2009) the process entails the phases of

(1) idea, (2) concept, (3) feasibility, and (4) implementation. Others see the role of business development only in much more narrowly defined process areas. For instance, Kind & zu Knyphausen-Aufseß (2007) illustrate a three-step process involving (1) identification, (2) evaluation, and (3) negotiation. The business development process may vary regarding the context and perspective and from firm to firm.

In line with the divergent perspectives on business development, the definitions show heterogeneous nature, even though there are some agreements regarding central characteristics. Eidhoff and Poelzl (2014) point out that the definition of business development by practitioners is strongly linked to the tasks business development is responsible for. Hence, the scope of business development can be described by its assigned tasks. This is also underlined with regard to the analysis of the existing business development definitions. The main component of nearly all definitions [16] are the tasks and activities of business development. The only exception is the generic definition of Hartlieb and Silvius (2016). Our systematic literature review identifies seven main pillars subsuming the variety of business development tasks. None of the individual business development definitions available includes all of these seven dimensions. However, if we look at them all together, all seven dimensions can be found. Hence, these should be combined and reflected in a universal definition of business development.

In addition to these tasks, the business developer, or personnel responsible for business development functions is a main component of business development (see Figure B.3). In contrast, the definitions do not refer to the business developer as the executing force. The business developer is the authority that combines the various tasks already established in other fields. Thus, as a generalist, the business developer is decisive for the understanding of business development as an independent integrated field.

To better understand the nature of business development, 10 definitions refer to the objectives, mostly uniform in regard to growth opportunities. For this reason, a joined definition synopsis of business development should entail its objectives.

The authors of the existing business development definitions referred to static content-related aspects mostly regarding tasks and objectives of business development. However, the systematic literature review reveals that business development is strongly characterized by interactions and processes. Hence, we propose an enhancement in perspective reflected in the universal business development definition. The perception of interrelations between elements

of business development as well as its interfaces within and outside the organization calls for a dynamic perspective.

Eidhoff and Poelzl (2014, p. 843) emphasize that "a uniform definition and scope of business development are prerequisites for further research in this field in order to classify corresponding research accordingly." On this basis, the existing – mostly heterogeneous – definitions of business development are to be consolidated and enriched with the results of the systematic literature review presented. Thus, a definition can be proposed that combines the main agreements of the status quo of business development research. The amalgamation of business development definitions is carried out along three components: (1) tasks and activities, (2) people, as well as (3) business development objectives and adds a dynamic view to the picture.

"Business development realizes new business opportunities by involving all analytical and strategic preparation efforts as well as internal, external and market development practices to alter the status quo of the business. The business developer is a generalist with an interdisciplinary skillset and consolidated knowledge of several, diverse business functions who aims to drive long-term value and corporate growth."

6 State of Business Development Research and Implications for Future Research

This chapter further consolidates the status quo of business development research. By means of a descriptive analysis we identify the main research topics in business development. Furthermore, we offer an overview of the underlying theories and research streams for business development. Lastly, we outline the research approaches applied in the field of business development (see Table B.4 in appendix for more details). The findings of the systematic literature review lead to implications for further research. Thus, we propose a research agenda and new avenues going forward in terms of topics, research designs, and methods.

Four main business development topics are particularly addressed by the authors: 'development of a method, framework or guideline for business development' [5 articles], 'scope of business development' [3], 'management of business development' [3], and 'success and (failure) factors of business development' [3]. Further 16 topics receive less contribution but are nevertheless important for future research. Hence, research can investigate promising and enriching topics like 'strategy in business development' [2], 'integrated business

development model' [1], or 'business development capabilities' [1]. The first descriptive report reveals that business development research offers various perspectives, as contributions cover a range from operational to strategic business development aspects. The research topics focus mainly on methods and strategies of its internal and external implementation, on the function and organization of business development, and on the business developer. In addition, the diverse topics suggest that a business development perspective can contribute to rejuvenating the thinking about established phenomena, such as planning [1], or commercialization of innovation [1].

With reference to the previous research, future research can examine different frameworks and guidelines for business development and test their validity and reliability. The existing frameworks and guidelines (e.g., Hamilton, 1974; Karol et al., 2002b; Uittenbogaard et al., 2005) can be subject for comparison and anchorage point to further elaboration and development of business development frameworks, extended by additional features like, for instance, performance measurement. The results of our systematic literature review and its theoretical contributions are laying the foundation to develop a specified multi-dimensional guideline for the implementation, execution, and effectiveness measurement of business development across companies, industries, and regions.

The understanding and scope of business development is a vital research topic. Our findings reveal that business development shows many similarities to other business fields and phenomena. Future studies should seek to create a common understanding of business development by researching its distinct and unique aspects. Thus, points of differences to other business functions should be investigated in order to better define the distinct character of business development. Business development should be researched by its differentiating aspects to, for instance, corporate development, corporate venturing, marketing, product development, and sales. Our findings indicate that business development is integrating these and many other functions. To better understand the scope of business development and how it is managed, future research should examine and intergrade business development alongside the identified three dimensions: (1) component-oriented perspective, (2) organizational-oriented perspective, and (3) process-oriented perspective.

Component-oriented perspective. Researchers can capture the specificities of the phenomenon as well as the profession of business development by comparing which specific practices alongside the whole value chain are taken over by business development and which by other

units. Furthermore, there is a lack of knowledge with regard to the multitude of tools and instruments in business development. Researchers should ascertain the benefits of these tools to realize business development goals and how they can be applied in a more effective and efficient way. Voeth et al. (2018) demonstrate that only about 3 percent of the companies use tools specifically designed for business development. Consequently, there is a need for action to analyze whether additional tools and instruments are necessary for business development activities and, if so, how new ones are developed.

Organizational-oriented perspective. Future research could build on our study by investigating which organization type is best applied for business development activities in various contexts, e.g., regarding enterprise size, industry, and level of responsibility of business development personnel in charge. Researchers should further examine the relationships and interdependencies between the business development function and the involved stakeholder to identify overlapping intervention points for cooperation or coordination, e.g., in regard to the nature and best timing of these interactions.

Another crucial topic is the impact of business development on other research fields respectively business functions and vice versa. For instance, the systematic literature review reveals that business development is specifically closely related to marketing (see tasks, tools, involved stakeholder, objectives). Giglierano et al. (2011, p. 31) even go so far to state: "[Business development] is apparently an element of marketing that deserves more attention in marketing theory, development of practical methods, and marketing and entrepreneurship education". In contrast, our study illustrates that business development is a distinct profession, business function and field of research, hence, more than an element of marketing. Nevertheless, further research should investigate which areas of marketing are relevant to business development and how they interoperate to each other, e.g., marketing management, strategic marketing, B2B marketing, brand management, consumer/ buying behavior, or digital and interactive marketing. For example, Thaler (2018) points out the interdependencies between business development and brand management. This can make valuable contributions not only to the field of business development research, but also provides new, interdisciplinary impetus for the status quo in marketing research. Above all, in this context a consumer- and market-oriented research perspective is suitable to broaden the business development research. For instance, studying business development in regard to the company‘s brand and taking a

consumer-centric perspective, the brand with its signaling effects can take an important role in the innovation adoption by customers (Aaker, 2007; Sinapuelas et al., 2015).

Process-oriented perspective. The previously mentioned business development components and interrelations should be investigated applying a process-oriented perspective. Accordingly, the conceptually derived success and also failure factors of business development need an empirical validation. The identified antecedent factors are primarily resource-based and have a focus on the specifications inside the company. Equally, the objectives respectively outcomes of the business development function are mainly company-internal-oriented (e.g., firm performance). As a consequence, research in business development lacks an understanding of the consumer- and market-oriented aspects in regard to determinants and outcomes of business development. Hence, further research should investigate the role of business development and its impact on, for instance, market and industry change or consumer behavior.

Due to the exploratory stage of business development research, it must be noted that several essential topics are not addressed yet. The role of digitalization within business development is largely unresearched. We have only found one study in this context. Stief et al. (2016) regard digital transformation of the firm as a business development strategy. Furthermore, the role of artificial intelligence (AI) to support business development might be a trend-setting research area.

In order to address these enriching topics in business development research, a theoretical foundation is vital. 11 papers of the dataset comprise theories and/ or research streams regarding business development; 25 are not mentioning any. Nine theories underlying business development can be identified: dynamic capabilities [5 articles], resource-based view (RBV) [4], market-based view (MBV) [1], strategy-as-practice-perspective [1], theory of entrepreneurship [1], theory of the growth of the firm/ process of development [1], institutional theory [1], process model for internal ventures [1], and a theoretical framework linking business model, open innovation and knowledge management [1]. Additionally, seven papers offer research stream(s); 29 do not. Five research streams are applicable for business development: corporate entrepreneurship [5], strategic marketing [3], strategic management [2], innovation research [2], and strategic entrepreneurship (SE) [1]. 19 papers neither offer a theory nor a research stream for business development. Two findings are particularly notable here. First, studies offer an interdisciplinary theoretical foundation of business development. Second, the

majority of papers lack a theoretical foundation stressing the need of our study. Thus, we make a contribution to the theorization of business development.

The dataset contains 26 empirical and 10 conceptual articles. The empirical articles offer a range of methodologies, of whom 21 are of qualitative and 7 of quantitative nature. Thus, methodology-wise, research on business development has mainly been conducted using qualitative interviews [9] and case-study designs [9].

The predominance of qualitative research also refers to the underdeveloped state of research in business development. Furthermore, the studies in the dataset are primarily investigating large and mature enterprises representing a narrow spectrum of business development in organizations. The few quantitative studies are mainly descriptive. Therefore, we call for more large-scale surveys ($N > 100$) applying multivariate analysis methods (e.g., multiple regressions, causal analyses or structural equation modeling). In accordance, and with respect to the overcoming of the exploratory phase of business development research, representative, quantitative based studies with generalizable results should contribute to broadening the horizon in this area. To develop conceptual models with dependency paths considering the determinants and outcomes of business development, researchers can take the shown influencing factors (determinants) and business development objectives (outcomes) into account. For this purpose, a universally valid operationalization of the business development construct seems to be indispensable and game-changing for gaining a better understanding of the different factors determining and contributing to business development. Additionally, to draw inference about the causality among these variables, the interrelatedness of these impact factors and antecedents as well as outcomes (e.g., firm performance, market/ industry change, consumer behavior) of business development are subject for investigation, for instance, through recall of survey data collecting participants. Additionally, previous findings can be tested and validated for larger samples.

Moreover, outcome-driven research can be launched by post hoc interviews with participants obtaining their recall of events. Hence, longitudinal study designs, in which participants are interviewed at multiple points in time, are suitable for application to discover how the perceived performance of business development efforts changes through and after the guideline implementation. Thus, success and failure dimensions and their variation through the process can be surveyed.

Researchers conducting studies in the context of the mentioned topics could supplement the measurement of business development with content analysis of several sources, e.g., internal memos, business plans, (annual) reports or monitoring systems. Alternative methodological approaches and developments of content analysis for strategy reconstruction can be applied (e.g., Höhler, 2018). The basis of this approach is found in articles from trade press reporting on business development activities.

Altogether, our study prompts researchers to further investigate the scope, interrelatedness, and processes of business development across job entry level, companies, industries and regions. A shift in focus towards quantitative surveys applying multivariate analyses offer advances in current knowledge. This supports the further theorization of the business development phenomenon in terms of business development as an organizational unit, as professional field and as strategic and/ or operational function. Thus, the theorization symbolizes a cornerstone to establish a standard business development process in research. Furthermore, the advancements in theory building and methods foster new managerial and practical implications.

7 Managerial and Practical Implications

For management practice our systematic literature review represents implications covering seven main topics: *tasks and activities, people, tools and instruments, organization, and responsibility, involved stakeholder and interaction, influencing and success factors, and business development objectives.*

Tasks and activities. The multifaceted tasks assigned to business development primarily include products, processes, services, new business (models), markets, acquisition, partnering and identification, exploitation, evaluation and actualizing of new business opportunities. Therefore, business development managers have to be able to serve a wide range of activities in order to develop their business in a growth-oriented way and not only focus on one of these aspects. Moreover, the management has to ensure to match the business development managers' and respectively business development teams' skills and knowledge with the assigned tasks, for instance via personality tests (Janovics & Christiansen, 2003).

People. According to the findings of the systematic literature review, human resources are one of the most critical factors to the success of business development. The skills and abilities crucial to work in business development are diverse and of high standards. Business developers

have a variety of different academic and professional backgrounds. Consequently, managers might select highly skilled potential business developer candidates for their business development teams in two ways. On the one hand, the interdisciplinary business development team is formed by the altogether composition of diversified specialists with different expertise. On the other hand, potential business developers meet the requirements of an 'integrating generalist' (Sørensen, 2012).

Besides this, companies and managers in charge should offer trainings and support in the field of business development in order to ensure customized professional development. Furthermore, trainings and support within companies are seen as incentives for potential business developer candidates (Turgeon, 2015).

The number of jobs in business development is growing steadily (Turgeon, 2015), calling for new academic and professional education offerings. Study programs in business development including relevant, interdisciplinary course content and particular teaching materials should be implemented for students and managers.

Tools and instruments. Business development managers use several tools and instruments typically found in strategic management, strategic marketing, finance, and corporate entrepreneurship. Thus, managers have to avoid silo thinking and ensure a flow of knowledge between departments and units applying the same tools. Furthermore, business developers are advised to use or develop analysis and valuation instruments and methods supporting the business development process and measuring its performance.

Organization and responsibility. With regard to the organizational structure of business development in firms Voeth et al. (2018) claim that in most companies an establishment of business development units has been realized mainly in the past ten years. Due to the vital role of business development in striving for corporate growth in an increasingly globalized and highly competitive environment, managers in charge have to consider an adequate organizational structure for their business development ambitions and initiatives. Especially for large and mature companies, an institutionalized business development type within the organization turns to good account.

Involved stakeholder and interaction. Due to the double interface of business development with a multitude of stakeholders and/ or departments, effective and efficient processes and structures

for collaboration have to be realized. In particular, it is the responsibility of the top management to enable and support these interactions. A seamless collaboration through a precise allocation of roles ensures to meet the business development objectives.

Influencing and success factors. The mentioned performance measurement is crucial to determine the influencing factors for business development success within the company. Managers are advised to measure business development success on long-term dimensions. According to the findings of the systematic literature review, different kinds of resources (e.g., financial, and human) are having a pivotal impact on business development activities. Hence, management has to enable the accessibility to all required resources throughout all phases of the business development process. Furthermore, business developers should have the expertise to exploit them in a sustainable and goal-oriented manner, for instance, by recombining the available resources. In sum, the company has to offer an environment and corporate culture where innovations can be fostered without any resistance.

Business development objectives. The objectives of business development are closely connected to the overall strategy and vital for securing the future of the company. It is important for management to recognize the essential role of business development by bringing in discontinuity in normal operations for corporate renewal and thus foster corporate growth. Especially, for organizations with business development activities executed by cross-functional units, an aligned business development objective is indispensable to guide and drive these different departments.

8 Conclusion and Limitations

Business development is a complex phenomenon. A uniform definition does not yet exist. The systematic literature review conducted in this paper could show that different disciplines make use of the business development construct, which thus can be analyzed from different perspectives. Against this background, we propose a definition that combines the main agreements of the status quo of business development research.

However, our systematic literature review is subject to its own limitations. All systematic literature reviews can only review the existing knowledge perhaps resulting in a bias for over- or underestimation of effect sizes. Another limitation is the exclusion of non-English publications due to language barriers. Furthermore, a body of work in, e.g., new product development and strategic work in framing growth in businesses, is not included in the systematic literature review. The main focus of this research lays explicitly on the phenomenon of business development. But findings of the systematic literature review reveal that business development itself is a multi-dimensional construct characterized by interdisciplinarity. Thus, adjacent research areas might be enriching to further contextualize, shape and complement the research field of business development.

We carry out the first comprehensive systematic literature review in regard to business development alongside 36 publications. In applying this methodology, we provided insights into seven main topics describing, structuring, and defining the scope and status quo of business development in academia. The findings are in line with the theoretical foundation and spectrum of underlying research streams in business development stressing an interdisciplinary understanding of business development. Thus, we established a uniform definition of business development supporting the further theory building of this phenomenon. The combination of different research streams makes business development not only relevant for practice but also offers new areas for established fields of research as a connecting element. Still, more research applying additional theoretical reflection, diversified methods and research designs is needed to create a shared and holistic understanding of the concept of business development. In summary, business development research should be regarded as an own and distinct field with many cross-connections to established research fields. In practice, business development is the essential link between all internal and external segments.

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Appendix

Table B.2 Overview of BD tasks and activities found in publications (part 1)

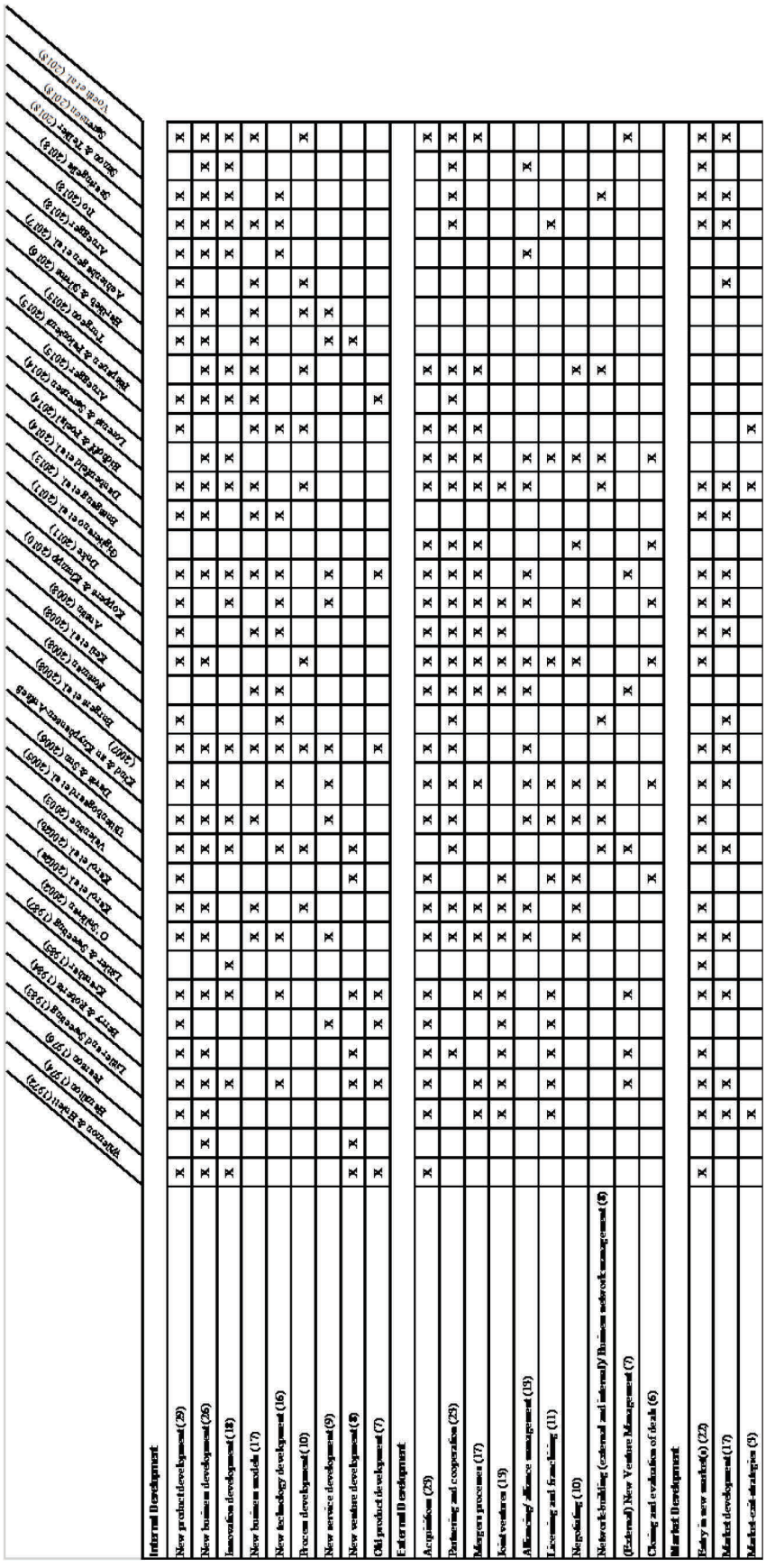

Table B.3 Overview of BD tasks and activities found in publications (part 2)

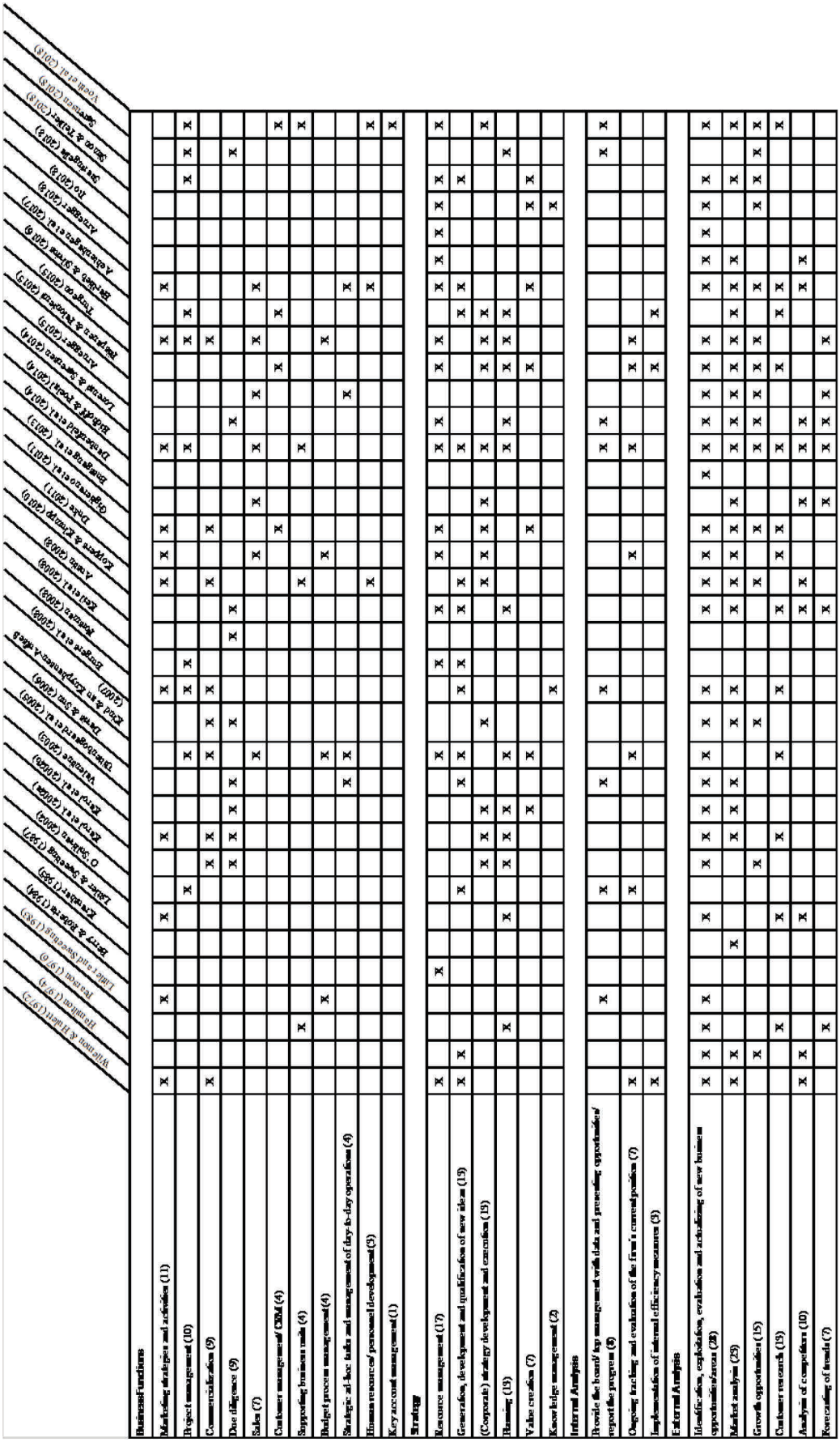

Table B.4 BD literature overview (source: own elaboration partially based on Voeth et al., 2018)

Author(s)	Topic	Theory/ Research stream	Key research interest	Definition of BD	Size of enterprise	Research approach	Results
Wilemon & Hulett (1972)	Proposing a systematic approach to developing new products and businesses for the large corporation. The new business develop-ment (NBD) department as a central part of this new enterprise develop-ment operation.	None/None	View approaches to NBD in a larger context as components of a corporate refounding process.	None	Large enterprise.	Conceptual/ practitioners citations	Framework: Systems view of New Enterprise Development Activities
Hamilton (1974)	Method developed for generating and screening ideas for NBD, new ventures, and diversi-fication.	None/None	Discussing of two methods of getting and screening ideas.	None	Large enterprise.	Conceptual/ set of proven practices	Three-step system for the conception and screening of new business ventures.
Pearson (1976)	BD approach to planning.	None/None	Proposing a BD approach to planning.	None	Large enterprise.	Conceptual	Strategic planning needs to be project oriented, i.e. to adopt a BD approach rather than the present technique of a procedural oriented approach.
Littler & Sweeting (1983)	Possible strategic options for mature companies to develop a business beyond existing borders.	None/None	What strategic options are possible to develop for mature businesses?	None	Mature enterprise.	In-depth interviews with 14 UK companies over a time period of two years.	Large companies often neglect new business development (NBD) until stagnation occurs in the core business; and are ineffective when establishing individual NBD initiatives.
Berry & Roberts (1984)	Possible ways of how to enter new businesses.	None/None	Conceptual Framework assisting in selecting entry strategy into potentially attractive new	None	Large enterprise.	Literature review and performance data on 14 BD episodes by one successful diversified techno-logical firm.	A multi-faced approach concentrating on the corporation´s familiarity with the new business area.

			business areas.				
Kraushar (1986)	Relevance, definition, and approaches of BD.	None/None	Proposing practical BD implications.	BD covering the following: (1) corporate strategy; (2) old product development, i.e. the development of the core business with extensions "near to home"; (3) new product development; (4) acquisitions; (5) other external developments, including joint ventures, licensing, distribution agreements, etc, and (6) disposals. Inclusion of disposals in a company's BD may be particularly arguable, but surely disposals of part of a business are extremely relevant to development priorities and resources and affect business development directly.	Small and large enterprise.	Conceptual/ practical cases	25 practical BD implications.
Littler & Sweeting (1987)	Strategies companies pursue to assess potential new business acquisitions.	None/None	Identifying strategies to perform NBD activities.	Entry into a business arena other than one forming a normal extension of existing activities" and purposeful movement into new generic product or customer markets in accordance with corporate strategy, "redeploying assets in non-strategic business areas to alternative areas; and diversifying into higher margin activities.	Large enterprise.	Survey with 24 respondents over the period 1984–198	NBD combines new technology, new customers and new products and is performed by acquisitions in most companies.
O'Sullivan (2002)	Development of an information architecture and associated toolset for understanding and managing the process of BD.	None/None	Identifying care processes of the management of business development in organizations with the goal to foster employee involvement and more goal centered change.	None	Not specified.	Developing a development funnel as a conceptual framework and testing it in over 30 companies through the use of self-assessment surveys in the respective companies.	By using the approach companies can improve the efficiency of the development process in the following core processes: 1 goal definition 2 alignment of goals to project 3 participation among employees 4 idea generation and problem solving 5 mapping of change to key processes 6 reporting of results

							7 management of projects.
Karol et al. (2002a)	Overview of DuPont's Business Initiative Process (BIP) – a framework developed to structure/ organize the NBD decision making and the work of develop-ment teams driving specific NBD projects.	None/None	A compre-hensive view of the work an NBD team must complete as it executes a project using BIP.	None	Large enterprise.	Conceptual	BIP phase-by-phase work guidelines and tools as a comprehensive framework for NBD projects.
Karol et al. (2002b)	Overview of DuPont's Business Initiative Process (BIP) – a framework developed to structure/ organize the NBD decision making and the work of develop-ment teams driving specific NBD projects.	None/None	A compre-hensive view of the work an NBD team must complete as it executes a project using BIP.	None	Large enterprise.	Conceptual	BIP phase-by-phase work guidelines and tools as a comprehensive framework for NBD projects.
Valentine (2003)	Discussion of how successful companies in the pharma-ceutical and bio-technology industry set and achieve realistic BD objectives.	None/None	BD success and failure factors.	None	Large enterprise.	Conceptual	Key success factors: (1) visionary leadership that sets aggressive but achievable, coordinated, measurable individual BD objectives to be met by designated dates, and (2) a proactive result-versus activity-oriented corporate culture.
Uitten-bogaard et al. (2005)	Develop-ment of a guideline for creating a corporate entrepreneur ship function in order to realize BD in a high-tech context.	None/ Corporate entrepre-neurship	How can an effective corporate entre-preneurship function (CEF) be developed and organized in a medium-sized technology-based company?	BD involves the actual development of product-market combinations, in other words it involves the "execution of the innovation process". It could be organized as a dispersed process throughout the company.	Medium-sized enterprise.	Using the 4S social system perspective and data on five high-tech companies (semi-structured interviews with BD directors).	Identified a list of success and fail factors for creating a CEF. Hybrid model combining BD and innovation process elements were identified. Extraction of four types of BD: network-oriented BD, internally oriented BD, R&D oriented BD and BD with ad

							hoc idea generation
Davis & Sun (2006)	BD in the ICT industry.	None/ Corporate entreprene urship	How is BD defined, what are main tasks in BD and who works in BD.	We define business development as a capability comprised of routines and skills that serves to enable growth by identifying opportunities and guiding the deployment of resources to extend the firm's value-creation activities into technological or market areas that are relatively new to the firm.	SMEs.	Analysis of 80 business developer job descriptions and in the follow-up 26 in-depth interviews.	BD is a recognized concept in the sample and the principal function for BD is to identify new growth opportunities within the business network.
Kind & Knyp-hausen-Aufseß (2007)	BD activities in the German bio-technology industry.	Strategy-as-practice-perspective Dynamic capabilities Ansoff´s product/ market matrix / None	How is BD managed in companies of the bio-technology industry?	Following the definition by Economic Development Services, Inc. (2003): Business development: enterprise development; the activity that increases, or is intended to increase, the profit, production, or service potential of an enterprise; investment of capital and time that causes, or is intended to cause, the growth and expansion of an enterprise; the process of moving a business towards the point where it can provide its services and products to the entire outside group that wants them; the promotional side of business networking; persuading, or intending to persuade, prospects that appear to have the potential become customers, clients, or buyers; the process of promotion to build and sustain working relationships that relate to the business purpose.	SMEs (15–174 employees) .	Qualitative case study approach with 15 companies in the biotech industry in Germany.	BD is an integrated function in biotech companies with low formalization but with a high degree of institution-nalization.
Burgers et al. (2008)	The fit between the creation of technologic al and market knowledge and important project	None/None	How does the match between the creation of techno-logical and market knowledge and project manage-	None	Large enterprise.	In-depth longitudinal case research of NBD projects from 1993–2003.	Senior management support and an engagement in an alliance with partners possessing complementary market knowledge can counter-

	manage-ment characteris-tics influences the success of NBD project.		ment characteris-tics influence the success of BD projects?				balance the technology emphasis of NBD projects.
Forsman (2008)	Structure and model the success dimensions that contribute to and can be used in evaluating the BD success in SMEs.	None/None	Framework for a BD project success in a SME context.	None	SMEs	Multiple case study methodology, following the replication approach. The empirical evidence is based on data from four SMEs that have implemented a BD project. Two of the projects were perceived as successful and the other two as unsuccessful.	BD project success depending on several interrelated dimensions. Success in one area leads to success in other areas, and so creates an upward success spiral. Failure in one area seems to lead to failure in other areas, thus creating a downward failure spiral.
Keil et al. (2008)	Influence of different government modes for external BD on the innovative performance of a company.	None/None	Re-examine prior findings of a positive relationship between different forms of external relation-ships and innovative perfor-mance.	None	Large enterprise.	Longitudinal study with 110 companies in the period from 1993–2000.	Alliances, joint ventures and corporate venture capital investments have a significantly positive correlation to increases in innovative performance of companies.
Austin (2008)	Overview of BD with special emphasis on the needs of the pharma-ceutical and biotechno-logy industry.	None/None	Practical guide for BD activities.	Any activity that alters the status quo of the business. This includes activities such as: o planning o adding for growth o subtracting for profit o business process improvement o competitive awareness and advantage.	Small to large enterprises.	Conceptual	Providing a 'illustrated tour' of the structure of a licensing transaction with an occasional detour into mergers and acquisitions or financing.
Klumpp & Koppers (2009)	Describing an integrated BD model.	Ansoff´s product/ market matrix / None	Gaining competitive advantage due to an integrated model of BD (including logistics, supply and quality manage-ment models and activities,	Following the definition by Eades, (2003, p. 71): BD is "the creating of new opportunities through new and different approaches."	Small to large enterprises.	Case study with 33 business cases.	Identification of risks, instruments, time frame, key factors, and qualification areas of personnel in BD.

			respectively personnel).				
Duke (2011)	Demonstrating theoretically that there is a strong connection between firms' ability to identify and analyze BD needs, using their stock of human capital, and the achievement of economic survival and sustainable development of a nation.	Schumpeter´s (1936) theory of entrepreneurship / None	Evaluation of the indicative impact of expenditure on education and health on the development of human capital.	Following the definition by The Unlimited (2007): All attempts aimed at identifying and then actualizing new opportunities by a firm. Generally, BD describes the identification and exploitation of new business opportunities by analyzing market trends and activities with a view to bringing in new customers, while retaining or expanding transactional relationships with the existing ones. It is therefore a process that involves prospection and development of a new products/services or technology. It may also mean investing or even divesting corporate assets. Ultimately, it seeks to bring about some discontinuity in the normal operations or scheme of things for a firm, under which it will focus on doing or developing new things it had hitherto not been involved in.	Not specified.	Descriptive secondary data analysis.	A nation´s human resources determine the nature, rate, or speed of its development. The identification and analysis of BD needs is the key for securing sustainable competitiveness by firms.
Giglierano et al. (2011)	Role of BD in the commercialization phase of innovation.	None/ Strategic Marketing	BD's role in the commercialization of disruptive innovation.	Activities aimed at finding and "developing" sources of new revenue. In general, this could include new business or new revenue from new customers in existing segments, new business from new segments, or new business from new industries. The new business can come from new products, existing products, new versions of existing products, or existing products offered with additional service features.	Startup and established enterprises.	Interviews/discussions with 12 "business developers" (entrepreneurs and marketers).	BD has an impact on the early commercialization of disruptive innovations.
Bussgang et al. (2013)	Describing the responsibilities of BD managers,	None/None	Provides an overview of the BD function.	None	Early stage, mid stage, and later stage startup.	Conceptual	Responsibilities of BD managers at each step of a typical deal. The role of the business

	the changing role of BD over the life cycle of a venture and discussion of two BD challenges that commonly confront startups as well as attributes of strong BD managers.						development function evolves as a startup matures. Two challenges: coping with powerful partners and scaling the BD process. Six common attributes of BD managers.
Daubenfeld et al. (2014)	The practice of NBD conducted in 17 chemical industry companies and related business sectors.	None/None	Current practice of NDB in the German chemical industry.	NBD is the process of identification, evaluation and establishment of new business areas of a company.	Small and large enterprises.	19 qualitative expert interviews from 17 companies of the chemical industry and related areas.	The objectives and organizational setup of NBD were found to be exceptionally heterogeneous and to cover a broad spectrum. The differentiation between NBD and Innovation Management was also not consistent. Small companies follow a rather opportunistic NBD approach without. Larger companies, on the other hand, employ a Stage-Gate process.
Eidhoff & Poelzl (2014)	Analyzing the concept and scope of BD.	None/ Strategic manage-ment research; Strategic marketing research; Fields of research on corporate entreprene urship; Innovation research.	Analyzing five main areas: under-standing, organi-zation, employees, instruments and trends of BD.	BD is generally understood as the further development of a company respective a business segment.	Small (150 employees) to large (30.000 employees) enterprises.	16 qualitative in-depth field interviews with practitioners from German B2B companies.	The tasks assigned to BD are highly strategic. BD is organized within a staff function and performed by interdisciplinary teams. Many of the applied instruments used belong to the strategic management and strategic marketing. Trends for BD can be distinguished between environment-driven and company-driven trends.
Lorenzi & Sørensen (2014)	BD activities in biotech-nology industry with focus on BD capabilities.	Dynamic capability; Resource-based view (RBV) / None	Exploration of the main elements underlying a BD capability.	BD refers to the tasks and processes concerning analytical preparation of potential growth opportunities, the support and monitoring of the implementation of growth opportunities.	Small to large enterprises (ranging from 21 to 520 employees) .	In-depth case study methodology with three cases.	Lay foundation for business capabilities in the biotechnology industry in particular structure, process, tasks, and people.

Arnegger (2015)	The influence of initiation timing for BD.	Dynamic capability / None	At what point do B2B companies initiate BD and does the timing of initiation have an influence on the assigned tasks?	None	Small (150 employees) to large (30.000 employees) enterprises.	16 in-depth field interviews with practitioners from German B2B companies.	Identification of three initiation types with varying tasks: new, proactive, and reactive BD.
Piispanen & Paloniemi (2015)	Actions of two entre-preneurs in BD.	None/ Strategic entrepre-neurship (SE)	Considers the balance between entre-preneurial and strategic actions in BD.	None	Startup and established enterprise.	Longitudinal multiple case study of BD of two Finnish information and communicatio ns technology (ICT) entrepreneurs. Six semi-structured, open-ended interviews.	The findings show that when case entrepreneurs focus more on emphasizing the effectiveness of existing business opportunity exploitation, they are more likely to follow this kind of logic in the context of an established firm, but they are less likely to follow it in the context of a start-up.
Turgeon (2015)	Investi-gation of BD jobs.	None/None	Identi-fication of the tasks, attributes, and incentives offered to business developers at the entry level, mid-level and upper level.	None	Not specified.	Content analysis of BD job postings.	Tasks in BD jobs are drawn from both marketing and sales. Desired attributes of business developers emphasize the sales dimension, along with managerial qualities at higher levels. Incentives offered include traditional monetary benefits, and advantages linked to organizational attractions and the work environment.
Hartlieb & Silvius (2016)	Conceptual analysis of the manage-ment of uncertainty in the disciplines of BD and project manage-ment.	None/None	Analysis of BD and project manage-ment by looking at the process, the planning, uncertainty and risk and the measure-ment of success.	Business development is the discipline that aims to develop 'new business'.	Not specified.	Conceptual.	BD and project management differ substantially in the perception and handling of uncertainty and how this is included in the overall process. BD uses additional methods to manage the uncertainty that is inherent to the BD process.
Achten-hagen et al. (2017)	Developing a concept-ualization and theorization of business develop-	Theory of the growth of the firm, Process of develop-	Core BD activities of micro-firms and the challenges they perceive in	BD as those business-related core and support activities that secure, organize, and leverage resources to allow	Micro-firms.	Semi-structured interviews with 30 micro-firm entrepreneurs from one	BD activities are tightly related to the three practices of leveraging, securing, and organizing resources.

	ment for micro-firms.	ment (Penrose, 1959) / None	conducting them.	immediate value creation and prepare for future business growth.		region of Southern Sweden. The data are analyzed through a case-comparison technique.	Identification of three contextual influences on BD in micro-firms: industry, age and if the firm is in an incubator.
Arnegger (2018)	Competitive posture and initiation timing in BD.	Resource-based view (RBV), Dynamic capabilities / None	Identification of patterns in market development and the connection to optimal timing of decision making for the initiation of BD measures.	None	Established enterprise.	Fuzzy-set Qualitative Comparative Analysis (fsQCA) of 57 cases.	The lack of necessary conditions for accurate timing indicates that a general success formula for BD timing entails several idiosyncratic influencing factors rather than singular, generalizable effects.
Ito (2018)	Providing theoretical and practical contributions to understanding of internal corporate venturing by illuminating factors that determine such projects' commercial success or failure.	Institutional theory, Burgelman‘s process model for internal ventures / None	Examining successful and unsuccessful cases of NBD within firms, with a focus on the effect of endorsement of new business projects by external firms, organizations, and individuals.	None	Large enterprises.	Qualitative case study approach with 6 companies.	Factors influencing a project's commercial success or failure included repetition of the legitimization process as the project moved ahead and taking full advantage of the opportunities for technological and commercialization-related learning that interorganizational endorsement and relationships offered.
Scaringella (2018)	The evolution of the contribution of business models, open innovation, and knowledge management during initial and further BD stages.	Theoretical framework linking business model, open innovation, and knowledge management / None	The initial and further BD of a successful spin-off.	BD entails increasing sales, creating partnerships, creating value for customers, organizational growth, geographical expansion into new markets, and development of new business models.	Startup/ Spin-Off.	Single longitudinal, in-depth case study.	The business model benefited from specific revenue streams and was supplemented by new business models in novel applications. Open innovation offered a unique outside-in process and then transformed into an advanced new process. Knowledge management focused on cross-technical knowledge modularity and on knowledge recombination.
Simon & Tellier (2018)	Exploring at the micro-level the actions taken by individuals to develop	None/ Corporate entrepreneurship	Focusing on the evolution of the network of actors involved in	Following the definition by Davis and Sun, (2006, p.145f):	Large, multinational enterprise.	Single case study.	The business developer’s personal network was useful in acquiring new ideas and getting

	and garner support for BD in multi-national companies (MNCs).		the develop-ment of an activity to determine how a business developer can overcome the challenge of developing new oppor-tunities in MNCs by using his personal network.	We consider business development to be a set of practices that "are a subset of new business formation practices, a variety of corporate entrepreneurial behaviors" [Davis and Sun, (2006), p.145]. The aim of these practices is to create growth "by identifying opportunities and guiding the deployment of resources to extend the firm's value-creation activities into technological or market areas that are relatively new to the firm" [Davis and Sun, (2006), p.146].			people involved in the project.
Sørensen (2018)	The link between BD and growth oppor-tunities at the planning and imple-mentation phase.	Resource-based view (RBV) (Werner-felt, 1984) / None	Investi-gating the BD tasks and processes that span a growth oppor-tunity's planning phase and its imple-mentation phase and their unique perfor-mance imply-cations.	Following the definition by Augier and Teece (2013) and Sørensen (2012): Business development refers to the tasks and processes concerning analytical preparation of potential growth opportunities, and the support and monitoring of the implementation of growth opportunities.	SMEs.	Quantitative analysis of 73 Danish companies.	BD increases the effectiveness of business planning and firm performance. Business developer support is found to positively influence firm performance per se.
Voeth et al. (2018)	Clarify the status quo of BD in practice.	Resource-based view (RBV), Dynamic capabilities approach, Market-based view (MBV) / Strategic manage-ment research, Strategic marketing research, Corporate entrepre-neurship research, Innovation research.	The analysis focuses on under-standing, activities, organi-zation, people, instruments as well as challenges and future relevance of BD.	None	Small to large enterprises.	Descriptive quantitative study of 352 German companies.	BD focuses on growth opportunities in four key dimensions: products, processes, markets and/or business models.

C. How Innovation Types Drive Consumers' Brand Perception – The Innovation-Brand-Interplay of Tech Giants

Abstract

Studies indicate that brand and innovation management can benefit from each other. Still, there is little empirical evidence that integrates these two streams. This paper examines the innovation-brand-interplay of Google, Amazon, and Apple by considering five innovation types (product, service, process, market, and business model innovation). Structural equation modeling (SEM) was carried out for data analysis. Our research is the first to empirically measure varying degrees of influence of specific innovation types on brand equity. As can be shown, specially product innovations, process innovations, and partly business model innovations can be important determinants for driving brand success. Moreover, strong brand equity is a prerequisite for a desired innovation adoption behavior and thus a key factor for innovation success.

Keywords: *innovation types, brand equity, brand innovativeness, innovation adoption, brand management, innovation management*

"There is only one valid definition of business purpose: to create a customer. [...] It is the customer who determines what the business is. [...] Because it is its purpose to create a [satisfied] customer, any business enterprise has two – and only these two – basic functions: marketing and innovation."

Peter Drucker (1954, p. 37ff.)

1 Introduction

Management guru Peter Drucker (1954) advocates that innovation and marketing are the two key functions that enable the firm to achieve its growth potential and competitive advantage. Brands respectively brand management play a significant and central role in contemporary marketing research and managerial practice (Louro & Cunha, 2001). Against this background, brand management and innovation management have been established as strategic core functions and management priorities of a company (Kapferer, 2008). Innovation and brand management are mutually dependent and in a complex interrelationship with each other (Brexendorf et al., 2015). For instance, both branding and innovations are crucial for creating favorable consumer responses (Page & Herr, 2002), and customer value (Aaker, 2007). Superior brand performance can be achieved by integrating both brand orientation and innovation orientation. Still, literature examining the interdependencies between branding and innovation remains comparatively small. Plenty of research is done separately in both fields. Neglecting linkages between brand management and innovation management, however, results in a narrow perspective (Lee et al., 2016). In spite of its importance for firms, the interrelationship between branding and innovations is still relatively under-researched, highlighting the need for more empirical evidence. In particular, a consumer perspective within the integration of these two streams has not yet been considered in detail in previous research (Brexendorf et al., 2015). Thus, investigating the relationship between both management priorities would provide implications for both marketing theory and business practice and help to better understand and formulate branding and innovation strategies (Lee et al., 2016). Against this background, our study focuses on the impact of innovation types in organizations on brand equity and how it can facilitate innovation adoption. In this paper, we examine the reciprocal innovation-brand-performance relationship based upon a theoretical framework that refers to five research approaches outlined in the following.

First, we build on a three-stage virtuous cycle exemplifying the brand-innovation interplay by Brexendorf et al. (2015). In this regard, we introduce brand equity in an innovation

context in order to analyze the influence of five innovation types on customer-based brand equity, and vice versa examine the impact of customer-based brand equity on the consumers' innovation adoption.

Second, we distinguish between types of innovation by building on a business development perspective. Empirical studies of innovation types have mainly focused on their antecedents (Damanpour et al., 2009). This study extends the innovation type theory by examining empirically the outcome of innovation types, specifically for a firm's brand performance. Thus, we contribute new insights by comparing performance consequences of different innovation activities in organizations and offer a practical business development innovation type taxonomy.

Third, innovation has mainly been studied with regard to firms in the goods industries (Damanpour et al., 2009). Following the synthesis perspective that offers an integrative approach to innovation in both the manufacturing and service sector (Coombs & Miles, 2000), we take a look at three companies that offer all five innovation types which we aim to investigate. We choose Google, Amazon, and Apple for our examination. These companies perform a trail-blazer strategy by both applying high levels of innovation efforts as well as high levels of brand management efforts (Paswan et al., 2020).

Fourth, Drucker (1954) states that the customer perspective depicts the business from the point of view of its final results. Accordingly, the ultimate judges of innovations and brands are consumers. The attitudinal and behavioral responses of consumers determine the competitive success of a brand in the marketplace (Keller & Lehmann, 2006). Thus, a market respectively consumer-centered innovation perspective is vital to address and satisfy consumers' needs. Consequently, we apply a consumer perspective within the integration of innovation and brands.

Fifth, we emphasize the importance of quantitative empirical studies in understanding the impact of innovation on dependent components. This methodology is particularly applicable to this study as the innovation-brand-performance relationship is path-dependent. We develop an innovation-brand-model and examine it by means of a quantitative online study. For the purpose of data analysis, partial least square (PLS), a variance-based approach of structural equation modeling (SEM), is used. The proposed hypotheses are assessed using smartPLS 3.

In summary, our preliminary assumption suggests that: (1) brands and innovations are subject to reciprocal interdependencies; (2) the impact of innovation on brand equity depends on different innovation types; and (3) a customer-perception perspective is best applied to investigate the results of the brand-innovation-relationship. We formulate hypotheses of five types of innovation (product, service, process, market, and business model) and customer-based brand equity and consider brand innovativeness and innovation adoption.

2 Theoretical Framework and Research Questions

We build our theoretical foundation on the conceptual framework by Brexendorf et al. (2015) that depicts the brand-innovation interplay as a virtuous cycle involving three stages: (1) brands provide strategic focus and guidance to innovations, (2) brands support the introduction and adoption of innovations, and (3) innovations improve brand perceptions, attitude, and usage. We adapt this framework by focusing first on how different innovation types support brands, i.e., brand equity in particular. In turn, this leads to the conceptualization of brands supporting the innovation adoption by consumers (see Figure C.1). These two steps will be outlined in the following.

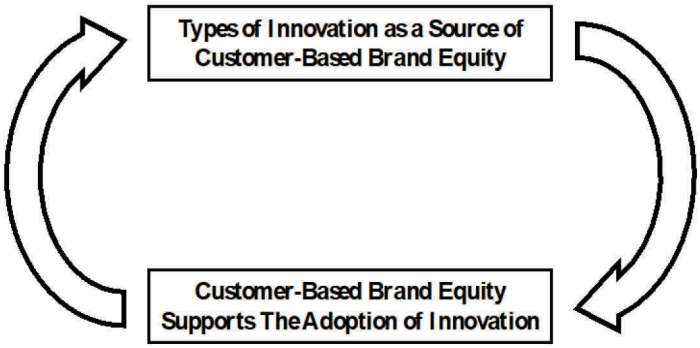

Figure C.1 Reciprocal brand equity-innovation cycle

2.1 Innovation as a Source of Brand Equity

Kapferer (2008, p. XV) proposes that "the issue of innovation is […] about reinventing the brand". Consequently, innovations revitalize the brand (Beverland et al., 2010) by strengthening brand attitudes (Aaker & Jacobson, 2001), fostering brand associations as well as creating and increasing the brand's points-of-difference (Keller & Lehmann, 2006). Innovations shape and update the brand by delivering on the brand promise, supporting the identity of a brand, and adding brand value, which should meet the expectations of the customer (Brexendorf et al., 2015; Srinivasan et al., 2009; Sriram et al., 2007). This value for customers can carry and enhance brand equity (Ward et al., 1999). Thus, innovation is an important

element to secure the long-term success of a brand (Aaker, 2007). In turn, the management and exploitation of brand equity is an important task for innovators (Beverland et al., 2010).

Against this background, our first research question is, (RQ1) Do different dimensions of innovations (product, service, process, market, business model innovation) strengthen customer-based brand equity?

2.2 Customer-Based Brand Equity Supporting the Innovation Adoption

Innovations require consumers to adopt new behaviors. A brand acts as a first quality indication by signaling reputation (Bearden & Shimp, 1982), and providing meaning for the consumers (Hoeffler & Keller, 2003). Brands enable innovations to meet the consumers' expectations (Keller, 2003), and influence the actual consumer response to innovations (Brexendorf et al., 2015). Therefore, strong brands may reduce the uncertainty and risks associated with innovations and thus increase the probability of new product trials (Aaker, 2007; Gielens & Steenkamp, 2007; Hoeffler & Keller, 2003). Consequently, it can be assumed that brands facilitate the innovation adoption by consumers.

Our second research question thus is, (RQ2) Does customer-based brand equity facilitate the consumers' adoption of an innovation?

In summary, existing literature shows the need to research the brand and innovation interplay. To address this research gap empirically, we conceptualize brand equity, innovation adoption, and brand innovativeness, juxtapose different innovation types, and formulate seven hypotheses.

3 Brand Equity

In marketing theory, brand equity is considered as an intangible asset that is long-term oriented and provides a better explanation for marketing performance than tangible assets (Christodoulides & de Chernatony, 2010). Intangible brand assets are more difficult to imitate and create sustainable competitive advantages for an organization (Pappu et al., 2005). Contrary to the clear classification of brand equity, there is no generally accepted single conceptualization and definition of brand equity in the marketing literature (Christodoulides & de Chernatony, 2010; Pappu & Christodoulides, 2017). Farquhar's definition from 1989 is best suitable for our purposes (Christodoulides & de Chernatony, 2010; Pappu et al., 2005). He defines brand equity as "the added value with which a brand endows a product" (Farquhar,

1989, p. 45). Starting from this basic characterization of the phenomenon, two main perspectives have emerged. First, the firm-based brand equity (FBBE) approach stressing the financial value of a brand to the firm (e.g., Simon & Sullivan, 1993). Second, the customer-based brand equity approach (CBBE) defining brand equity as the value of a brand to the consumer (e.g., Aaker, 1991; Christodoulides et al., 2006; Keller, 1993; Pappu et al., 2005; Yoo & Donthu, 2001). In the following, we focus on customer-based brand equity from a cognitive psychology perspective, which argues based on the structures of human memory (Christodoulides & de Chernatony, 2010). More precisely, the focus is on the consumer reaction to the marketing mix of a brand and the resulting consumer associations (Baalbaki & Guzmán, 2016). In consequence, the consumers' brand knowledge is the source and foundation of brand equity (Keller & Lehmann, 2006). Brand equity depicts the customers' perception of a particular brand. This knowledge and perception from a consumer perspective are accumulatively influenced by organizations' strategic actions, for instance, innovation efforts and outcomes (Keller, 1993; Xu et al., 2014). The most common conceptualization of customer-based brand equity is based on the seminal works of Keller (1993, 2003) and Aaker (1991, 1996). Keller (1993, 2003) focuses on the brand knowledge dimensions brand awareness and brand associations. Aaker's (1991, 1996) conceptualization is broader and adds the dimensions brand loyalty and perceived quality. Collectively, based on the multidimensional perspectives of Keller (1993, 2003) and Aaker (1991, 1996), brand equity consists of four dimensions: brand loyalty, perceived quality, brand awareness and brand associations (Christodoulides et al., 2015; Yoo & Donthu, 2001). Aaker (1991, p. 39) defines brand loyalty as "the attachment that a customer has to a brand". Perceived quality is "the consumer's judgment about a product's overall excellence or superiority" (Zeithaml, 1988, p. 3). Brand awareness is "the ability for a potential buyer to recognize or recall that a brand is a member of a certain product category" (Aaker, 1991, p. 61). Brand associations refer to "anything linked in memory to a brand" (ibd., p. 109). Many researchers, for instance, Christodoulides et al. (2015) and Yoo and Donthu (2001), developed a brand equity multi-item scales measure based on these four dimensions.

Brand equity is the central construct in our innovation-brand interplay model. In the following, the relevance of the investigation of different innovation types is first explained. Subsequently, the innovation types are defined and related to the construct of brand equity with the help of theoretical considerations and hypotheses derived from them. Finally, the influence of brand equity on innovation adoption is examined, considering the mediator brand innovativeness.

4 Types of Innovation

In the early 19th century, Schumpeter (1934, 1939 & 1942) specified the importance of innovation for economic development in his theory of creative destruction. He regarded innovation as the economic impact and source of technological change and entrepreneurship; the use of new combinations of existing productive forces to solve the problems of business (Schumpeter, 1982). Some scholars have researched different types of innovation as a source of developing a sustainable competitive advantage (e.g., De Luca & Atuahene-Gima, 2007). The role and importance of innovation types differ along the value chain (Porter, 1985), suggesting that the contextual and organizational factors that enhance their adoption are not similar (Damanpour et al., 2009). Companies need to develop different types of innovations to remain competitive. Innovations are often expensive and time-consuming, yet their future returns and outcomes are constantly uncertain and consequently fraught with risk (Amit & Zott, 2012). This is also reflected in studies showing that the flop rate of new products is estimated at around 40 percent (Castellion & Markham, 2013). Therefore, firms have to identify auspicious and thriving types of innovation. This suggests that the approach to innovation needs to be comprehensive, taking several types of innovation into consideration. In addition to research that relies primarily on product innovation (e.g., Nørskov et al., 2015; Sriram et al., 2007; Zhang et al., 2013), we advance different innovation types that can better explain innovation-induced brand equity on a holistic level. In applying a consumer perspective, our research aims to focus on innovation types that lead to strong brand equity and thus propose alternative innovation considerations which can complement or even substitute each other.

Innovation researchers have introduced many conceptual typologies of innovation. For instance, Schumpeter has defined five types of innovation. Further multidimensional concepts of innovation have been added by other researchers. For instance, Zaltman et al. (1973) identified approximately 20 innovation types. As innovations represent a fundamental element for business development focusing on further growth, we apply a business development perspective on innovation typologies (Eidhoff & Poelzl, 2014; Voeth et al., 2018). The aim of business development is to search for, develop and/ or realize new business fields by mainly five innovation types: (1) product innovation, (2) service innovation, (3) process innovation, (4) market innovation, and (5) business model innovation (Burgers et al., 2008; Steffl & Emes, 2020; Voeth et al., 2018). In the context of our study and according to Frascati Manual (OECD, 2002), technological innovation is seen as an umbrella term for technological products and

processes and thus is not investigated separately. In fact, all innovation types of our three investigated brands are powered by new technologies.

In the following, we juxtapose different innovation types by offering a taxonomy that distinguishes five established types of innovations theoretically and hypothesize their relationship with customer-based brand equity in order to answer our first research question.

4.1 Product Innovation

"Product innovation is the creation of value by using relevant knowledge and resources to implement an idea for a new product that meets a currently unmet need, a currently met need better than products presently available in the market, or a currently met need differently compared to products presently available in the market, or improvements in an existing product" (Varadarajan, 2018, p. 155). According to this definition, product innovation aims to meet customer needs by offering new, additional value. Thus, product innovation is critical for driving corporate growth and performance (Chimhundu et al., 2010) and is a key factor for brand success (Hanaysha, 2016). It is of importance for building brand equity, since it extends and strengthens the brand's meaning (Keller, 2003). The ability of a brand in creating product innovation leads to higher brand equity (Beverland et al., 2010). Few scholars have already empirically proven that product innovations have a positive impact on brand equity (Hanaysha, 2016; Hanaysha & Hilman, 2015; Nørskov et al., 2015; Sriram et al., 2007; Zhang et al., 2013). Consequently, we follow extant research and assume accordingly:

H1: Product innovation perception has a positive effect on customer-based brand equity.

4.2 Service Innovation

Service innovation research has not generally distinguished between product and service innovations. Coombs and Miles (2000) categorize the commonly used and distinct assimilation, demarcation, and synthesis perspectives on service innovation. The assimilation approach proposes that the theories and concepts developed for product innovation in a manufacturing context can be adapted to analyze service innovation (Coombs & Miles, 2000; Nijssen et al., 2006). The demarcation perspective, by contrast, suggests that service innovation is highly distinctive in nature from product innovation and stresses the specific features of services (Coombs & Miles, 2000; Droege et al., 2009; see Nijssen et al., 2006 for an overview). The synthesis perspective offers an integrative approach to innovation in both manufacturing and service sector (Coombs & Miles, 2000; Gallouj & Weinstein, 1997). Thus, service innovation

is no longer only relevant for service organizations. Nowadays, manufacturing firms aim to provide integrated solutions (i.e., integrated goods, and services) (Carlborg et al., 2014). Our further elaboration is based on the synthesis approach. Witell et al. (2016) emphasize that the term service innovation is widely used, although few studies offer a clear-cut definition resulting in a loss of a distinct conceptualization. In consequence, Gustafsson et al. (2020) argue that the definition of service innovation should exclude the development process and lay its focus on the outcome of the process. According to their definition, service innovation is a "new process or offering that is put into practice and is adopted by and creates value for one or more stakeholders" (Gustafsson et al., 2020, p. 114). Service innovation comprises change for either the firm or the customer and thus is able to build brands (Witell et al., 2016). Studies related to external measurement (customer perspective) are very limited; likewise, studies investigating the relationship between service innovation and brand equity are rare. Xu et al. (2014) show the positive effect of information and communication technology service innovation on brand equity in a consumer technology market. Furthermore, service innovations are able to reinforce brand meaning, foster brand value, and profitability and thus build brand equity (Brexendorf et al., 2015). Consequently, it can be assumed:

H2: Service innovation perception has a positive effect on customer-based brand equity.

4.3 Process Innovation

Process innovation aims to improve the effectiveness and efficiency of internal organizational processes (Damanpour et al., 2009). Due to its internal focus, process innovation can be fostered in almost all industries to increase business performance (Mooi et al., 2020) and to enable business process reengineering (Cumming, 1998). Hamel (2006) distinguishes between two categories of process innovation: innovations in management processes (e.g., strategic planning, project management, and knowledge management) and innovations in operational processes (e.g., customer support, logistics). Damanpour (2010, p. 997) defines process innovations as "new elements introduced into a firm's manufacturing or service operation to produce a product or render a service." Accordingly, we focus on the customers' perception of technological process innovations that raise the product respectively service quality and thus enable firms to satisfy changing customer needs (Yao et al., 2019). By generating unique operational capabilities, process innovation is regarded as a key determinant of long-term competitive advantage (Kim et al., 2012). Furthermore, consumers may experience convenience due to process innovations and appreciate the innovation efforts resulting in a better brand image (Zhang et al., 2013). Zameer et al. (2019) show empirically that the

consumers' perception of process innovations has a direct impact on brand prototypes that further positively influence product sophistication, brand preference, and brand recommendation. Brand prototype can be described as the consumer's overall knowledge of the brand based on personal experience, background, expectation, and interpretation (Sun et al., 2017). As the consumer's brand knowledge is the source and foundation of brand equity (Keller, 1993; Keller & Lehmann, 2006), we assume:

H3: Process innovation perception has a positive effect on customer-based brand equity.

4.4 Market Innovation

Schumpeter (1934) particularly recognized market innovation as one of five innovation types and established its classic definition as "opening of new markets". Johne (1999, p. 6) defines market innovation as "improving the mix of target markets and how these are served". Thus, the understanding of market innovation is extended beyond the Schumpeterian view by complementing the identification and choice of better (potential) target markets respectively customer segments with different (new) modes of how markets can be served (Johne, 1999; Kjellberg et al., 2015). Market innovation embraces innovation activities in existing markets or creating new markets through entrepreneurial endeavors (Branstad & Solem, 2020; Kjellberg et al., 2015). The active shaping of markets implies the view of markets to be ongoing processes. Accordingly, market innovation is understood as the alteration of the way in which business is done (Kjellberg et al., 2015). Thus, the recent understanding of market innovation is the creation of new markets and the transformation of existing ones (Sprong et al., 2021). In line, Anderson and Gatignon (2008) argue that new markets do not emerge, rather they are made by the activities of firms. New markets are created when firms offer a novel product, service, or marketing activity. Similar to radical innovations, market innovations go beyond incremental development and bring a degree of novelty that is new not merely to the firm but to the market (Nenonen et al., 2019). Zhang et al. (2013) find a positive effect of the degree of innovation (incremental or radical) on brand equity. Thus, the more radical an innovation is, the greater its impact on brand equity. Accordingly, we assume:

H4: Market innovation perception has a positive effect on customer-based brand equity.

4.5 Business Model Innovation

Business model innovation is regarded as a 'new' type of innovation distinct and complementary to the traditional dimensions of innovation (Amit & Zott, 2012). The understanding of business model innovation still remains heterogeneous; a precise definition has not yet been established. At a rather abstract level, business model innovation refers to the "search of new logics of the firm and new ways to create and capture value" (Casadesus-Masanell & Zhu, 2013, p. 464). As such, business model innovation implies changes (Markides, 2006; Teece, 2010), modification (Amit & Zott, 2010), or reinvention (Johnson et al., 2008) of the existing business model. Khanagha et al. (2014) emphasize that these variances can range from incremental changes (individual components of business models), an extension of the established business model, and introduction of parallel business models to the disruption of the current business model. This disruption is seen as the creation or "discovery of a fundamental different business-model in an existing business" (Markides, 2006, p. 20) replacing the current one. Business model innovation involves implementing a new or game-changing business model in the industry respectively market in which the focal company competes (Amit & Zott, 2012; Johnson et al., 2008; Snihur & Wiklund, 2018). In order to attain competitive advantage, firms should focus on the creation of new, disruptive business model innovations (Christensen et al., 2016). Consequently, business model innovation is regarded as a key component to drive firm performance and corporate transformation (Zott et al., 2011). Business model innovation goes beyond purely innovating a product, process, or service by providing novel customer value (Mehrizi & Lashkarbolouki, 2016). Spieth et al. (2019) argue that this novel customer value determines brand equity.

We follow the business model innovation conceptualization by Spieth and Schneider (2016) that applies a customer-centric perspective. The authors distinguish three dimensions of business model innovation: (1) value offering innovation (VOI), (2) value architecture innovation (VAI), and (3) revenue model innovation (RMI). Value offering innovation is defined as the creation of a new value offering that meets an existing yet unfulfilled customer demand or that vitalizes an additional but not yet perceived demand. Value architecture innovation refers to the exploration of new applications and combinations of a firm's resources and competencies or within its external partner network. Revenue model innovation refers to the firm's development of new ways of generating earnings and managing costs while meeting customer needs (ibd.). There are only a few publications which address the relationship between customers' brand perception and business model innovation. Spieth et al. (2019) conducted

research that investigates the link between business model innovation and brand equity. In their study, they show empirically that the value offering innovation (VOI) dimension has a positive, significant effect on brand equity. VOI is much more visible and tangible for customers compared to the other business innovation types (VAI and RMI). Therefore, it can be assumed that VOI has the strongest impact on brand equity of these three dimensions. Even though an examination of the direct effect of VAI and RMI on brand equity was not part of the study of Spieth et al. (2019), their work implies an overall link between business model innovation and brand equity. Baumeister et al. (2015) studied the role of brands in business model innovation. The authors investigate access as an additional consumption mode besides the ownership of products. Their study results show that the perception of access offerings – as a business model innovation – is related to the brand equity of the parent brand. Accordingly, it is hypothesized:

H5: Business model innovation has a positive effect on customer-based brand equity.

5 The Outcome of Brand Equity

5.1 Innovation Adoption

Two streams of research on innovation adoption have emerged, one focusing on the consumer versus one on the organization. Several theories and models are used to explain why and how consumers adopt innovations. One of the most widespread ones is Rogers' (2003) diffusion of innovations model that acknowledges the key characteristics of innovations that affect innovation adoption decisions of consumers within the current social system. Accordingly, Rogers (2003) defines the adoption of innovation as consumers' decision of making use of innovation completely. A social psychology perspective is used to explain consumer adoption in the technology acceptance model by Davis (1989). The technology acceptance model predicts that an individual's innovation adoption is a function of its perceived ease of use and perceived usefulness. Different theories are applied for the investigation of consumer choice behavior in different contexts; key drivers of innovation adoption tend to be context-specific (Hasan et al., 2019). Arts et al. (2011) conducted a meta-analysis showing that the drivers of consumer innovation adoption differ across the adoption process stages. Consequently, it is important to assume innovation adoption intention and innovation adoption behavior as dissimilar constructs. Research shows that adoption intention can be misleading as it is a poor predictor of innovation adoption behavior (ibd.). Therefore, our study focuses on the actual innovation adoption behavior. Applying a behavioral perspective, innovation adoption behavior is defined as "the degree to which an individual adopts innovations relatively earlier than other members in his or her social system" (Rogers & Shoemaker, 1971). In order to understand

innovation adoption behavior of customers, we follow the approach of Alan et al. (2017). This approach differentiates from methods of other studies, that mostly measure innovation adoption behavior by self-reports of both product ownership/ usage and/ or the relative time of adoption (i.e., number of years since adoption) (e.g., Im et al., 2007). On the contrary, Alan et al. (2017) use satisfaction as a measure of innovation adoption behavior.

5.2 The Relationship Between CBBE and Innovation Adoption

Brexendorf et al. (2015) conceptualize that the brand has a strong influence on product as well as service adoption behavior of consumers. Consumers who are loyal to the brand adopt innovations earlier than new customers do. Since brand loyalty is a key dimension of customer-based brand equity, this recognition operates as a first indication of the relationship between brand equity and innovation adoption. Further, brand equity leads to a more salient perception of the innovation. For instance, high brand awareness provides a shred of reassuring evidence for brand promise fulfillment (Rahman, 2013). In consequence, when consumers are aware that the innovation is launched by a well-known brand, they are more likely to adopt its innovation. Further research that has a focus on firm reputation confirms the influence of brand equity on new product adoption (Herbig & Milewicz, 1997; Corkindale & Belder, 2009). Chi (2018) empirically approves the positive relationship between brand equity and Chinese consumer intention to use apparel mobile commerce. By applying a technology acceptance model (TAM), this study shows that all used dimensions of brand equity (here: brand loyalty, brand association, brand perceived quality, and brand image) significantly enhance consumer perceived ease of use. Brand loyalty, perceived quality, and image have a positive impact on consumer perceived usefulness. Valued brands determine the way consumers evaluate innovations and foster the probability of innovation trials (Aaker, 2007; Brexendorf et al., 2015). Accordingly, we hypothesize:

H6: Customer-based brand equity has a positive impact on innovation adoption behavior.

5.3 Brand Innovativeness

A majority of the world's top 100 brands regard themselves as innovative as they use innovativeness in their brand positioning and claims (Brexendorf & Keller, 2017; Pappu & Quester, 2016). Accordingly, the issue of innovativeness based on consumer perceptions at the brand level has received recent attention in literature (e.g., Brexendorf & Keller, 2017; Hubert et al., 2017; Pappu & Quester, 2016; Shams et al., 2015). Brand innovativeness from the consumer's perspective is defined as the degree to which consumers perceive a brand to be innovative (Barone & Jewell, 2013) respectively as being able to provide new and useful solutions to their needs (Eisingerich & Rubera, 2010; Pappu & Quester, 2016). Consumer perceived brand innovativeness therefore is a subjective assessment based on the perception of a group of consumers within the brand's target market (Shams et al., 2015). The conceptual foundation of consumer perceived brand innovativeness is comprised of various theoretical backgrounds, such as exchange theory (Eisingerich & Rubera, 2010), cue utilization theory (Kunz et al., 2011), signaling theory (Spence, 1974), and the associative network model of memory (Anderson, 1983).

Prior studies have found that brand innovativeness has a positive effect on purchase intention and willingness to pay (Hubert et al., 2017). In contrast, research is not able to paint a clear picture of the brand innovativeness and innovation adoption relationship until now. Alan et al. (2017) hypothesize that consumer perceived brand innovativeness affects the adoption of innovation positively. Even though their study could not support this assumption, they call for the integration of brand innovativeness into innovation adoption models to advance the information of its antecedents. Shams et al. (2015) take the same line by highlighting the importance of brand innovativeness for a more complete picture of innovation adoption. In consequence, innovation adoption should be analyzed in a broader brand context.

Therefore, we rely on signaling theory, which assumes that the marketplace is characterized by information asymmetry (Spence, 1973, 1974). For instance, firms know the quality of their offerings whereas consumers do not have the full information required for judging their quality (Stiglitz, 2000). According to signaling theory, firms attempt to convey information by using signals that can resolve the state of information asymmetry (Kirmani & Rao, 2000). Signals, e.g., brand name (Erdem & Swait, 1998) or price (Dawar & Sarvary, 1997), make non-observable information explicit for customers and enable them to draw inferences about the offering, e.g., an innovation (Spence, 1974). These signals can thus provide adequate

information for customers to make adoption decisions (Besharat, 2010; Su & Rao, 2010). Scholars argue that brand innovativeness can be one of the signals consumers perceive from a firm (Henard & Dacin, 2010; Pappu & Quester, 2016; Stock, 2011). Thus, signaling theory suggests that brand innovativeness signals may encourage the consumer's innovation adoption. Shams et al. (2020) mention that consumers' existing perception of brand innovativeness shapes the perceived innovativeness of a new product, regardless of its actual innovativeness, which subsequently influences both brand attitude and purchase intention outcomes. The customer-based brand equity model of association transfer suggests that brand image associations transfer to a new product respectively to innovations in general (Keller & Swaminathan, 2019). Therefore, we aim to model consumer perceived brand innovativeness as a specific association as part of customer-based brand equity (Brexendorf & Keller, 2017), and assume:

H7: Consumer perceived brand innovativeness mediates the relationship between customer-based brand equity and innovation adoption behavior.

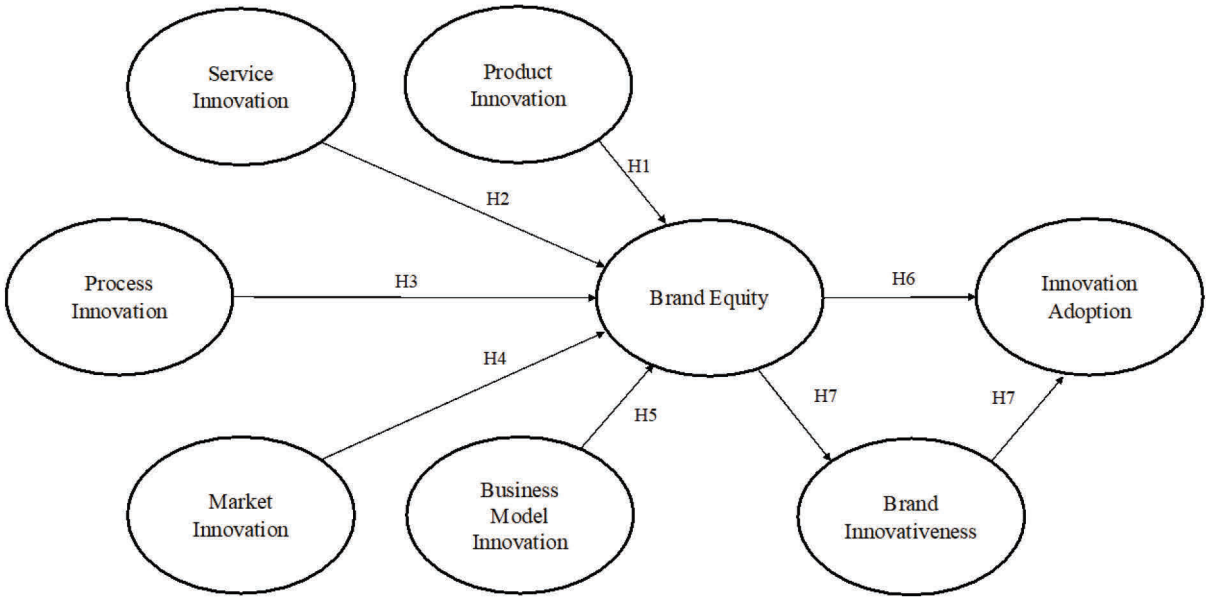

Figure C.2 Hypotheses framework

6 Methodology

6.1 Brand Selection, Research Design, and Case Development

We conduct a preliminary case study to identify brands that are suitable for our research interest. First, the eligible brands have to offer all five innovation types which we aim to investigate. Second, the brands must be known so that the study participants can assess their brand equity. Third, we were looking for companies in the B2C market with a broad consumer base to receive adequate answers on innovation adoption. On this basis, we select the brands Apple, Amazon, and Google for our analysis. The paper's main research questions are investigated by an online survey. For this purpose, we design a quantitative standardized online questionnaire. In order to survey the business model innovation dimensions (VOI, VAI, RMI) for Apple, Amazon, and Google, we develop scenario-based company cases by means of a pretest series. After the pretest we made minor adaptions to the provided scenarios in order to obtain the most suitable scenario for each business model innovation dimension. The different scenarios are described in the following (see Appendix): Apple's core business is the development and production of products/ goods (e.g., iPhone, Apple Watch, AirPods), and services (e.g., Apple Music, iCloud, Apple Pay, Apple News+). We ask survey participants to evaluate the entire range of products and services offered by the respective firm.

First, the creation of a new value-added offering to address new customer segments describes a VOI. Apple plans to enter the e-mobility market with a self-driving car and battery technology (case 1.1). Second, VAI refers to the exploration of new applications and combinations of a firm's resources and competencies or within its external partner network. Apple is leveraging partnerships and is building a global manufacturing network (case 1.2). Third, RMI describes new ways of generating earnings and managing costs. Apple wants to lease cars in addition to selling them and offers a monthly installment and receive an all-round carefree package that already includes maintenance and repair (case 1.3).

Amazon's core business is the development and production of products/ goods (e.g., Amazon Alexa, Amazon Kindle, Amazon Fire-TV-Stick), and services (e.g., Amazon Prime Video, Amazon Prime Music, Amazon Pay). Through the expansion into a new market, Amazon hopes to win over new customer groups. Amazon plans to expand its business to stationary retail by launching the cashierless supermarket Amazon Go in Germany (case 2.1). Amazon hopes to improve the value creation process by leveraging partnerships with local stores or key brands in the industry – such as Starbucks (case 2.2). Amazon Go tends to be

located at the lower end of the supermarket price spectrum. Compared to other Amazon services, customers do not have to be an Amazon Prime member to use Amazon Go (case 2.3).

Google's core business is the development and production of products/ goods (e.g., Google Pixel/ Google Phone, Google Nest, Google Home), and services (e.g., Google Search, Google Maps, Google Play, Google Drive). Google is advancing into the automotive market with self-driving car technology and software (case 3.1). In 2016, Google's self-driving car project became Waymo. Waymo has partnerships with several vehicle manufacturers to integrate its technology (case 3.2). Google plans to offer self-driving cars as part of a car-sharing service. Customers pay either a monthly subscription or as part of a pay as you go model (3.3).

6.2 Operationalization of the Constructs to Be Measured

In order to measure the perception of product innovation as well as process innovation, we use the respective items from Zameer et al. (2019). The process innovation scale focuses on its technological facet. We add an item to additionally research the process innovation effort regarding services. We self-develop measurement items for market innovation based on the conceptualizations of Kjellberg et al., (2015) and Sprong et al. (2021). Measurement items for the perception of service innovation are based on service leadership items found at Wu (2014) and Xu et al. (2014), as this construct has shown to have an impact on brand equity. Two additional service innovation items are adopted product innovation items from Zameer et al. (2019). We operationalize business model innovation as suggested by Spieth and Schneider (2016). For the measurement of customer-based brand equity we use the multidimensional brand equity (MBE) model developed by Yoo and Donthu (2001) and adapt it – where necessary – to service providers. Further, we measure consumer perceived brand innovativeness as suggested by Shams et al. (2015) and adapt their scale for our study. Items in regard to innovation adoption by Alan et al. (2017) were adapted to this study. Additionally, we incorporate gender, age, and highest education level as control variables in order to ensure the reliability of the results. All items are measured with seven-point Likert scales (ranging from 1 = strongly disagree to 7 = strongly agree). All measures are professionally translated with back translation to confirm conceptual equivalence (Hoskisson et al., 2000).

6.3 Data Collection and Sample Characteristics

After a short introduction and instructions on how to answer the online survey, we divide our participants randomly into three treatment groups. The respective group members receive one of three sub-questionnaires (Google, Amazon, Apple) with specific BMI scenarios. In total, we recruited 472 participants. Subsequently, we exclude participants with a uniform response style and participants that require an unusually short response time. This leads to a final sample size of 387. In the following, we characterize the descriptive statistics of our total sample ($N = 387$) and subsamples (Apple: $N = 80$; Amazon: $N = 148$; Google: $N = 159$). Our sample consists of participants with a primary residence in Germany. The mean age of participants is 27 years (Apple: $M = 27$; Amazon: $M = 28$; Google: $M = 27$). Females are overrepresented in all three subsample groups (Apple: 70%; Amazon: 67.6%; Google: 59.1%). The educational level of participants is above the general public, with 67.4 percent having completed a university degree.

6.4 Data Analysis and Model Estimation

We estimate our model using Partial Least Square (PLS), a variance-based approach of structural equation modeling (SEM) (Hulland et al., 1996). This approach allows us to estimate higher-order constructs (HOC) consisting of formative operationalizations (Henseler & Chin, 2010). All first-order constructs are modeled as reflective. According to Spieth and Schneider (2016), we operationalize business model innovation as a formative-formative HOC type IV consisting of the lower-order components VOI, VAI, and ROI. Brand equity was modeled as second-order reflective construct type I, operationalized by its three respective dimensions (Pappu et al., 2007; Yoo & Donthu, 2001). We apply the repeated indicator approach in modeling both HOCs (Hair et al., 2018). The data analyses are performed using the path modeling software application SmartPLS3.

In order to evaluate our hypotheses, we estimate different models for Google, Amazon, and Apple. By investigating three technology brands, our data consist of three respective subsamples. As a first step, we aim to test whether the brand/ firm acts as a moderation across the established model. Therefore, we run the assessment of measurement invariance using the measurement invariance of composite models (MICOM) procedure and multigroup analysis (MGA) for three comparison cases (Apple x Amazon; Apple x Google; Amazon x Google). The MICOM procedure was performed along three hierarchical steps: (1) configural invariance, (2) compositional invariance, and (3) equality of composite mean values and variances (Hair et

al., 2018). As a first step, we were able to establish configural invariance by an equal specification of all latent variables of each group. By testing for compositional invariance, we could not establish partial measurement invariance for all latent variables of each group. Consequently, running a multi-group analysis was not feasible. For that case, Hair et al. (2018) recommend analyzing each group separately. Even though we cannot confirm that the group-specific differences are significant we can qualitatively discuss these differences.

As a second step, we estimate the established innovation-brand-interplay model for each brand separately to test our hypotheses. We apply a factor weighting scheme with 300 iterations (Tenenhaus et al., 2005) and bootstrapping with 5000 replications (Hair et al., 2011). The formative constructs in the models are calculated with Mode A (Rigdon, 2012).

7 Results

7.1 Measurement Model

Google. A reflective first-order measurement model is assessed via its reliability and validity. We exclude one item loading for the construct brand awareness/ associations in order to improve composite reliability. All other factor loadings except four exceed the recommended threshold of 0.70. Nevertheless, these four factor loadings go beyond the minimum threshold of 0.40 (Hulland, 1999). After bootstrapping (5000 subsamples) all standardized loadings were significant ($p < 0.05$; t-value > 1.96) (Table C.1). We can therefore assume that indicator reliability is established. Composite reliability (CR) was calculated with all exceeding the threshold level of 0.70 (Fornell & Larcker, 1981). Convergent validity, assessed by the average variance extracted (AVE), is found to meet the threshold level of 0.50 (ibd.). We additionally determined our construct's discriminant validity by applying the Heterotrait-Monotrait (HTMT) analysis. Table C.2 depicts that the HTMT is below the recommended threshold of 0.90 for each construct.

The second-order reflective construct brand equity shows significant loadings above the threshold of 0.70. Further, CR and AVE values exceed their respective recommended thresholds (Table C.3). The HTMT analysis can confirm discriminant validity (Table C.2).

Furthermore, we evaluate the first-order formative constructs VOI, VAI, and RMI, by their validity and multicollinearity. All indicator outer weights exceed the required minimum threshold of 0.10 (Lohmöller, 1989) as well as the threshold of $t > 1.96$ at a significance level of 5 percent. In addition, the criterion of multicollinearity is met, since the corresponding

variance inflation factor (VIF) values are clearly below the recommended threshold of 5 (Hair et al., 2011) (Table C.4).

Finally, we assess the values and significance of the weights of the second-order formative construct BMI (Table C.5). All outer weights are above the threshold of 0.10, their *t*-values are significant and show a VIF lower than 5.

Amazon. In the Amazon model, we exclude one item loading for the construct brand awareness/ associations and one for product innovation. The measurements are internally consistent with a composite reliability (CR) higher than 0.70. All AVE values are above 0.50, indicating convergent validity (Table C.1). Additionally, the HTMT ratio of all constructs is lower than the required 0.90 (Table C.2). The second-order reflective construct brand equity shows significant loadings. Only the loadings from the first order construct brand awareness/ association are slightly under the recommended 0.70. CR and AVE values exceed their respective thresholds and the HTMT ratio establishes discriminant validity.

The first-order formative constructs VOI, VAI, and RMI show outer weights that are higher than the threshold of 0.10 and significant ($p < 0.05$; t-value > 1.96). Further, there is no multicollinearity issue between the constructs (VIF < 5).

The weights of the second-order construct BMI exceed the threshold of 0.10 and their *t*-values are significant and show a VIF lower than 5 (Table C.5).

Apple. In the Apple model, we exclude one item loading for the construct brand awareness/ associations. All other factor loadings except five exceed the recommended threshold of 0.70 and all factor loadings are significant (Table C.1). CR as well as AVE exceed their respective thresholds while the HTMT ratio meets the required < 0.90 of all the constructs (Table C.1 and C.2). These criteria also apply for the second-order reflective construct brand equity.

The first-order formative constructs VOI, VAI, and RMI show outer weights that are higher than the threshold of 0.10 and significant ($p < 0.05$; t-value > 1.96). All the VIF values are below the threshold of 5. The same applies for the second-order construct BMI (Table C.4 and C.5).

Table C.1 First-order constructs measurement results of reflective constructs

Latent variable	Items	Loadings		
		Google	Amazon	Apple
Product Innovation	[X] is offering a number of product lines.[a]	0.668***	– [d]	0.627***
CR_{Google} = 0.888	[X] is offering considerable innovation products as compared to its competitors.	0.855***	0.891***	0.849***
CR_{Amazon} = 0.882	[X] is always the first to introduce new products in the market.	0.749***	0.823***	0.831***
CR_{Apple} = 0.885	[X] always launches more new products as compared to its rivals.	0.758***	0.592***	0.725***
AVE_{Google} = 0.617	New products launched by [X] are highly innovative.	0.877***	0.899***	0.847***
AVE_{Amazon} = 0.657				
AVE_{Apple} = 0.610				
Service Innovation	[X] is always the first to introduce new services in the market.	0.669***	0.778***	0.764***
CR_{Google} = 0.892	New services introduced by [X] are highly innovative.	0.835***	0.845***	0.863***
CR_{Amazon} = 0.892	[X] keeps introducing new services to the market.	0.771***	0.789***	0.821***
CR_{Apple} = 0.905	[X] frequently innovates its service offerings for its customers.	0.720***	0.790***	0.820***
AVE_{Google} = 0.581	[X] offers a great variety of services.	0.795***	0.678***	0.704***
AVE_{Amazon} = 0.581	[X] always provides a diversified selection of services for its customers.	0.774***	0.677***	0.718***
AVE_{Apple} = 0.614				
Process Innovation	[X] has great focus on research and development.	0.834***	0.842***	0.783***
CR_{Google} = 0.925	[X] is industry leader in terms of technology.	0.785***	0.746***	0.766***
CR_{Amazon} = 0.905	[X] uses latest technology in its products.	0.862***	0.814***	0.826***
CR_{Apple} = 0.912	[X] uses latest technology in its services.	0.891***	0.832***	0.833***
AVE_{Google} = 0.712	[X] uses innovative technology on frequent bases.	0.844***	0.816***	0.897***
AVE_{Amazon} = 0.595				
AVE_{Apple} = 0.684				
Market Innovation	[X] introduce innovations that create new markets.	0.834***	0.811***	0.865***
CR_{Google} = 0.918	[X] introduce innovations that change the existing market structure.	0.804***	0.823***	0.821***
CR_{Amazon} = 0.880	[X] introduce innovations that cause a transformation of existing markets through behavioral changes.	0.886***	0.788***	0.872***
CR_{Apple} = 0.915	[X] introduce innovations that are totally new to the market.	0.804***	0.751***	0.669***
AVE_{Google} = 0.692	[X] introduce innovations that cause the reconstruction of market agents.	0.829***	0.673***	0.887***
AVE_{Amazon} = 0.595				
AVE_{Apple} = 0.684				
Brand Loyalty	I consider myself to be loyal to [X].	0.871***	0.879***	0.952***
CR_{Google} = 0.922	[X] would be my first choice.	0.915***	0.903***	0.947***
CR_{Amazon} = 0.922	I will not buy other brands if [X] is available at the store.	0.892***	0.898***	0.948***
CR_{Apple} = 0.965				
AVE_{Google} = 0.797				
AVE_{Amazon} = 0.798				
AVE_{Apple} = 0.901				
Perceived Quality	The likely quality of [X] is extremely high.	0.937***	0.899***	0.933***
CR_{Google} = 0.934	The likelihood that [X] would be functional is very high.	0.935***	0.818***	0.931***
CR_{Amazon} = 0.849				
CR_{Apple} = 0.930				
AVE_{Google} = 0.876				
AVE_{Amazon} = 0.739				
AVE_{Apple} = 0.869				
Brand Awareness/ Associations	I can recognize [X] among other competing brands.	0.762***	–	0.772***
CR_{Google} = 0.810	I am aware of [X].	0.777***	0.632***	0.719***
CR_{Amazon} = 0.802	Some characteristics of [X] come to my mind quickly.	0.641***	0.722***	0.798***
CR_{Apple} = 0.816	I can quickly recall the symbol or logo of [X].	–	0.729***	0.606***
AVE_{Google} = 0.517	I have difficulty in imagining [X] in my mind. (r) [b]	0.689***	0.751***	–
AVE_{Amazon} = 0.504				
AVE_{Apple} = 0.529				
Brand Innovativeness	[X] sets itself apart from the rest when it comes to innovations.	0.849***	0.842***	0.862***
CR_{Google} = 0.949	With regard to innovations, [X] is dynamic.	0.858***	0.772***	0.839***
CR_{Amazon} = 0.930	[X] is a cutting-edge brand.	0.801***	0.676***	0.780***
CR_{Apple} = 0.939	[X] innovations make me feel "Wow!"	0.733***	0.705***	0.755***
AVE_{Google} = 0.673	[X] launches new innovations and creates market trends all the time.	0.857***	0.836***	0.759***
AVE_{Amazon} = 0.598	[X] is an innovative brand in its market.	0.825***	0.834***	0.838***
AVE_{Apple} = 0.633	[X] makes new innovations with superior design.	0.818***	0.802***	0.760***
	With regard to innovations, [X] constantly generates new ideas.	0.841***	0.824***	0.856***
	[X] is a new product leader in its market.	0.793***	0.640***	0.694***
Innovation Adoption	Overall, I am satisfied with [XX]. [c]	0.880***	0.905***	0.913***
CR_{Google} = 0.907	Overall, [XX] has been an unsatisfactory experience. (r)	0.763***	0.858***	0.906***
CR_{Amazon} = 0.918	I think I did the right thing when I decided to use [XX] for my needs.	0.855***	0.819***	0.900***
CR_{Apple} = 0.944	Based on all my experiences with [X], I am very satisfied with the products and services it provides.	0.868***	0.850***	0.874***
AVE_{Google} = 0.710				
AVE_{Amazon} = 0.737				
AVE_{Apple} = 0.807				

Note: $^{\dagger}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$, two-tailed test.
[a] [X] indicates a brand name.
[b] (r) indicates reversed scoring.
[c] [XX] indicates the innovative product/service.
[d] indicates an eliminated indicator

Table C.2 Heterotrait-Monotrait (HTMT) ratio

Google	**BI**	**IA**	**ProdI**	**ServI**	**ProcI**	**MarketI**	**BE**	**BL**	**PQ**	**BA/BA**
BI										
IA	0.347									
ProdI	0.729	0.282								
ServI	0.734	0.431	0.625							
ProcI	0.784	0.410	0.628	0.710						
MarketI	0.729	0.279	0.697	0.714	0.735					
BE	0.659	0.535	0.577	0.561	0.594	0.451				
BL	0.501	0.478	0.383	0.359	0.382	0.234	0.914			
PQ	0.647	0.537	0.550	0.516	0.662	0.514	0.943	0.598		
BA/BA	0.296	0.296	0.481	0.496	0.438	0.383	1.044	0.394	0.623	
Amazon	**BI**	**IA**	**ProdI**	**ServI**	**ProcI**	**MarketI**	**BE**	**BL**	**PQ**	**BA/BA**
BI										
IA	0.373									
ProdI	0.788	0.295								
ServI	0.507	0.264	0.514							
ProcI	0.727	0.247	0.721	0.525						
MarketI	0.647	0.255	0.627	0.401	0.750					
BE	0.490	0.785	0.472	0.369	0.343	0.377				
BL	0.287	0.510	0.333	0.211	0.107	0.157	0.900			
PQ	0.560	0.704	0.475	0.284	0.402	0.360	0.961	0.451		
BA/BA	0.327	0.585	0.292	0.335	0.323	0.362	1.054	0.282	0.501	
Apple	**BI**	**IA**	**ProdI**	**ServI**	**ProcI**	**MarketI**	**BE**	**BL**	**PQ**	**BA/BA**
BI										
IA	0.517									
ProdI	0.894	0.334								
ServI	0.626	0.243	0.692							
ProcI	0.841	0.419	0.809	0.628						
MarketI	0.729	0.267	0.851	0.609	0.748					
BE	0.675	0.688	0.527	0.382	0.541	0.444				
BL	0.346	0.474	0.322	0.230	0.223	0.203	0.857			
PQ	0.669	0.751	0.498	0.404	0.616	0.420	0.924	0.500		
BA/BA	0.621	0.446	0.444	0.295	0.504	0.450	1.022	0.331	0.636	

Table C.3 Second-order measurement results of hierarchical reflective construct

Second-order construct	**First-order construct**	**Loadings**		
		Google	Amazon	Apple
Brand Equity				
CR_{Google} = 0.833	Brand Loyalty	0.812***	0.779***	0.773***
CR_{Amazon} = 0.775				
CR_{Apple} = 0.821	Perceived Quality	0.837***	0.723***	0.822***
AVE_{Google} = 0.625				
AVE_{Amazon} = 0.536	Brand Awareness/Association	0.718***	0.691***	0.737***
AVE_{Apple} = 0.605				

Note: $^{\dagger}p < 0.10$, *p < 0.05, **p < 0.01, ***p < 0.001, two-tailed test.

Table C.4 First-order constructs measurement results of formative constructs

Latent variable	**Items**	**Google**		**Amazon**		**Apple**	
		Weights	VIF	Weights	VIF	Weights	VIF
VOI	Target customers have changed.	0.393***	1.362	0.354***	1.180	0.360***	1.153
	The product and service offering has changed.	0.410***	1.553	0.476***	1.239	0.495***	1.171
	[X] positioning in the market has changed.	0.425***	1.619	0.494***	1.239	0.499***	1.194
VAI	[X] core competences and resources have changed.	0.321***	1.539	0.320***	1.412	0.287***	1.688
	Internal value creation activities have changed.	0.346***	1.952	0.306***	1.394	0.315***	2.326
	Roles and involvement of partners in the value creation process have changed.	0.303***	1.572	0.346***	1.616	0.322***	2.381
	Distribution has changed.	0.301***	1.464	0.344***	1.554	0.288***	1.783
RMI	Revenue mechanisms have changed.	0.600***	1.667	0.522***	1.425	0.469***	1.836
	Cost mechanisms have changed.	0.506***	1.667	0.614***	1.425	0.622***	1.836

Note: $^{\dagger}p < 0.10$, *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$, two-tailed test.

Table C.5 Second-order measurement results of hierarchical formative construct

Second-order construct	First-order construct	Google		Amazon		Apple	
		Weights	VIF	Weights	VIF	Weights	VIF
Business Model Innovation	VOI	0.394***	1.562	0.352***	1.292	0.321***	1.545
	VAI	0.561***	1.666	0.593***	1.450	0.649***	1.738
	RMI	0.267***	1.232	0.311***	1.278	0.245***	1.197

Note: $^{\dagger}p < 0.10$, $*p < 0.05$, $**p < 0.01$, $***p < 0.001$, two-tailed test.

7.2 Structural Model

Google. We test our hypotheses by analyzing direct effects of the constructs of the structural model. The findings indicate that product innovation has a significant positive effect on brand equity ($\beta = 0.225$; $p < 0.05$), supporting H1. On the contrary, we found no support for H2, as service innovation shows an insignificant effect on brand equity ($\beta = 0.151$; n. s.). Conversely, the influence of process innovation on brand equity is statistically significant and positive ($\beta = 0.348$; $p < 0.05$), thus H3 is accepted. The relationship between market innovation and brand equity is negative and not significant ($\beta = -0.106$, n. s.), thus H4 is not supported. The fifth predictor for brand equity, BMI, has a positive significant effect on brand equity ($\beta = 0.150$; $p < 0.05$), therefore H5 is accepted. We found support for H6, since there is a positive significant effect of brand equity on innovation adoption ($\beta = 0.456$; $p < 0.001$) with a moderate effect size ($f^2 = 0.177$). Furthermore, we test our hypothesis H7 by integrating the suggested effect of brand innovativeness as a mediator. Brand equity has a positive and significant direct effect on brand innovativeness ($\beta = 0.604$; $p < 0.001$); whereas the effect of brand innovativeness on innovation adoption is not significant ($\beta = 0.079$; n. s.). The specific indirect effect of brand equity on innovation adoption ($\beta = 0.048$; n. s.) indicates that H7 has to be rejected (see Figure C.3). Overall, the results support the significant positive effect of product innovation, process innovation, and business model innovation on Google's brand equity. The f^2 values of these significant effects range from 0.030 – 0.093 indicating a weak effect size respectively. In total, all innovation dimensions jointly explain 38 percent of variance in brand equity ($R^2 = 0.379$). Brand equity itself explains 37 percent ($R^2 = 0.365$) of brand innovativeness and 26 percent ($R^2 = 0.257$) of innovation adoption. A blindfolding procedure with an omission distance of 7 provides positive Stone-Geisser's Q^2 values for the endogenous constructs brand equity ($Q^2 = 0.150$), brand innovativeness ($Q^2 = 0.234$), and innovation adoption ($Q^2 = 0.148$) implying predictive relevance for the proposed research model (Fornell & Bookstein, 1982).

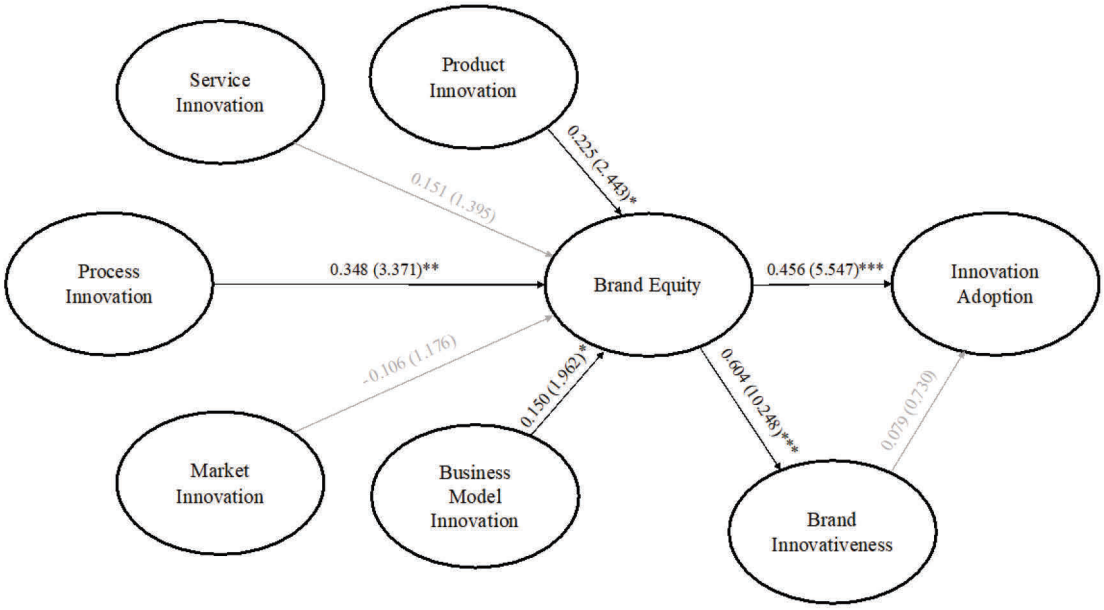

Figure C.3 Structural model results (Google) (Note: *t*-values in brackets; *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$)

Amazon. The results of the Amazon model show that product innovation has a significant positive effect on brand equity ($\beta = 0.292$; $p < 0.05$) with a weak effect size ($f^2 = 0.056$), thus supporting H1. Conversely, we found no support for H2, H3, H4, and H5 as service innovation, process innovation, market innovation and business model innovation show an insignificant effect on brand equity each. H6 can be confirmed, since there is a positive significant effect of brand equity on innovation adoption ($\beta = 0.610$; $p < 0.001$; $f^2 = 0.529$). Finally, H7 cannot be supported. Brand equity shows a positive and significant direct effect on brand innovativeness ($\beta = 0.426$; $p < 0.001$); whereas the direct effect of brand innovativeness on innovation adoption ($\beta = 0.087$; n. s.) as well as the specific indirect effect of brand equity on innovation adoption ($\beta = 0.037$; n. s.) is not significant (see Figure C.4). In total, the antecedent innovation dimensions jointly explain 20 percent of variance in brand equity ($R^2 = 0.198$). Brand equity itself explains 18 percent ($R^2 = 0.181$) of brand innovativeness and 43 percent ($R^2 = 0.425$) of innovation adoption. The Stone-Geisser's Q^2 is above zero for all endogenous constructs. Therefore, the prognostic relevance of the model is confirmed.

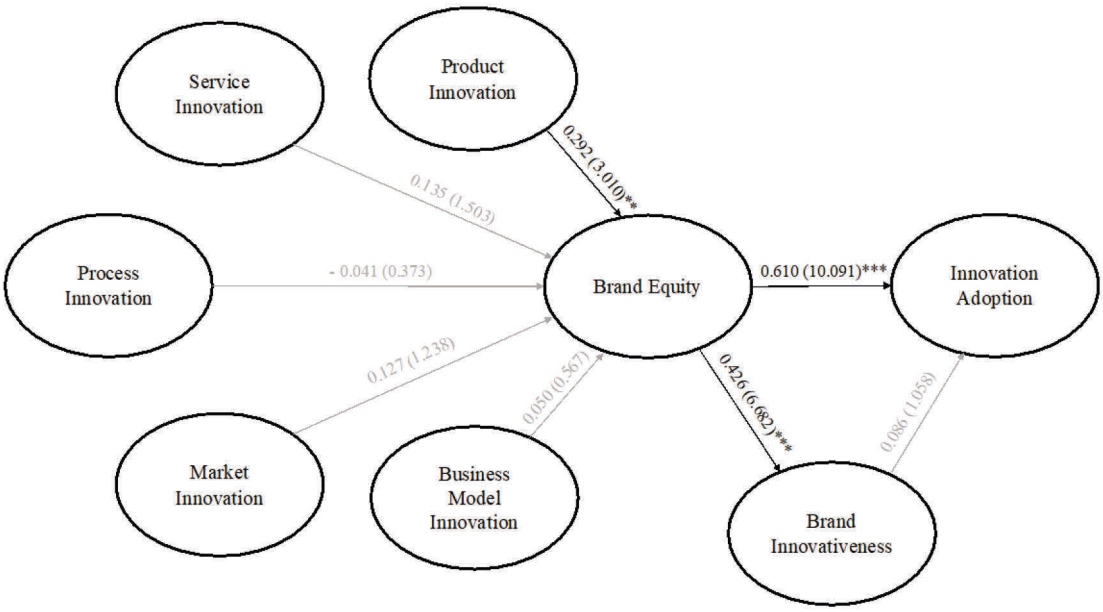

Figure C.4 Structural model results (Amazon) (Note: *t*-values in brackets; *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$)

Apple. The results of the Apple model indicate that there is no support for H1, H2, H3, H4, and H5 as all predictive innovation dimensions do not show a significant effect on brand equity. Contrary, we see a positive significant effect of brand equity on innovation adoption ($\beta = 0.538$; $p < 0.001$) with a moderate effect size ($f^2 = 0.311$), thus supporting H6. Finally, H7 cannot be supported. Brand equity shows a positive and significant direct effect on brand innovativeness ($\beta = 0.618$; $p < 0.001$); whereas the direct effect of brand innovativeness on innovation adoption ($\beta = 0.162$; n. s.) as well as the specific indirect effect of brand equity on innovation adoption ($\beta = 0.100$; n. s.) is insignificant (see Figure C.5). Overall, the antecedent innovation dimensions jointly explain 29 percent of variance in brand equity ($R^2 = 0.285$). Brand equity itself explains 38 percent ($R^2 = 0.382$) of brand innovativeness and 42 percent ($R^2 = 0.424$) of innovation adoption. We can confirm the prognostic relevance of the model as the Stone-Geisser's Q^2 is above zero for all endogenous constructs.

Finally, our models' control variables for gender, age, and highest education level were not significant.

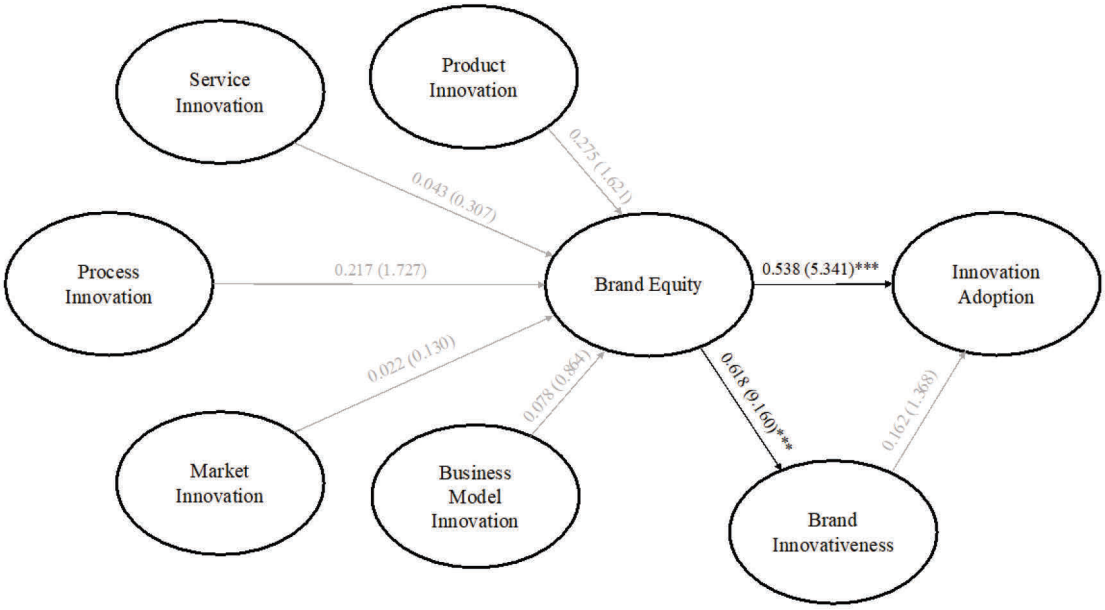

Figure C.5 Structural model results (Apple) (Note: *t*-values in brackets; *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$)

7.3 General Discussion and Summary

Earlier research pays no attention to the effect of different innovation types on brand equity. The current study provides a significant contribution to the innovation-brand literature by examining the effect of innovation types on brand equity of tech giants that apply a trail-blazer strategy (here: Google, Amazon, Apple) (Paswan et al., 2020). On the one hand, these firms are expected to constantly introduce new ideas, bring novel solutions to the market to create superior value propositions for their customer base, and attract new potential customers. On the other hand, these firms have to safeguard an enduring and favorable brand value throughout their brand touchpoints (Jensen & Beckmann, 2009; Paswan et al., 2020). In contrast to this paradoxical dichotomy, our results show that some types of innovation might improve customer perceptions of long-grown, high-equity brands.

We can identify brand-related differences between Google, Amazon, and Apple regarding their respective innovation-brand relationships. In line with prior research (e.g., Nørskov et al., 2015; Sriram et al., 2007; Zhang et al., 2013) product innovation is a significant driver for a strong brand equity of Google and Amazon. For Apple, product innovation does not show a significant effect, still, the path coefficient ($\beta = 0.275$) and effect size ($f^2 = 0.035$)

imply that product innovation is the most influential innovation antecedent for Apple's brand equity.

On the contrary, our results show that service innovation has no significant effect on brand equity of our three investigated tech brands. These brands offer integrated solutions that integrate their services (e.g., Google Maps, Amazon Music, Apple Music) into their products (e.g., Google Pixel, Amazon Alexa, Apple Watch). These services create value for the customer but might be seen as an integrated part of the playback device. Thus, integrated service innovation upvalues technical product innovation as product-service hybrids and thus can play a relevant role for the company's brand equity. A product that delivers services fulfills the brand promise of these companies in contrast to a service innovation itself.

The relationship between process innovation and brand equity has to be evaluated in a differentiated manner. The customers' perception of technological process innovation shows a significant positive effect on the brand equity of Google. Apple's process innovation perception shows a notable path coefficient (β = 0.217) but is not significant. Investigating the result of customers' perception of Amazon's process innovation, we notice a negative, non-significant effect on brand equity (β = -0.041). A great focus on R&D and unique operational capabilities lead to the perceived status of a technological industry leader, which might apply more to Google and Apple than to Amazon.

Our insights do not support a significant relationship between market innovation and brand equity for each of the three tech brands. Notably, we identify a negative link between Google's market innovation perception and its brand equity (β = -0.106). That might indicate that the transformation of existing markets might result in customers changing their behavior and thus decreasing their loyalty to a brand, which could lead to a decreased brand equity for Google. Market innovations may not coherently reflect a clear, consistent, and meaningful brand image in the minds of consumers. Consumers might prefer an established and consistent brand identity that could be questioned by the creation of new markets. New markets are fraught with risk, since they may irritate existing customers and diminish brand equity (Lee et al., 2016).

With regard to business model innovation, we see a positive significant effect on Google's brand equity and positive insignificant effects on Amazon's and Apple's brand equity. Therefore, we conclude that the specific business model innovation and its brand fit are crucial for its positive effect on brand equity. Eggers & Eggers (2021) show that on average,

technology brands are most preferred for renting or purchasing an autonomous car. Further, they show that Google is more favorable than Apple in the autonomous car market. This assessment is confirmed by our results. Google's BMI, the self-driving car project, was branded as Waymo (as described in the case stimuli). This indicates that BMI should be branded under a new name. When examining consumers' perception of the brand equity, however, we find that the underlying brand can benefit from the introduction of a new business model.

A closer look at the innovation types as predictors for brand equity shows differences comparing the specific effects of these innovation types on brand equity as well as differences across the three tech brands. Our results demonstrate that under different patterns of contextual factors (e.g., brand) the significance of innovation types varies, with specific combinations leading to high-level brand equity. These findings suggest that researchers and practitioners should identify key combinations of innovation factors that lead to enhanced brand equity. In general, service innovation and market innovation do not have an impact on brand equity of the three respective brands. One possible reason for the rejection of H2 and H4 and the weak effect sizes of the significant predictors is that innovations might have a stronger value-adding impact on low-equity brands than high-equity brands. Innovations that aim to add significantly more value to high-equity brands have to be regarded as superior innovative offerings. Another reason might be that the relationship of, for instance, service innovation and market innovation with brand equity is situation-dependent (e.g., timing of entry; market and brand positioning) (Nørskov et al., 2015). Moreover, higher levels of innovation orientation can jeopardize the clarity and consistency of the core brand (Lee et al., 2016). For that reason, tech brands are advised to brand their innovations – especially, service innovations and market innovations – in a way that supports the overall brand equity of the firm.

Our study is the first that empirically verifies the significant positive impact of brand equity on innovation adoption behavior. Consequently, high-equity brands enhance the likelihood of consumers' adoption of innovations – regardless of product or service innovations. Thus, we confirm the theoretical notion by Brexendorf et al. (2015). In contrast, brand innovativeness does not show a significant effect on innovation adoption behavior. In line with the findings of Alan et al. (2017), even if the brand is regarded as innovative, it may not affect the customers' attitude toward their product/ service adoption. These results are consistent across all three brand subgroups. But why can innovation adoption behavior benefit in terms of brand equity but not in terms of brand innovativeness? Brand equity and brand innovativeness might embody the paradoxical dichotomy – to which the attention is drawn by Paswan et al.

(2020). Creating and enduring a recognizable brand identity by brand equity is more important than the state to be a constantly innovative brand when it comes to adopting products and services. Novel value offerings might need a brand that is based on a consistent and strong brand equity more than on a perception of innovativeness. This might apply to high-equity brands. Start-ups as well as small and medium-sized enterprises cannot rely on a strong brand equity. For them, brand innovativeness might be more important in order to facilitate innovation adoption behavior.

8 Theoretical Contributions

This study combines brand management and innovation management and therefore goes beyond previous research undertaken in isolated silos (Brexendorf et al., 2015). By investigating the effect of innovation types on customer-based brand equity and its impact on the consumers' innovation adoption by integrating brand innovativeness, we contribute and extend the literature on innovation-brand interplay. First, we empirically show a reciprocal innovation-brand relationship as illustrated in the theoretically assumed reciprocal brand equity-innovation cycle in Figure C.1. Our notion underlines the assumption that innovations can be important factors for driving brand success in fostering high brand equity (Beverland et al., 2010; Brexendorf et al., 2015). Moreover, a strong brand equity is a prerequisite for a desired innovation adoption behavior and thus a key factor for innovation success (Brexendorf et al., 2015; Hoeffler & Keller, 2003). Consequently, the complex and complementary interweaving of innovation and branding plays an important role in building an organization's competitive advantage (Lee et al., 2016). Contrary to the original preliminary assumption we cannot support the notion that consumer perceived brand innovativeness significantly affects the adoption behavior of innovation. This is in line with the findings of Alan et al. (2017). Thus, we conclude for signaling theory, that brand innovativeness is not necessarily a signal that encourages the consumers' innovation adoption. High brand equity is more important than brand innovativeness when supporting innovation adoption behavior.

Second, we decompose our innovation model by distinguishing between five types of innovation. Our study proposes a practical business development innovation type taxonomy. This approach allows us to apply a more granular understanding of the innovation-brand interplay in order to derive specific implications by comparing performance consequences of different innovation activities on brand performance. The results underline that product innovation, process innovation, and business model innovation are better predictors for a strong brand equity than service innovation and market innovation. Our research is the first that

empirically shows that different innovation types have varying degrees of influence on brand equity. This is particularly relevant for innovation and brand theory. In this context, the discourse on the innovation brand relationship must be differentiated. Specially, it enhances knowledge in regard to the synthesis perspective with its integrative approach to innovation in both the manufacturing and service sectors (Coombs & Miles, 2000). The combination, complementation, and integration of distinct innovation types are of importance to generate a holistic picture. Further, our study shows that company-internal and, therefore, for customers fairly intangible innovation activities such as process innovation and the business model elements VAI and RMI impact customer-based brand equity. Thus, we conclude that the visibility and tangibility of innovations respectively their absence do not influence the customers' brand equity perception.

Third, the integration of a customer perspective brings new and insightful impulses into the theoretical discourse on innovation-brand interplay. We argue that researchers have to understand customers' perceptions of innovations and brands in order to understand the integration of customers into the ideation and development of innovations. In doing so, we draw attention to the novel direction that customer brand perceptions take.

9 Managerial Implications

Our results also have several implications for managerial practice. Managers of companies applying a trail-blazer strategy (e.g., Google, Amazon, Apple) currently face fast-changing environmental conditions that force them to adapt their innovation and branding efforts in order to sustain their firm's present success. One key finding of our study is that this adoption must be executed from a more strategic perspective. Innovation managers as well as brand managers have to work together from the beginning to streamline their efforts to reach the end goal of value creation for the customers. We therefore call for a complementary, interdisciplinary team working hand in hand with a constant focus on the intersection of innovation management and brand management; elaborated in two paths.

9.1 Innovation-Led Brand Management

The implications of the findings suggest that managers of high brand equity firms have to explicitly recognize the importance of product innovation and process innovation and must actively incorporate their development as part of their brand management. Innovations are important brand touchpoints, whether visible or not to the customers. Changes due to

innovations also transform the perception of brands which must be taken into account and thus actively managed. Thus, brand management can benefit from innovation efforts. Firms should invest extensively in R&D and business development in order to create offerings that meet customer needs. In consequence, novel offerings increase the brand's points-of-difference (Keller & Lehmann, 2006). Our results show that it is a key for tech brands to embody high equity rather than high innovativeness in an attempt to improve the innovation adoption behavior of customers. Therefore, brand managers should focus on brand equity rather than brand innovativeness as a target variable in order to foster innovation adoption of the branded innovations. Thus, it can be ascertained that brand equity growth can be strategically engineered by innovation efforts from its very genesis.

9.2 Brand-Led Innovation Management

A key strategic goal for innovation managers must be to strengthen the brand through innovative solutions and offerings. They have to focus on innovations that support a strong, sustainable brand. Our study indicates that product innovation, process innovation and partly BMI pave the way towards a strong brand perception. Therefore, brand-led innovation management has to focus on these innovation types and should rather neglect service innovation and market innovation. Our research creates awareness among managers to extend the list of innovation determinants that managers can priories in their efforts to improve their brand equity, and eventually drive company growth. These implications lead to a more efficient, inexpensive innovation development process that might reduce the flop rate of novel offerings. Initially, managers of valuable tech brands should introduce process innovations into the firm's operational capabilities to develop favorable product innovations. Further, we show that innovation management with a focus on increasing brand equity initially lays the foundation for successful innovation adoption. Incorporating a brand perspective into innovation efforts allows companies to leverage first-mover advantages that enable them to achieve higher profit margins and compensate R&D costs (Aaker, 2007; Beverland et al., 2010). Therefore, brand equity functions as a key performance indicator not only in brand controlling but also in innovation management controlling. Branding is a central pillar for innovation management that needs to be focused, not least to include the customer and his/ her behavioral and cognitive characteristics in the development process. A strong brand is a necessity as it erects barriers to imitation (Barney, 2014). For that reason, high brand equity can be a competitive advantage against those companies that seek to put competing versions of the innovation into the market.

In an era characterized by breaking down of silos and the rise of heterogeneous teams, business development is embodying this new state of work. It combines marketing and innovation management alongside new products, new services, new technological processes, and new business models. The transformation of innovative business development activities into innovation-led brand effects enhances both strategic business fields. In consequence, we call for an integrated business development perspective on the interplay of brand and innovation management, insofar as these play part in fostering growth and altering the status quo by developing new business fields. High-equity tech brands like Google, Amazon, and Apple should spend their resources on innovation and branding in the same manner in order to reap the reciprocal benefit of both business fields (Lee et al., 2016).

10 Limitations and Future Research Directions

This study is subject to some limitations that leave avenues for future research. First, the main limitation of this study is related to the sampling technique and generalizability of the research. Applying convenience sampling technique may not reflect the overall consumer attitude of the entire German population. In order to confirm our innovation-brand interplay model we call for further studies that approve its external validity. Second, there may be limitations due to the sample size. We applied the minimum *R*-squared method to determine the minimum sample size of each of our three subsamples in PLS-SEM. According to this method, the respective sample sizes are above the required minimum threshold value (Hair et al., 2014). Nevertheless, the sample size of the Apple subsample is comparatively small, which is why it is possible that it did not meet the significance level given the expected effects. The small effect size values support this assumption. Third, given the lack of suitable customer-centric metrics and measurements of innovation types like service innovation and market innovation, we want to encourage researchers to develop valid innovation scales. Fourth, in our study we focuse on tech giants that are characterized by high brand equity and perform a trail-blazer strategy. These tech giants successfully managed the transformation from product/ service providers to solution providers and finally to value-adding providers. The role of the interplay between brand and innovation management within this transformation process cannot be answered by this study, but it offers a fruitful starting point for future research to elaborate on how firms can co-create brand meaning and value with their customers.

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Appendix

Scenario-Based Company Cases

Case 1 Apple: Description of the VOI

Through the expansion into a new market, Apple hopes to win new customer groups over. Therefore, Apple is moving forward into the e-mobility market with self-driving car technology and is targeting 2024 to produce a passenger vehicle that could include its own breakthrough battery technology.

Case 2 Apple: Description of the VAI

Apple is planning a targeted development of new competencies and resources to create a new battery design and an autonomous driving system in the future. In this way, Apple hopes to improve the value-added process by utilizing partnerships with existing manufacturers and building a global manufacturing network.

Case 3 Apple: Description of the RMI

Apple is planning to not only sell the vehicles but also lease them in the future. Instead of a single payment at a specific time point and further payments for maintenance and repair, the customer can pay a monthly rate and gets a carefree package, which already includes maintenance and repair. In this way, the car manufacturer hopes to get more regular revenue streams.

Case 1 Google: Description of the VOI

Through the expansion into a new market, Google hopes to win new customer groups over. Therefore, Google is moving forward into the automotive market with self-driving car technology. To realize a self-driving car, Google is working on the corresponding technology and software.

Case 2 Google: Description of the VAI

Google is planning a targeted development of new competencies and resources to develop an autonomous driving system in the future. In 2016, Google's self-driving car project became Waymo. Waymo has partnerships with several vehicle manufacturers to integrate its technology.

Case 3 Google: Description of the RMI

Google plans to offer self-driving cars as part of a car-sharing service. Thus, Google offers access to its self-driving cars as a transportation service. Customers pay either a monthly subscription or as part of a pay-as-you-go model.

Case 1 Amazon: Description of the VOI

Through the expansion into a new market, Amazon hopes to win new customer groups over. Amazon plans to expand its business to stationary retail and, in the course of this, to launch the cashierless supermarket Amazon Go in Germany. With the help of the Amazon Go app and an automatically generated QR code, queuing at checkouts will be a thing of the past. Customers are automatically charged when they leave the store with their purchases.

Case 2 Amazon: Description of the VAI

Amazon is planning a targeted development of new competencies and resources to develop the cashierless supermarket Amazon Go. In this way, Amazon hopes to improve the value creation process by leveraging partnerships with local stores or key brands in the industry – such as Starbucks.

Case 3 Amazon: Description of the RMI

Amazon Go is aimed at customers who value fast shopping without checkouts. This convenience should not be expensive. Amazon Go tends to be located at the lower end of the supermarket price spectrum. Compared to other Amazon services, customers do not have to pay for a Prime membership to use Amazon Go.

D. Winning The Green Brand Image Battle – The Role of Green Product Innovations, Limited-Editions and Co-Branding

Abstract

Sustainability increasingly dominates the focus of product innovations. To keep pace with the demands of a value-driven consumer market, building a green brand image and brand value is a key challenge for companies. However, in current marketing research there is a lack of understanding as to what extent green product innovations affect consumers' brand perception. In two empirical between-subject experiments, we examine the extent to which green product innovations, Limited-Edition products, co-branded products, and a combination of these product branding strategies contribute to the consumers' (green) brand perception. The findings reveal that green product innovations perform better than a non-green alternative in creating a favorable green brand image and enhancing the brand's value. In contrast, we could not identify differences in the green brand image perception across divergent product branding strategies (Limited-Edition and/or co-branding), while green Limited-Edition co-branded products are most effective in reinforcing the brand's price and emotional value.

Keywords: *green product innovation, green brand image, brand value, limited-edition, co-branding, sustainability*

1 Introduction

Patagonia's famous anti-consumption campaign "Don't buy this jacket" encourages customers to consume less (Patagonia, 2022). It is one of many examples that in recent years, threats to the environment have led to an increased sustainability awareness. Thus, sustainability has become a business imperative and as such a significant purchase criterion for consumers and a key driver of corporate growth (Rahman et al., 2019; Xie et al., 2019). Against this background, sustainability is a particularly important issue in marketing and consumer research (Lunde, 2018). In this paper, we build on the basic definition of sustainability as stated in the WCED's Brundtland Report: a development that "meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED 1987, p. 37). According to the triple bottom line, sustainability encompasses economic, environmental, and social aspects (Sander et al., 2021). The focus of our study is on the environmental dimension, in the following referred as 'sustainable' or 'green'.

By taking responsibility for the environment, brands are responding to a growing awareness of sustainability. Sustainability is considered a new business megatrend and a key driver for product innovations (Nidumolu et al., 2009; White et al., 2019). Thus, an increasing number of brands develop green product innovations (GPIs) that help to embed green values and society-improving mission into business development (Xie et al., 2019). New green product development is a valid approach for companies to decrease their environmental footprint (Jung et al., 2020). Accordingly, sustainability has become a key factor in product innovations as GPIs are increasingly popular among consumers (Hemonnet-Goujot et al., 2022).

Chen (2010) postulates that companies deploy green marketing activities to improve their images. Companies offering GPI want consumers to recognize, embrace, and reward their sustainable values and actions (White et al., 2019). They position and market their brands as superior green alternatives (Brunk & de Boer, 2020). Aaker (2012) highlights that many brands (e.g., Toyota, Panasonic, and Walmart) have defined a green brand identity and implemented sustainability as an important facet of their brand personality. Companies are therefore concerned about how their brands are perceived as green by consumers. Sustainability-related criteria are employed as a point of difference set against the competition (Kumar & Christodoulopoulou, 2014) with companies exploiting GPI strategies achieving and sustaining competitive advantages (Albort-Morant et al., 2016). Sustainability branding can develop importance by linking green associations to aspirational actions in a way that fosters a sense of desirability and value linked to GPIs and behaviors (White et al., 2019). However, only a few

of these brands achieve green credibility and visibility. Despite their efforts, many brands fail to be perceived as green by consumers (Aaker, 2012).

Brexendorf et al. (2015) stress the importance of the impact of innovations on brand perception in general. However, the effects of GPIs on the consumers' (green) brand perception remain poorly understood. So far, there is little research focusing on the perception of greenness of brands (Brunk & de Boer, 2020) and even less on the impact of sustainable products on the consumers' brand perception (e.g., Olsen et al., 2014) or on the consumer-brand relationship (e.g., Hemonnet-Goujot et al., 2022). Against this backdrop, our research aims to investigate the positive effect of GPIs on (green) brand perception. More precisely, we pursue two objectives in our research paper. First, we compare the impact of GPI and non-green product innovation on green brand image and brand value. Second, we aim to investigate which type of GPI influences a more favorable green brand perception. Brands apply different product branding strategies in order to put GPIs on the market. Recent research has shown that GPIs are important in the context of luxury products and brands (e.g., Hemonnet-Goujot et al., 2022; Park et al., 2022). Scarcity appeals inherent in luxury products seem to influence the effectiveness of GPIs towards the brand evaluation. Therefore, our second study focuses on product line extensions with scarcity appeals: Limited-Edition (LE) products. In recent years, many brands have introduced LE variants as a new product branding strategy (Jang et al., 2015). This practice can be seen in many product categories in today's marketplace, including fashion items, automobiles, tech products and fast-moving consumer goods. Motivated by the observed industrial practices, e.g., in the fashion industry, we additionally aim to investigate co-branding as a second product branding strategy. LEs are closely linked to co-branding when brands partner with each other in order to launch co-branded special edition products with a limited availability. Klein Daley (2022) states that "brand collaboration is the new innovation for marketers" as it is regarded as a constant brand re-contextualization. Co-branding that centers around sustainability can deliver benefits for both partners and increase the pool of conscious consumers.

New product development is a key driver for brand growth with LE products and co-branding as alternative branding strategies for brand extensions (Jang et al., 2015). Rajavi et al. (2022) have shown in a recent study, that a wide product assortment is a strong contributor to brand equity in times of macroeconomic expansions. The authors conclude that the expansion of the assortment should be a priority for brand management. Marketers and product managers have to carefully review the brand's product portfolio. They need to decide whether the brand

should change its current product line completely to a green product line (ongoing line extension) or instead introduce special green product variants (LE and/or co-branded) to its already established product line. Based on the objectives to expand the product assortment and to obtain differentiation advantages, companies embody the strategic concepts of greenness (Chen, 2010), LEs (Jang et al., 2015; Shin et al., 2017) and co-branding (Besharat & Langan, 2014) in their products. Even though a combination of these product branding strategies is often used in practice, it has not yet been empirically analyzed. It can be assumed that these specific branding tactics have a different effect on the consumer' (green) brand perception. Our paper proposes valuable and practical implications; it contributes to the literature on green branding and innovation by analyzing the most effective GPI types for enhancing consumers' green brand perception. More precisely, we focus on identifying and comparing the impact of green product innovation (GPI), green LE product innovation (GLEPI), green co-branded product innovation (GCOPI), and green LE co-branded product innovation (GLECOPI) on green brand image and brand value. Thus, we explore consumer responses to brand value creation processes as an integral part of sustainable brand management and how it is put into practice. We add brand value in our framework as scarce research has attempted to investigate the relationships amongst conventional branding and green branding constructs in a holistic framework (Ng et al., 2014).

In doing so, this paper focuses on the following research question (*RQ*): *What (green) product innovation strategy is most effective to enhance consumers' perception of green brand image and brand value?*

To answer this research question, our paper is structured as follows: we introduce the relevant consumer brand perception constructs as dependent variables and review the literature in terms of the existing theoretical understanding of the concepts GPI, GLEPI, GCOPI, and GLECOPI. We finally connect these research fields and derive the respective hypotheses. Subsequently, we present our two experimental studies. We conclude with a general discussion of our results, their theoretical and managerial implications, reflect the study critically and propose future research directions.

2 Literature Review and Hypothesis Development

2.1 Green Product Innovation

The ecological impact of products is becoming increasingly important to consumers, who want to buy products from environmentally friendly brands (Xie et al., 2019). A growing number of

brands respond to these consumer expectations by launching GPIs (Gershof & Frels, 2015). GPI is regarded as a driver for new business creation and market leadership (Xie et al., 2019). Varadarajan (2017, p.17) defines GPI as "a firm's introduction of a new product or modification of an existing product whose environmental impact during the lifecycle of the product, spanning resource extraction, production, distribution, use, and post-use disposal, is significantly lower than existing products for which it is a substitute." He identifies three types of GPIs: efficiency innovation, elimination innovation, and substitution innovation. Our research is focusing on substitution product innovation (SPI) as it is a widespread green product strategy for our studies' product category. SPIs are defined as "innovations that lower the environmental impact of a product by substituting a resource used as an input with another resource" (ibd.). Hemonnet-Goujot et al. (2022) differentiate SPI in four types: recycling, upcycling, process, or sustainable alternative. Based on conceptual considerations, we investigate the innovative character of the substitution of a product by focusing on the category of sustainable alternatives.

2.1.1 Green Product Innovation and Green Brand Image

Brand image management has emerged as a strategic priority for companies. Keller (1993, p. 3) defines brand image as "perceptions about a brand as reflected by the brand associations held in consumer's memory." Consumers are becoming more environmentally aware, with the potential for environmental protests and rising public pressure, and there are strict international environmental regulations that may result in legal penalties (Chen, 2010). Accordingly, many companies have invested to incorporate sustainability into their brand identity with the aim to align it with consumer perceptions of their brand image (Aaker, 2012). Thus, brands enhance consumer expectations about environmental friendliness. Chen (2010, p. 309) proposes the construct 'green brand image' and defines it as "a set of perceptions of a brand in a consumer's mind that is linked to environmental commitments and environmental concerns." Consequently, green brand image is a subset of the overall brand image and includes consumers' perceptions of the positive environmental or green attributes of the company (Ng et al., 2014; Xie et al., 2019). Generally speaking, a brand's green image is now a crucial factor affecting a company's strategy and performance and as such, is more important than ever to attract customers who prefer GPI (Xie et al., 2019). Brands exploit product innovations to become more sustainable (Aaker, 2012). In general, innovations improve brand perceptions, attitude, and usage (Brexendorf et al., 2015). More specifically, launching a GPI is regarded as a pro-environmental practice with an impact on the consumer-brand relationship (Hemonnet-Goujot et al., 2022). Therefore, one purpose of green brand extensions is the greening of the

parent brand (Olsen et al., 2014). According to Dangelico and Pujari (2010) and Jung et al. (2020) GPIs help to improve brand image. Therefore, we assume:

H1: Consumers of a GPI will evaluate the brand's green image more positively than consumers of a non-green product innovation.

2.1.2 Moderator Effects

It is assumed that the process of positive green brand image perception is supposed to be moderated by some relevant factors.

Product involvement is an important concept in consumer research. Consumers having higher involvement with a product category show a greater interest in information seeking, comparing attributes, and have a stronger brand preference (Zaichkowsky, 1985). Nagar (2015) showed a significant moderating effect of product involvement on the interaction between attitude toward green advertisement and brand image. Under a low-involvement condition, consumers are not motivated to evaluate the true merits of a product. Thus, we assume that low involved consumers perceive the green brand image as less strong.

Green knowledge is defined as "a general knowledge of facts, concepts and relationships concerning the natural environment and its major ecosystems" (Fryxell & Lo, 2003, p. 45). It is seen as a critical element in purchasing green products. Consumers that are well informed about environmental issues have an improved perception towards GPI (Banytė et al., 2010). Hence, green knowledge leads to a higher awareness about green brands.

Environmental concern goes beyond green knowledge, as it relates not only to consumers' awareness and understanding of environmental problems, but also to individuals' belief that certain behaviors can help to solve these problems, and their willingness to act on these behaviors (Kumar et al., 2021). Rindell et al. (2014) show that environmental concern may play a crucial role in forming a relationship with the brand. Consumers that are concerned about global ecological issues tend to value a firm's green brand image. Accordingly, we hypothesize:

H2: a) Product involvement, b) green knowledge, and c) environmental concern positively moderate the effect of GPI on green brand image.

2.1.3 Green Product Innovation and Brand Value

One of the most comprehensive conceptualizations of brand value is the four-dimensional view of customer perceived brand value (PERVAL) developed by Sweeney and Soutar (2001). Brand value comprises four dimensions: quality value, price value, emotional value, and social value. Customers derive these values from the performance of the brand (ibd.). In particular, quality value refers to the utility derived from the perceived quality, while price value relates to value for money. While emotional value is determined by the utility derived from feelings, social value refers to the value derived from brands' social credibility. One aim of our study is to explore the impact of GPI on the particular dimensions of the perceived value of the brand.

Quality value. GPIs with visible environmentally friendly features signal added value (e.g., in terms of environmental benefits, better product performance) to consumers, thereby enhancing the quality perception of a brand (Green & Peloza, 2011). Koller et al. (2011) show that the ecological value of a product has a significant impact on the quality value. GPIs often comprise state-of-the-art technological innovations signaling quality. Therefore, we follow Koller et al.'s (2011, p. 1158) rational "green to have quality".

Price value. Economic considerations play an important role for GPIs. Consumers are willing to pay a price premium for GPIs. Moreover, they value the longevity and efficiency characterizing GPIs that saves them money in the long run (Green & Peloza, 2011; Koller et al., 2011). Hence, the rational "green to save money" (Koller et al., 2011, p. 1158) functions as the basis for our assumption.

Emotional value. Consumers value emotional benefits of green brands when considering purchasing GPIs (Griskevicius et al., 2010). The green positioning of a product can enhance a consumer's emotional perception of a brand (Hartmann et al., 2005). Consequently, green products trigger emotional feelings in order to make consumers feel good (Koller et al., 2011).

Social value. Brands enhance their legitimacy by ensuring that their behavior and operations, such as the introduction of GPIs, are aligned with social values. Consumers express themselves through the socially visible consumption of GPIs, which allows them to demonstrate their environmental awareness to others and gain social recognition (Green & Peloza, 2011). Consumers want that their GPIs are accepted in their social surroundings (Koller et al., 2011). We follow the rational "green to be seen" (Griskevicius et al., 2010; Koller et al., 2011).

Based on the previous elaboration we hypothesize:

H3: Consumers of a GPI will evaluate the brand's a) quality value, b) price value, c) emotional value, and d) social value as more positive than consumers of a non-green product innovation.

2.1.4 Green Brand Image and Brand Value

Brand image is the key element of brand value (Aaker, 1991). Park et al. (1986) believe that brand image is based on corporate operations and sales activities, and brand image not only involves consumers' subjective awareness, but also creates value for the brand. A product with a more favorable brand image is likely to be associated with a higher quality value (Richardson, 1994). When a brand offers green products, consumers tend to perceive a higher green brand image and quality (Ng et al., 2014). This perceived brand quality influences consumers' willingness to pay a premium price, thus generating brand value for money (Pappu & Quester, 2008). Furthermore, information about green product attributes evoke positive brand emotions by associating it with sustainability (Hartmann et al., 2005). Moreover, green brand image reflects the social value orientation of the company (Zameer et al., 2019). Thus, we hypothesize that green brand image mediates the effect of GPIs on the four brand value dimensions:

H4: Green brand image mediates the positive impact of GPI on consumers' perceived a) quality value, b) price value, c) emotional value, and d) social value.

2.2 Limited-Edition Products & Scarcity Appeal

In order to improve the green brand image and brand value perception, we want to investigate which product branding strategy is best suited to achieve this goal. Product innovations come in different nature. We want to highlight the notion that marketers and marketing researchers should gain deeper knowledge about the influence of different product branding strategies on brand perception. The physical product characteristics of different brands are becoming increasingly similar. Hence, psychological product attributes rise in importance as a means of differentiation. An increasingly common new product strategy for brands is the introduction of LE variants to their products already established in the market (Jang et al., 2015). A LE is the introduction of an additional, limited range in the same product category under the same brand name and as such a special form of product line extension. Thus, LE products are an important part of a brands' marketing mix and can benefit the overall brand profit (Balachander & Stock, 2009). Balachander and Stock (2009) show that LE products sell at a price premium over a brand's regular product. Moreover, LE products make a brand's offerings more unique,

exclusive, and differentiated (Jang et al., 2015). Brands exploit LEs as a low-risk new product strategy to distinguish themselves from competition (Shin et al., 2017).

2.2.1 Green Limited-Edition Products and Green Brand Image

The effects of a LE on the parent brand can be explained by category-conditioned assimilation effects. According to categorization theory, a brand category can be understood as a group of distinguishable products with the same brand name. It forms the basis for receiving and evaluating new information about the brand (Boush & Loken, 1991). LEs are new exemplars of the brand category. The inclusion of LE products leads to a change of the mental brand representation. The characteristics which are associated with LEs lead to a consumer's positive modification of the corresponding belief about the core brand (Shin et al., 2017). Thus, the brand can be upvalued with additional attributes, e.g., green attributes. Shi et al. (2020) suggest that companies introduce LE products to improve brand image. For green LE products, we hypothesize that their green characteristics strengthen the brand's image in terms of sustainability perception:

H5: Consumers' perception of green brand image is more positive for GLEPI than for GPI in an ongoing product line.

2.2.2 Moderator Effect: Perceived Scarcity

LE are characterized by limited product availability. The scarcity feature is associated with an increased attention effect. Product scarcity is generally regarded as an "important marketing instrument" (Gierl & Huettl, 2010, p. 225). Scarcity can be defined as a real or perceived threat to the consumer's ability to meet their needs and desires due to the lack of access to goods, services, or resources (Hamilton et al., 2019). Following Jang et al. (2015) marketers essentially apply two different types of scarcity measures for LEs: limited-time scarcity (LTS) and limited-quantity scarcity (LQS). LTS refers to the restriction of the time available for purchasing the products. In the case of LQS, only a predefined limited product quantity is available for purchase (Jang et al., 2015). We focus on LQS as it is regarded the elementary promotional mechanism and main differentiation between LE products and other types of products (Balachander & Stock, 2009). LQS messages evoke a greater sense of competition among consumers (compared to time scarcity messages) (Aggarwal et al., 2011). As a result, LQS is more effective in increasing positive consumer reactions to the product than time scarcity (Jang et al., 2015; Park et al., 2022). In consequence, consumers perceive the products as more valuable and special (Aggarwal et al., 2011) and are willing to pay a premium price (Park et

al., 2022). The limited availability of a product adds to its value (Lynn, 1991). Products with scarcity appeals imply high exclusivity and distinctiveness and enhance consumers' preferences for a brand (Gierl & Huettl, 2010; Lynn, 1991). Therefore, we assume:

H6: Perceived scarcity positively moderates the effect of GLEPI on green brand image.

2.2.3 Green Limited-Edition Products and Brand Value

LQS enhance the value of a brand (Jang et al., 2015). This leads to LE products increasing brand value (Shin et al., 2017). Brands offer LE products to signal its high quality and value to their consumers (Balachander & Stock, 2009). Furthermore, Chae et al. (2020) show that the characteristics of LE shoes have a significant impact on the consumers' economical, emotional, and social value perception. On this backdrop, we formulate the hypothesis:

H7: Consumers of a GLEPI will evaluate the brand's value (quality, price, emotional, and social) as more positive than consumers of a GPI in an ongoing product line.

2.3 Co-Branding

Co-branding is a special type of brand extension (Oeppen & Jamal, 2014), in which two or more brands are brought together to create a unique new product (Besharat & Langan, 2014; Washburn et al., 2000). The main interest in co-branding research is the consumers' perception of brands (Rao et al., 1999). Co-branding is an effective marketing strategy as co-branded products are better evaluated than a regular brand extension (Park et al., 1996). A successful co-branding strategy can achieve synergy, allowing each partnering brand to leverage its unique strengths. The focus of our research is the combination of two brands that are used together as a brand name for a new product.

2.3.1 Green Co-Branded Products and Green Brand Image

For brand managers, brand image management is regarded as a key objective of co-branding as a strong brand perception is essential for retaining a competitive advantage in a highly competitive environment (Oeppen & Jamal, 2014). Co-branding is applied by companies to reinforce the image of their brands. Companies have started to use green co-branding in order to extend their brands into other markets without saturating or alienating their existing consumer base. So far, green co-branding refers to a company and a nongovernmental organization (NGO) connecting their two brands to a product. For instance, WWF has partnered with the fashion brand H&M to help green its fashion lines (Schweitzer & Meng, 2022). While

the impact of green co-branded products from partner companies has not yet been studied, the literature on co-branding between NGOs and other companies might have parallels. Heinl et al. (2021) show a positive effect of NGO–firm co-branding on consumers' brand perception of co-branded green products. Schweitzer and Meng (2022) demonstrate that co-branding can contribute to the greening of business, when the NGO–firm collaboration represents a commitment to green business practices. Against this background, we argue that green co-branding between two brands that are committing to sustainable practices influences their respective green brand images:

H8: Consumers' perception of green brand image is more positive for GCOPI than for GPI in an ongoing product line.

2.3.2 Moderator Effects

We assume that the effect of co-branded product innovations, for both the ongoing and the LE scenario, is moderated by attitude towards the co-branding partnership and perceived brand fit.

Attitude towards the co-branding partnership. While co-branding has the main potential to generate positive spillover effects between the brands involved, the literature highlights that the attitude towards the brand partnership influences this outcome. Attitude towards the co-branding entails the judgment and evaluation of the consumers' general positive or negative feelings about the co-branding alliance (Simonin & Ruth, 1998). We assume that a positive attitude towards the co-branding partnership enhances the consumers perception of the focal brand's green brand image.

Perceived brand fit. Brand fit describes how the participating brands are perceived as a suitable match (Simonin & Ruth, 1998). Brand fit is an important concept in brand alliance research as findings reveal that it plays a key role for the success of co-branding (Turan, 2021). Thus, it matters with whom a brand collaborates (Oeppen & Jamal, 2014), particularly when the co-brand acts as the partner whose contribution lies in increasing the green brand image of the focal brand. Hence, we assume:

H9: a) Consumers' attitude towards the co-branding partnership and, b) perceived brand fit positively moderate the effect of GCOPI on green brand image.

2.3.3 Green Co-Branded Products and Brand Value

Co-branding is a way to create brand value through 'borrowing' brand value from a partner. Co-branding makes both brands in the alliance appear to be of similar quality (Besharat & Langan, 2014). Rao and Ruekert (1994) argue that the financial brand value of both co-branding partners is greater than their individual parts. Moreover, consumers associate their perceptions and emotions about a brand with a partnering brand (Washburn et al., 2000). The social brand value stems from an ideal social self-congruence, which leads to a more positive evaluation of the co-brand (Wang et al., 2020). This leads to our 10th hypothesis:

H10: Consumers of a GCOPI will evaluate the brand's value (quality, price, emotional, and social) as more positive than consumers of a GPI in an ongoing product line.

2.3.4 Limited-Edition Co-Branding

LE co-branding partnerships are regarded as a widely used branding strategy (Besharat & Langan, 2014). Exclusive co-branded collections are short-term oriented and have limited availability (Nabec et al., 2016). The scarcity of a one-of-a-kind LE co-brand attracts extensive consumer and media attention (Rollet et al., 2013). Fashion and lifestyle brands are particularly active in the creation of hypes. The hype-based business model of these brands is based on so-called drops, new product launches of mostly limited and highly demanded products. Both partner brands benefit from this increased exposure. Childs & Jin (2020) show that consumers' evaluations of brands become more favorable when a brand's and retailer's co-branded product is available on a LE (vs. ongoing availability). In accordance and referring back to the previous elaboration, we assume:

H11: Consumers perceive green brand image as more positive for GLECOPI than for GPI, GLEPI, and GCOPI.

H12: a) Perceived scarcity, b) consumers' attitude towards the co-branding partnership and, c) perceived brand fit positively moderate the effect of GLECOPI on green brand image.

H13: Consumers of a GLECOPI will evaluate the brand's value (quality, price, emotional, and social) as more positive than consumers of GPI, GLEPI, and GCOPI.

3 Overview of Studies

We test our hypotheses in two experimental studies. Study 1 is designed to determine whether a GPI has a more positive impact on the consumer-perceived green brand image and on consumers' perceived brand value than a non-green product innovation. Study 2 applies the same context (fictitious brand ABC) and investigates whether GPI, GLEPI, GCOPI, and GLECOPI have a divergent impact on the consumers' perceived green brand image and on consumers' perceived brand value. Hence, we compare these product branding strategies regarding their effectiveness to influence consumers' (green) brand perception. Figure D.1 captures the aspects of the framework tested in study 1 and study 2.

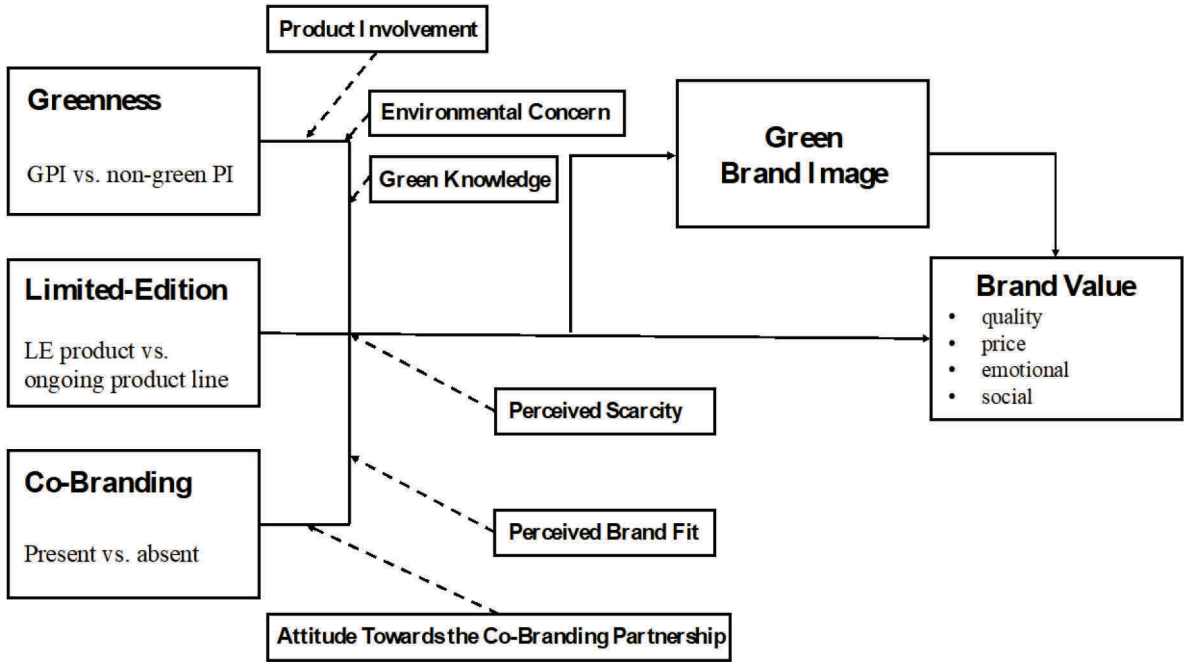

Figure D.1 Conceptual framework

4 Study 1

The aim of study 1 is to examine the differences of a green and a non-green substitute product innovation in terms of the impact on consumers' perceived green brand image and on consumers' perceived brand value. Based on our prior theoretical discussion, we posit that consumers rate the brand outcomes as more favorable for the GPI condition. In addition, we investigate the assumed moderating effects. Ultimately, this study serves as an important precondition for conducting study 2.

4.1 Methodology

4.1.1 Product Category and Brand Selection

The fashion industry is one of the most prominent sectors to actively utilize LE marketing for conspicuous products (Chae et al., 2020). At the same time, it is one of the most environmentally harmful industries (Niinimäki et al., 2020). Achieving a sustainable brand image is therefore very important for fashion brands. In addition, we aim to choose a fashion product that is used equally by different genders and age groups. In consequence, we select a pair of shoes as tested product category. Many fashion brands are launching sustainable shoes. Shoes are a suitable example for manipulating greenness in terms of the product materials used. Brands frequently release LE co-branded shoes. Study 1 features a fictitious brand (ABC) in order to eliminate a possible bias of previous brand associations and image to maintain internal validity of our experiment. We introduce ABC as a new, international fashion and lifestyle brand. The brand designs, manufactures, distributes, and retails footwear and apparel.

4.1.2 Research Design and Stimuli

Study 1 examines the nature of the product innovation (non-green vs green substitution innovation). The impact of product type is investigated in a one-factor between-subjects experimental design. Respondents are randomly assigned to one experimental condition, in which they are presented with a short description of the fictitious brand ABC. Both stimuli conditions show the same product picture (including the brand logo of ABC) and differ in its manipulation of the shoes' characteristics. Gershof and Frels (2015) find that a product is perceived as more environmentally friendly when a central product attribute offers a green benefit. On this backdrop, we rely on the substitution innovation nature of a product by investigating a sustainable alternative of a key product part of shoes in our greenness conditions. We follow Hemonnet-Goujot et al. (2022) and propose vegetable leather produced from vine residues as green main material of the shoes as product innovation manipulation. Manipulation

check items are used to verify the effect of the experimental conditions. In line with Brunk and de Boer (2020) our study design aims to address limitations of previous research by confronting the survey participants with information not only limited to the greenness, LE, and co-branding criteria. We expose them to additional product information: price, design, color, and innovativeness. In doing so, we adapt a product website design for the product presentation including a product description, further details, and a product picture (see Appendix). The manipulation of the green character of the products was first verified before the hypotheses are tested. A comparison of means test between the perceived environmental friendliness of the product innovation and the GPI shows a significant difference (M_{GPI} = 3.93; M_{PI} = 2.66; $p <$ 0.001). Significant differences are also confirmed in regard to perceived sustainability (M_{GPI} = 3.87; M_{PI} = 2.70; $p < 0.001$). As expected, the GPI is perceived as 'greener' than the non-green variant.

4.1.3 Operationalization of Constructs

We measure green brand image by applying the scale developed by Chen (2010). To measure the brand value dimensions, we adopt the PERVAL scale used by France et al. (2020) and shorten it as recommended by Walsh et al. (2014). Product category involvement (Schweitzer & Meng, 2022; Zaichkowsky, 1985) is measured using three items on a 7-point Likert-type scale (1 = unimportant, means nothing to me, and matters to me, 7 = important, means a lot to me, does not matter to me). The environmental concern scale is based on the items found at Thøgersen et al. (2010). Green knowledge is quantified by adopting the respective scale by Lin et al. (2017). In this study, the questionnaire items are measured using a 7-point Likert scale from 1 to 7, ranging from strongly disagree to strongly agree. Participants also report their age and gender.

4.1.4 Data Collection and Sample

An online questionnaire survey was conducted in order to test our research hypotheses. The questionnaire is administered in German. We recruit participants for this study through a German research institute. By a national representative sample of general consumers from an online panel, we strengthen the external validity of our findings. Moreover, we address concerns rendering student samples problematic when assessing sustainability-related responses (Schlegelmilch et al., 1996). The final sample consists of N = 406. The participants were randomly assigned to one of the two conditions: neutral product innovation with N = 220; GPI with N = 186. No significant differences are found between the demographic characteristics

of the groups (Group$_{GPI}$: 18–35 years: 46.8%; female: 50.5% vs. group$_{PI}$: 18–35 years: 53.2%; female: 50.5%).

4.2 Analysis and Model Estimation

We estimate our overall model in regard to H2, H3, H4 and H6 using Partial Least Square (PLS), a variance-based approach of structural equation modeling (SEM). All constructs are modeled as reflective first-order constructs. The data analysis is performed using the path modeling software application SmartPLS3. We apply a factor weighting scheme with 300 iterations and bootstrapping with 5000 replications (Hair et al., 2011).

First, we examine the reliability and validity of the first-order reflective measurement constructs. All factor loadings exceed the threshold of ≥ .707 (Fornell & Larcker, 1981) and are significant ($p < .05$; t-value > 1.96) after bootstrapping with 5000 subsamples. The construct reliability was assessed by examining Cronbach's alpha and composite reliability and should be ≥ .70 (Hair et al. 2017). Table D.1 shows that scores of Cronbach's alpha and composite reliability are > .70, indicating construct reliability. The convergent validity was evaluated by examining the average variance extracted (AVE) with ≥ .50 (Fornell & Larcker, 1981). The HTMT values are < .85, suggesting that discriminant validity is present (Hair et al., 2017).

Table D.1 Measurement results of reflective constructs

Latent variable	Indicators	Convergent validity		Internal consistency reliability	
		Loadings	AVE	Composite reliability	Cronbach's alpha
		> .70	> .50	> .70	> .70
GPI	*gpi_1*	1.000	1.000	1.000	1.000
GBI	*gbi_1*	0.936	0.902	0.979	0.973
	gbi_2	0.957			
	gbi_3	0.959			
	gbi_4	0.948			
	gbi_5	0.949			
QV	*qv_1*	0.919	0.861	0.949	0.919
	qv_2	0.937			
	qv_3	0.927			
PV	*pv_1*	0.907	0.880	0.957	0.932
	pv_2	0.958			
	pv_3	0.949			
EV	*ev_1*	0.946	0.895	0.962	0.941
	ev_2	0.957			
	ev_3	0.935			
SV	*sv_1*	0.943	0.887	0.959	0.936
	sv_2	0.962			
	sv_3	0.919			

Next, we evaluate the structural model and test for collinearity by examining the inner VIF values. The analysis of the VIF values indicates no multicollinearity issue, with VIF scores ranging between 1.000 and 1.176 (Hair et al., 2017). The R^2 value of green brand image is described as weak ($R^2 = 0.147$), whereas moderate R^2 values for quality value ($R^2 = 0.478$), price value ($R^2 = 0.449$), emotional value ($R^2 = 0.468$), and social value ($R^2 = 0.407$) are shown (Hair et al., 2011). After blindfolding with an omission distance of 5, the Q^2 values for all endogenous variables are > 0, indicating the predictive relevance of the model.

4.3 Results

In line with theoretical expectations, the results of our experimental study show that there is a significant difference in consumer green brand image perception between the green product innovation ($M_{GPI} = 4.72$) and the neutral product innovation scenario ($M_{PI} = 3.50$, $t(404) = -8.44$, $p < .001$), thus H1 is supported.

We then test the moderating effects and conduct ANOVAs. To answer on H2, we apply the median split to create three consumer groups for each moderation variable:

- product involvement: 1) low ($N_{Low} = 46$), 2) mid ($N_{Mid} = 67$), and 3) high ($N_{High} = 73$),

- green knowledge: 1) low ($N_{Low} = 43$), 2) mid ($N_{Mid} = 73$), and 3) high ($N_{High} = 70$), and

- environmental concern: 1) low ($N_{Low} = 51$), 2) mid ($N_{Mid} = 73$), and 3) high ($N_{High} = 62$).

The results for GPI show a significant different green brand image perception between the consumer groups ($F(2, 183) = 8.601$, $p < .001$, $\eta^2 = .09$). Bonferroni correction demonstrates that participants with a high product involvement ($M_{HighPInv} = 5.15$) perceive the brand's green image as significantly more favorable compared to mid ($M_{MidPInv} = 4.36$, $p < .001$) and low product involvement ($M_{LowPInv} = 4.55$, $p = .021$). Green knowledge also has a significant moderating effect on green brand image perception ($F(2, 183) = 15.566$, $p < .001$, $\eta^2 = .15$). Consumers with a high extend of green knowledge perceive the brand's image as greener ($M_{HighgKno} = 5.30$) than consumers with mid ($M_{MidKno} = 4.30$, $p < .001$) and low levels of green knowledge ($M_{LowPInv} = 4.47$, $p < .001$). The analysis of the moderation effect of environmental concern shows significant group differences ($F(2, 183) = 10.558$, $p < .001$, $\eta^2 = .10$) with highly concerned consumers ($M_{HighEC} = 5.23$) having a more favorable brand image perception than

consumers with a mid (M_{MidEC} = 4.60, p = .006) and low level of environmental concern (M_{LowEC} = 4.26, p < .001).

To test H3, we conduct a multivariate analysis of variance (MANOVA). A significant main effect can be observed (F(4, 401) = 3.802, p = .005). Overall, estimated marginal means show that quality value (M_{GPI} = 4.93 vs. M_{PI} = 4.65, F(1, 405) = 5.355, p = .021), price value (M_{GPI} = 4.17 vs. M_{PI} = 3.77, F(1, 405) = 9.108, p = .003), emotional value (M_{GPI} = 4.43 vs. M_{PI} = 3.84, F(1, 405) = 14.297, p < .001), and social value (M_{GPI} = 3.53 vs. M_{PI} = 3.08, F(1, 405) = 6.824, p = .009) were each assessed significantly higher in the GPI condition than in the neutral product innovation condition.

Hypothesis 4 suggests that green brand image mediates the relationship of GPI upon the four brand value dimensions. Indeed, green brand image plays a key role for the forementioned effects. As shown in Table D.2, the direct, indirect and the total effects are found significant. The results reveal that the direct effects of GPI on each of the four brand value dimensions are negative, while the indirect effects are positive. There is a positive overall effect on brand value, suggesting that green brand image mediates the relationship between GPI and the four brand value dimensions.

Overall hypotheses H1, H2, H3, and H4 are supported.

Table D.2 Mediation analysis: direct, indirect, and total effects

Effects of:	Effect on:		
	Quality Value		
	Direct	Indirect	Total
Green Product Innovation	- 0.173***	0.287***	0.114*
Green Brand Image	0.742***		0.742***
	Price Value		
Green Product Innovation	- 0.127**	0.275***	0.148**
Green Brand Image	0.711***		0.711***
	Emotional Value		
Green Product Innovation	- 0.089*	0.277***	0.188***
Green Brand Image	0.716***		0.716***
	Social Value		
Green Product Innovation	- 0.134**	0.263***	0.129**
Green Brand Image	0.680***		0.680***

*p < 0.05; **p < 0.01; ***p < 0.001

4.4 Summary and Discussion

Our findings support the general premise of the brand-innovation virtuous cycle proposed by Brexendorf et al. (2015). As suggested in the framework, our experiment shows that an innovation can significantly improve brand perception. We proof this effect in a green brand-innovation context. Launching GPIs on the market enables brands to enhance their image in terms of its greenness perception. The pro-environmental characteristics of the GPI are connected to the consumers' greenness perception of the parent brand. The result shows parallels to the findings proposed by Hemonnet-Goujot et al. (2022) that green substitution innovations can be regarded as a pro-environmental practice having an impact on the relationship of consumers with a brand. Hence, the greenness of products is a means for product differentiation (Chen, 2010). Furthermore, GPIs contribute to the positioning of a brand by protecting or shifting its image. Innovations can also change brand perceptions in the short term, such as green brand image, according to the experimental design of the study. In consequence, GPIs can ensure that sustainability becomes an integral part of the brand.

The significant positive effect of GPI on green brand image perception is positively moderated by product involvement, green knowledge, and environmental concern. The more consumers are engaged with green shoes, the more they appreciate their true green benefits, leading to an increased perception of the green brand image. In line with previous theoretical assumptions, green knowledge proves to be an important element in green product purchases. Congruently, the consumers' concern towards the environment has a positive moderating impact on the green brand image perception. This finding supports the theoretical notion that environmental concerns play a role in forming a relationship with the brand (Rindell et al., 2014). Consumers with green beliefs as well as pro-environmental behavior tend to value brands with a green image.

The results of study 1 further indicate that GPI not only have a significant impact on a green brand construct but also on conventional branding constructs, namely the consumer's perceived brand value and its respective four dimensions. Quality value, price value, emotional value, and social value are each perceived higher when the brand offers a GPI. Therefore, we can confirm previous theoretical notions, e.g., the rationales derived by Koller et al. (2011). GPI enhances and preserves the overall perceived value of a brand (Pauwels et al., 2004).

However, the mediation analysis uncovers that the key element of the impact of GPIs on brand value is the mediation effect of green brand image. When GPIs lead to a green brand

image, they have a relevant positive influence on the brand's quality, price, emotional, and social values. Therefore, launching GPIs is recognized by the consumers as a sustainable practice when they perceive the brand as green. By contrast, when a brand that does not embody a green brand image launches GPIs, they prove to be less effective to enhance brand value compared to neutral product innovations. In that case, consumers might perceive GPIs as a means of greenwashing. Given the increasing sustainability awareness of consumers, their perception of the brand's positive environmental and green characteristics is a prerequisite for the overall value perception of the brand. Our findings not only support the general premise that brand image is the key element of brand value (Aaker, 1991), but extend this relationship in a green branding context.

5 Study 2

The focus of study 2 is the detailed examination of consumers' brand perception as a consequence of different product branding strategies. Study 2 applies the same brand context (fictitious brand ABC) as in study 1; it compares GPI, GLEPI, GCOPI, and GLECOPI regarding their impact on consumers' perceived green brand image and on consumers' perceived brand value.

5.1 Methodology

5.1.1 Product Category and Brand Selection

In study 2 we use the same product category and the same fictitious brand (ABC) as in study 1. In regard to the scarcity effects, literature shows that there is no difference in scarcity effects between a famous brand and a fictitious brand (Gierl & Huettl, 2010). Whereas, in the co-branding setting, we select the well-known, high-equity brand *The North Face*. This brand was chosen as it was rated with the highest perceived level of green brand image in study 1. Moreover, in the co-branding setting, consumers form favorable impressions about an unknown brand when recognizing the collaboration with a high-equity partner brand (Washburn et al., 2000).

5.1.2 Research Design and Stimuli

Experiment 2 has a 2 × 2 factorial design with product line characteristic (Limited-Edition vs. ongoing) and co-branding (present vs. absent) as between-subjects factors. Similar to the previous study, we present participants with descriptions and mock-up images of shoes. For the manipulation we varied descriptions of the availability of the product innovation and the

collaboration between brands. Thus, four short scenarios were formulated, to which participants were randomly assigned (see Appendix). In the first stage of the experiment, participants were asked to read a scenario about the launch of a new pair of shoes. In all scenarios, the shoes are characterized as green.

For the LE conditions, participants were told that there were only 1000 product units available. We checked this manipulation by asking for the perceived scarcity of the shown product. We conducted an ANOVA that proofs significant differences of scarcity perception across the four groups ($F(3, 804) = 8.221$, $p < .001$). Bonferroni correction served as post hoc tests to compare the groups in detail. The results show that there is a significant difference between GLEPI ($M_{GLEPI} = 4.72$) and GPI ($M_{GPI} = 4.33$; $p = .044$) and GCOPI ($M_{GCOPI} = 4.22$; $p = .003$). Moreover, GLECOPI ($M_{GLEPI} = 4.82$) was perceived as significantly scarcer than GPI ($M_{GPI} = 4.33$; $p = .004$) and GCOPI ($M_{GCOPI} = 4.22$; $p < .001$). Thus, both LE scenarios are perceived as scarcer than the non-LE scenarios.

For the co-branding conditions, the participants are told that the fictitious brand ABC partners together with *The North Face* brand.

5.1.3 Operationalization of Constructs

We measure green brand image (Chen, 2010) and brand value (France et al., 2020; Walsh et al., 2014) as in study 1. Additionally, we include the moderator constructs perceived scarcity ("How scarce is the product?"; 1 = not at all scarce, 7 = very scarce; Park et al., 2022), attitude towards the co-branding alliance (negative/positive, unfavorable/unfavorable, bad/good; Simonin & Ruth, 1998) and perceived brand fit (adapted from Bouten et al., 2011).

5.1.4 Data Collection and Sample

The data collection and sampling procedure is equal to study 1. Participants from Germany ($N = 808$) are randomly distributed among the groups as follows: (1) GPI: $N = 200$, (2) GLEPI: $N = 205$, (3) GCOPI: $N = 198$, and (4) GLECOPI: $N = 205$. The demographic characteristics of the groups are similar: $\text{Group}_{\text{GPI}}$: 18–35 years: 63.0%; female: 50.5% vs. $\text{group}_{\text{GLEPI}}$: 18–35 years: 51.7%; female: 51.7% vs. $\text{Group}_{\text{GCOPI}}$: 18–35 years: 66.2%; female: 54.0% vs. $\text{Group}_{\text{GLECOPI}}$: 18–35 years: 57.6%; female: 53.7%.

5.2 Analysis and Model Estimation

The model estimation of study 2 using PLS-SEM was conducted with the same settings and construct specifications as in study 1 (see section 4.2). The measurement results shown in Table D.3 and HTMT values < 0.90 confirm the model's validity and reliability.

Table D.3 Measurement results of reflective constructs

Latent variable	Indicators	Convergent validity		Internal consistency reliability	
		Loadings	AVE	Composite reliability	Cronbach's alpha
		> 0.70	> 0.50	> 0.70	> 0.70
GPI	*gpi_1*	1.000	1.000	1.000	1.000
GLEPI	*glepi_1*	1.000	1.000	1.000	1.000
GCOPI	*gcopi_1*	1.000	1.000	1.000	1.000
GLECOPI	*glecopi_1*	1.000	1.000	1.000	1.000
GBI	*gbi_1*	0.869	0.765	0.942	0.923
	gbi_2	0.861			
	gbi_3	0.884			
	gbi_4	0.867			
	gbi_5	0.891			
QV	*qv_1*	0.868	0.795	0.921	0.871
	qv_2	0.903			
	qv_3	0.903			
PV	*pv_1*	0.788	0.769	0.908	0.852
	pv_2	0.921			
	pv_3	0.914			
EV	*ev_1*	0.934	0.860	0.949	0.919
	ev_2	0.937			
	ev_3	0.910			
SV	*sv_1*	0.888	0.793	0.920	0.871
	sv_2	0.911			
	sv_3	0.872			

5.3 Results

We conduct an ANOVA to evaluate the green brand image perception across the four experimental groups. The results show no significant differences between all groups (M_{GPI} = 4.84, M_{GLEPI} = 4.95, M_{GCOPI} = 4.79, $M_{GLECOPI}$ = 4.73, $F(3, 804) = 1.27$, $p < .283$, $\eta^2 = .005$), thus H5, H8, and H11 have to be rejected.

As we assumed, the green brand image perception is moderated by the perception of the product scarcity. We test the moderation effect of perceived scarcity by conducting an ANOVA. We apply the median split to create two consumer groups: 1) low scarcity perception and 2) high scarcity perception. As perceived scarcity plays an important role for LE products, we analyze GLEPI (H6) and GLECOPI (H12a). For GLEPI (N_{Low} = 85, N_{High} = 120) the results reveal a significant different green brand image perception between these two consumer groups (M_{LowPS} = 4.65, M_{HighPS} = 5.17, $F(1, 203) = 12.63$, $p < .001$, $\eta^2 = .06$). In the GLECOPI scenario (N_{Low} = 79, N_{High} = 126) the green brand image perception is significantly higher for participants with a high perceived scarcity (M_{HighPS} = 4.94) compared to participants with a low perceived scarcity (M_{LowPS} = 4.41, $F(1, 203) = 8.73$, $p = .003$, $\eta^2 = .04$). Thus, our findings support H6 and H12a.

We then test the moderation effects of attitude towards the co-branding partnership (GCOPI: H9a, GLECOPI: H12b) and perceived brand fit (GCOPI: H9b, GLECOPI: H12c) and conduct ANOVAs. Therefore, we compare consumers with a low attitude towards the co-branding partnership (N_{GCOPI} = 97; $N_{GLECOPI}$ = 102) with consumers showing a high attitude (N_{GCOPI} = 101; $N_{GLECOPI}$ = 103). The results show a significant difference in green brand image perception between these two consumer groups for the ongoing co-branding scenario (M_{LowAtt} = 4.16, $M_{HighAtt}$ = 5.40, $F(1, 196) = 65.76$, $p < .001$, $\eta^2 = .25$). The LE co-branding scenario shows similar results, with green brand image perception significantly higher for participants with a high attitude ($M_{HighAtt}$ = 5.46) compared to when there is a low attitude towards the co-branding partnership (M_{LowAtt} = 4.00, $F(1, 203) = 103.11$, $p < .001$, $\eta^2 = .34$). In the same line, we contrast participants that perceived a low brand fit (N_{GCOPI} = 91; $N_{GLECOPI}$ = 104) with participates that showed a high brand fit perception (N_{GCOPI} = 107; $N_{GLECOPI}$ = 101). In the GCOPI scenario, the results show a moderating effect of perceived brand fit, as green brand image perceptions are significantly different between the low ($M_{LowBFit}$ = 4.11) and high ($M_{HighBFit}$ = 5.37, $F(1, 196) = 68.17$, $p < .001$, $\eta^2 = .26$) brand fit groups. In the LE co-branding scenario the green brand image perception is also significantly higher in the high brand fit group ($M_{HighBFit}$ = 5.50)

compared to the low brand fit group ($M_{LowBFit}$ = 3.99, $F(1, 203) = 111.18$, $p < .001$, $\eta^2 = .35$). Thus, results support H9a, H9b, H12b, and H12c.

Hypotheses H7, H10, and H13 propose that the consumers' perception of the four brand value dimensions differ along the four product-branding strategies of green product innovations. We use the experimental groups as categorial predictor variables respectively to show these differences in SmartPLS3. The results reveal that there are no significant differences between GPI, GLEPI, and GCOPI. Thus, H7 and H10 find no support. By contrast, when we use GLECOPI as reference group and compare it to the other product branding strategies, the results show some significant differences. There is a significant difference of influence of GLECOPI on price value ($\beta = 0.091$, $p = 0.010$) and emotional value ($\beta = 0.076$, $p = 0.018$) compared to GPI. A comparison of GLECOPI and GLEPI points to an improved perception of price value ($\beta = 0.099$, $p = 0.026$) for GLECOPI. In the same line, the price value ($\beta = 0.073$, $p = 0.006$) for the GLECOPI scenario is perceived significantly higher than the price value in the GCOPI scenario. In consequence, H13 can be partly supported.

A summary of the results is presented in Table D.4.

Table D.4 Synthesis of the findings of study 1 and study 2

Hypothesis	Supported?
H1: Consumers of a GPI will evaluate the brand's green image as more positive than consumers of a non-green product innovation.	Yes
H2: a) Product involvement, b) green knowledge, and c) environmental concern positively moderate the effect of GPI on green brand image.	Yes
H3: Consumers of a GPI will evaluate the brand's a) quality value, b) price value, c) emotional value, and d) social value as more positive than consumers of a non-green product innovation.	Yes
H4: Green brand image mediates the positive impact of GPI on consumers' perceived a) quality value, b) price value, c) emotional value, and d) social value.	Yes
H5: Consumers' perception of green brand image is more positive for GLEPI than for GPI in an ongoing product line.	No
H6: Perceived scarcity positively moderates the effect of GLEPI on green brand image.	Yes
H7: Consumers of a GLEPI will evaluate the brand's value (quality, price, emotional, and social) as more positive than consumers of a GPI in an ongoing product line.	No
H8: Consumers' perception of green brand image is more positive for GCOPI than for GPI in an ongoing product line.	No
H9: A) Consumers' attitude towards the co-branding partnership and, b) perceived brand fit positively moderate the effect of GCOPI on green brand image.	Yes
H10: Consumers of a GCOPI will evaluate the brand's value (quality, price, emotional, and social) as more positive than consumers of a GPI in an ongoing product line.	No
H11: Consumers perceive green brand image as more positive for GLECOPI than for GPI, GLEPI, and GCOPI.	No
H12: A) Perceived scarcity, b) consumers' attitude towards the co-branding partnership and, c) perceived brand fit positively moderate the effect of GLECOPI on green brand image.	Yes
H13: Consumers of a GLECOPI will evaluate the brand's value (quality, price, emotional, and social) as more positive than consumers of GPI, GLEPI, and GCOPI.	Yes (partly)

5.4 Summary and Discussion

The results of study 2 show that consumers perceive the brand's green image in a similar extent across all experimental groups and thus regardless of the type of GPI. The findings also indicate that high perceived scarcity for GLEPI and GLECOPI is effective to increase green brand image perception. The more consumers evaluate a green product innovation as rare, the higher their green brand image perception. Moreover, we show for GCOPI and GLECOPI that high levels of attitude towards the co-branding partnership and perceived brand fit are beneficial to foster a high perceived green brand image. In a green co-branding context, the evaluation of the co-branding partnership and the co-brands' fit are key elements. Notably, our study design demonstrates that these key elements can be assessed in regard to the co-branded green product itself and its product description. When high levels of attitude towards the co-branding partnership and perceived brand fit are present, positive spillover effects from one partner brand to the focal brand are effective (Schnittka et al., 2017). In consequence, an image transfer among the brands can occur that leads to an enhancement of both brands' images (Besharat & Langan, 2014). In a green co-branding scenario, a brand can rebuild its green brand image by 'borrowing' the green brand image from the partner brand. However, the brand fit and attitude evaluation may come with risks for failure. If fit and attitude are rated low, the co-branding partnership backfires by harming the green brand image perception of the focal brand. Therefore, the selection of a suitable partner for green co-branding alliances is elementary.

The comparison of the distinctive impact of the four green product strategies reveal that GLECOPI can be seen as the superior product branding strategy to enhance the brand's price value perception. The exclusivity of a one-of-a-kind LE co-branded product is most predestined to generate hypes and favorable consumer responses (Childs & Jin, 2020; Rollet et al., 2013). Consumers also regard LE products, especially LE sneakers, as investment goods due to higher prices on the reselling market compared to the list price. In consequence, LE co-branded products are likely to become symbols and as such treated like a luxury good (Chae et al., 2020). The symbolic value of GLECOPI leads to an increased price value perception of the brand. Moreover, GLECOPI is more effective to increase the emotional value of the brand compared to GPI by raising the consumers positive feelings towards the brand.

6 General Discussion

Our study makes a theoretical contribution by applying the innovativeness-brand framework in a green brand context, which enriches the body of knowledge on GPI and green branding. Additionally, we extend the literature on consumer perception of LE as well as co-branding into the field of sustainability innovation(s). Fostering sustainable consumer behavior by enabling consumers to make an informed choice for green products and brands is vital in changing human consumption for the better, which in turn contributes to society's welfare. To optimize consumers' image perception of green brands, companies can launch GPIs, which are a brand's tangible contribution to and visible effort for the environment. In a reciprocal manner, a green brand image helps companies to actively develop their business towards greenness by facilitating the creation of GPIs (Xie et al. 2019). In these circumstances, a match between the actual green business practices and green claims of a brand is effective. This conformity is elementary in order to credibly embody sustainability and to preventively counteract consumers' distrust and greenwashing assumptions. The findings of our study provide evidence that consumers' perception of green brand image due to (different kinds of) GPIs are strengthened by consumer factors (product involvement, green knowledge, environmental concern, attitude towards the co-branding partnership and perceived brand fit) and marketing factors (product scarcity). In general, it is confirmed that environmental practices enhance resource productivity and foster innovations (Kumar & Christodoulopoulou, 2014). In consequence, GPIs in combination with a green brand image attract environmentally conscious consumers that push the market performance of the brand. Moreover, it may promote green consumption behavior among consumers who have not yet bought green products, which in turn increases the number of sustainable consumers. Koller et al. (2011) emphasize that the integration of greenness aspects in brand value dimensions, such as quality, price, emotional, and social value, is necessary to understand green consumption behavior. We can show that these brand value dimensions benefit from GPIs launched by a brand with a green brand image. Hesse et al. (2022) indicate that it is essential for GPIs to offer desirable benefits for consumers, like cost saving or improved product performance. Thus, the success for GPIs lies in their additional benefits that enhance brand value and consequently prevent a breeding ground for consumer skepticism.

7 Managerial Implications

Our results have several implications for marketing managers considering greening their brands. First, study 1 demonstrates the effectiveness of GPIs as a green-brand-image creation strategy. Thus, brands should launch GPIs for the sake of reciprocally greening their parent brand. Therefore, brand managers should take a key role for new green product development processes by implementing a general green branding strategy. This requires the willingness to change the entire value creation process in a sustainable manner. Therefore, companies should invest more resources in the increasing of their green brand image (Chen, 2010). Second, involved consumers with knowledge and concern towards the environment tend to be more favorable to evaluate a brand as green. Identifying and targeting these customer groups is the pathway for green branding success. Third, we show that green brand image plays a key role in brand value creation. Since the goal of brand management is to maximize brand value, we show that brand managers can achieve this by promoting a sustainable lifestyle. They can actively bolster the brand's quality, price, emotional and social value by ensuring a fit of GPIs and the parent brand's green image. As consequence, going green is one of the best ways to extending product ranges and obtain differentiation advantages.

Further, study 2 answers managerial questions such as: what GPI type should be promoted (or avoided) for brands aiming to go green? We demonstrate that GPIs, regardless of their product branding strategy (LE and/or co-branding), promote green brand image to the same extent. Hence, brand managers should focus more on marketing and consumer factors to get the most potential out of these products. For instance, the number of LE products available is often not explicitly stated. Through targeted communication activities, product managers can ensure that LE products are perceived as scarce. Our findings show that promoting scarcity appeals are goal-dependent: if brands want to strengthen their green brand image, they should highlight GLEPI with scarcity messages. If brands aim to raise its value perception (quality, price, or emotional), they should apply scarcity instruments for GLECOPI. Moreover, applying a LE strategy is useful for market testing. Releasing a LE product as a prototype tests the market reaction before the production of the main GPI takes place. This approach can be particularly applicable for brands that do not have a strong green brand image and are therefore fraught with risks (esp., consumer distrust and skepticism).

Market testing is also important to identify the matching partner brand in green co-branding alliances. Brand and innovation managers can use artificial intelligence to generate brand collaboration mock-ups. For instance, AI Midjourney is able to generate images from

text descriptions and thus accelerates the process of choosing the right partner sharing the same values committing to environmental causes. These AI generated images show co-created and co-branded products. They can be used to check on the co-partners brand fit and consumers' attitude towards the brand alliance before launching a co-branded product. Applying this approach enables the brand to achieve successful brand extension into a new market.

Overall, brand and innovation managers can choose GPI, GLEPI, GCOPI, and GLECOPI equally to raise green brand image, but have determining factors on hand to improve one over the other. In contrast, launching GLECOPI is the best option to support brand value in regard to its price and emotional dimensions. This finding adds a practical implication to the notion of Hartmann et al. (2005) who propose that a combination of functional and emotional positioning ensures consumers' positive responses towards green brands.

8 Limitations and Future Research Directions

This study is subject to some limitations that open opportunities for further research. First, the study's focus is on substitution innovation. Further studies can replicate and extend our work by considering efficiency innovations, elimination innovations, or SPI with recycling, or upcycling activities. Besides product innovations, innovation management compiles different innovation types having an impact on brand perception, e.g., process innovation and business model innovation. Future research should elaborate these innovation types in a green branding context. Second, the research design should be discussed with regard to its limitations. We used a fictitious brand to investigate our conceptual framework in order to exclude a previous brand association bias and maintain internal validity of our experiments. However, the associative memory network model describes theoretically, that the existing memory structure of brand associations in a consumer's mind might shape the perception of the GPI (Ng et al., 2014). Further studies can start here and investigate a real brand to prove that GPIs with certain features are able to improve green brand image and brand value perception. This approach can reveal whether GPIs can transform a negative green image, e.g., after an environment-related corporate crisis, into a positive green brand image, or whether a GPI can backfire in that case. Thus, future studies should research under which conditions GPIs are harmful or helpful for the greening of the parent brand. For instance, Hesse et al. (2022) propose that the intended greening of the non-green parent brand image requires a reference point for a fit, similarity or complementarity with the green product. Third, the findings demonstrate that moderating variables are important to explain the effects shown. However, our incorporated moderators are not able to undercover differences across the experimental GPI scenarios. To better understand

the mental processes behind the effects, further moderators and mediators should be included in the conceptual framework, e.g., variables that explain the hype around LEs and co-branded products. Researchers should hypothesize the effects of moderators that simultaneously have a positive effect on the relationship of GPI on green brand image and brand value and a negative effect on the relationship of non-green product innovations. The green brand image has a proven effect as a mediator, strengthening or weakening the overall brand value in a reciprocal interaction with the respective product type. That's why it is important to win the green brand image battle, for the sake of your own brand and for the environment.

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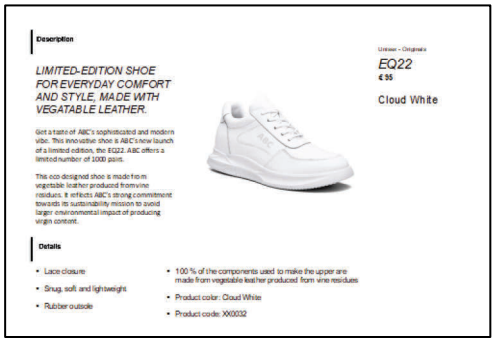
Appendix

Table D.5 Experimental treatments study 1

Brand	**Product Innovation**	**Green Product Innovation**
ABC	Treatment 1 (N = 220)	Treatment 2 (N = 186)
		

Table D.6 Experimental treatments study 2

Brand	**Green Product Innovation (ongoing)**	**Green Limited-Edition Product Innovation**
ABC	Treatment 1 (N = 200)	Treatment 2 (N = 205)
		
Co-Brands *ABC* *&* *The North Face*	Treatment 3 (N = 198)	Treatment 4 (N = 205)