

Tim Blume

# New Taxonomy for Corporate Open Innovation Initiatives

Best Practices and an Empirical  
Validation among Germany's  
500 Biggest Companies



Springer Gabler

---

# Innovationsmanagement und Entrepreneurship

## **Series Editors**

Ronald Gleich, Oestrich-Winkel, Germany

Patrick Spieth, Oestrich-Winkel, Germany

Florian Täube, Oestrich-Winkel, Germany

In unserer Schriftenreihe „Innovationsmanagement und Entrepreneurship“ werden wichtige Ergebnisse der wissenschaftlichen und praxisorientierten Forschung des Strascheg Institute for Innovation and Entrepreneurship (SIIE) der EBS Business School veröffentlicht.

Our series includes excellent academic and practitioner oriented research in the area of innovation management and entrepreneurship which has been recently conducted at EBS Business School, Strascheg Institute for Innovation and Entrepreneurship (SIIE).

More information about this series at <http://www.springer.com/series/12747>

---

Tim Blume

# New Taxonomy for Corporate Open Innovation Initiatives

Best Practices and an Empirical  
Validation among Germany's  
500 Biggest Companies

 Springer Gabler

Tim Blume  
Heiligenhaus, Germany

Dissertation, EBS Universität, Wiesbaden, 2019

Doctorate Supervisors:  
Prof. Dr. Ronald Gleich  
Prof. Dr. Diane Robers

Innovationsmanagement und Entrepreneurship  
ISBN 978-3-658-27348-4      ISBN 978-3-658-27349-1 (eBook)  
<https://doi.org/10.1007/978-3-658-27349-1>

Springer Gabler

© Springer Fachmedien Wiesbaden GmbH, part of Springer Nature 2020

This work is subject to copyright. All rights are reserved by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed.

The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

The publisher, the authors and the editors are safe to assume that the advice and information in this book are believed to be true and accurate at the date of publication. Neither the publisher nor the authors or the editors give a warranty, expressed or implied, with respect to the material contained herein or for any errors or omissions that may have been made. The publisher remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

This Springer Gabler imprint is published by the registered company Springer Fachmedien Wiesbaden GmbH part of Springer Nature

The registered company address is: Abraham-Lincoln-Str. 46, 65189 Wiesbaden, Germany

---

# Contents

<b>1</b>	<b>Introduction</b>	1
1.1	Problem Statement	1
1.2	Structure of the Dissertation	4
<b>2</b>	<b>Conceptual Basis and Status Quo of Research</b>	7
2.1	Definition of Corporate Open Innovation Initiatives	7
2.2	Theoretical Framework & Status Quo of Research	7
2.2.1	Literature Review	7
2.2.1.1	Strategic Theory of the Firm	8
2.2.1.1.1	Resource-Based View	8
2.2.1.2	Open Innovation	9
2.2.1.3	Corporate Venturing	10
2.2.1.4	Corporate Entrepreneurship	11
2.2.1.5	Radical Innovation	12
2.2.1.6	Management Fashion	12
2.2.1.7	Incubator Literature Stream	13
2.2.1.8	Science Park Literature Stream	14
2.3	Research Gap	15
2.4	Research Questions	21
2.5	Research Approach	22
<b>3</b>	<b>Taxonomy Development</b>	25
3.1	Corporate Business Lab	25
3.2	Corporate Business Incubator	26
3.3	Corporate Business Accelerator	28
3.4	Corporate Venture Capital	30
3.5	Corporate Business Hub	33
3.6	Clustering Taxonomy Matrix for Corporate Open Innovation	34

<b>4</b>	<b>Test for Validity of the Taxonomy Matrix Within the German Market</b>	39
4.1	Corporate Open Innovation Initiatives Among Germany's Biggest Companies	39
4.2	Application of the Taxonomy for the Identified Initiatives	41
4.3	Evaluation of Results	45
<b>5</b>	<b>Managing Corporate Open Innovation Initiatives: An Explorative Case Study Approach within the German Market</b>	59
5.1	Case Study Design	59
5.2	Derivation of Questionnaire Questions	60
5.3	Selection of Interview Partners	80
5.3.1	Corporate Business Labs	82
5.3.1.1	Burda Bootcamp by Hubert Burda Media Holding GmbH & Co. KG	82
5.3.1.2	WATTx GmbH by Viessmann Werke GmbH & Co. KG	82
5.3.1.3	Corporate Business Lab of a Stock-listed Bank from Germany	83
5.3.2	Corporate Business Incubators	83
5.3.2.1	Corporate Business Incubator of a Stock-listed Bank from Germany	84
5.3.2.2	Incubator of a Stock-listed Telecommunication Company from Germany	84
5.3.3	Corporate Business Accelerators	84
5.3.3.1	ProSiebenSat.1 Accelerator GmbH by ProSiebenSat.1 Media SE	85
5.3.3.2	Metro Accelerator by Metro AG	85
5.3.4	Corporate Venture Capitalists	85
5.3.4.1	SevenVentures GmbH by ProSiebenSat.1 Media SE	86
5.3.4.2	TRUMPF Venture GmbH by Trumpf GmbH & Co. KG	86
5.3.5	Corporate Business Hubs	87
5.3.5.1	Corporate Business Hub of a Stock-listed Industrial Manufacturing Conglomerate Company from Germany	87
5.3.5.2	Corporate Business Hub of a Stock-listed Aviation Transport and Logistics Company from Germany	88

---

5.3.5.3	Corporate Business Hub of a Stock-listed Energy Production and Distribution Company from Germany	88
5.3.5.4	Corporate Business Hub of a Stock-listed Specialty Chemicals Production Company from Germany	89
5.4	Evaluation Methods	89
5.5	Case Study Results: Derivation of Assumptions	91
5.5.1	Corporate Business Labs	91
5.5.1.1	Incumbent's Motivation	91
5.5.1.2	Location & Working Environment Within the Initiative	95
5.5.1.3	Venture Target Selection	101
5.5.1.4	Investment Period	106
5.5.1.5	Financing Strategies	111
5.5.1.6	Management's Best Practices	115
5.5.2	Corporate Business Incubators	123
5.5.2.1	Incumbent's Motivation	123
5.5.2.2	Location & Working Environment Within the Initiative	126
5.5.2.3	Venture Target Selection	130
5.5.2.4	Investment Period	133
5.5.2.5	Financing Strategies	136
5.5.2.6	Management's Best Practices	140
	Concluding Overview	142
5.5.3	Corporate Business Accelerators	144
5.5.3.1	Incumbent's Motivation	144
5.5.3.2	Location & Working Environment Within the Initiative	148
5.5.3.3	Venture Target Selection	153
5.5.3.4	Investment Period	157
5.5.3.5	Financing Strategies	161
5.5.3.6	Management's Best Practices	165
5.5.4	Corporate Venture Capitalists	171
5.5.4.1	Incumbent's Motivation	171
5.5.4.2	Location & Working Environment Within the Initiative	175
5.5.4.3	Venture Target Selection	178
5.5.4.4	Investment Period	182

---

5.5.4.5	Financing Strategies	186
5.5.4.6	Management's Best Practices	190
5.5.5	Corporate Business Hubs	194
5.5.5.1	Incumbent's Motivation	194
5.5.5.2	Location & Working Environment Within the Initiative	201
5.5.5.3	Venture Target Selection	206
5.5.5.4	Investment Period	211
5.5.5.5	Financing Strategies	215
5.5.5.6	Management's Best Practices	219
5.5.6	Concluding Frameworks & Comparisons	227
<b>6</b>	<b>Development of Taxonomy Management Framework for Corporate Open Innovation Initiatives</b>	<b>235</b>
6.1	External Environment	235
6.2	Open Innovation Environment	237
6.3	Taxonomy Framework for Corporate Open Innovation Initiatives	240
<b>7</b>	<b>Conclusion</b>	<b>245</b>
7.1	Common Managerial & Academic Contribution	245
7.2	Limitations & Critical Evaluation of the Research Approach	248
7.3	Directions of Future Research	250
	Reference List	253
	Appendix	267

---

## List of Figures and Tables

### Figures

Figure 1	Status Quo of Research .....	17
Figure 2	The Research Gap .....	20
Figure 3	Taxonomy for Corporate Open Innovation Initiatives .....	37
Figure 4	Open Questions Part 1 .....	65
Figure 5	Open Questions Part 2 .....	68
Figure 6	Open Questions Part 3 .....	71
Figure 7	Open Questions Part 4 .....	74
Figure 8	Open Questions Part 5 .....	77
Figure 9	Open Questions Part 6 .....	79
Figure 10	Corporate's Motivation for Creating a Corporate Business Lab .....	93
Figure 11	Location & Working Environment in a Corporate Business Lab .....	98
Figure 12	Corporate Business Lab's New Venture Target Selection Process .....	103
Figure 13	Corporate Business Lab's Investment Period .....	108
Figure 14	Corporate Business Lab's Financing Strategies .....	113
Figure 15	Management's Best Practices to Run & Control a Corporate Business Lab .....	119
Figure 16	Corporate's Motivation for Creating a Corporate Business Incubator .....	124
Figure 17	Location & Working Environment in a Corporate Business Incubator .....	128
Figure 18	Corporate Business Incubator's New Venture Target Selection Process .....	131
Figure 19	Corporate Business Incubator's Investment Period .....	134

Figure 20	Corporate Business Incubator' Financing Strategies . . . . .	138
Figure 21	Management's Best Practices to Run & Control a Corporate Business Incubator . . . . .	142
Figure 22	Corporate's Motivation for Creating a Corporate Business Accelerator . . . . .	146
Figure 23	Location & Working Environment in a Corporate Business Accelerator . . . . .	150
Figure 24	Corporate Business Accelerators' New Venture Target Selection Process. . . . .	155
Figure 25	Corporate Business Accelerator's Investment Period . . . . .	159
Figure 26	Corporate Business Accelerator's Financing Strategies . . . . .	163
Figure 27	Management's Best Practices to Run & Control a Corporate Business Accelerator . . . . .	168
Figure 28	Corporate's Motivation for Creating a Corporate Venture Capitalist . . . . .	173
Figure 29	Location & Working Environment in a Corporate Venture Capitalist . . . . .	177
Figure 30	Corporate Venture Capitalist's New Venture Target Selection Process . . . . .	180
Figure 31	Corporate Venture Capitalist's Investment Period . . . . .	184
Figure 32	Corporate Venture Capitalist's Financing Strategies . . . . .	188
Figure 33	Management's Best Practices to Run and Control a Corporate Venture Capitalist . . . . .	192
Figure 34	Corporate's Motivation for Creating a Corporate Business Hub . . . . .	198
Figure 35	Location & Working Environment in a Corporate Business Hub . . . . .	204
Figure 36	Corporate Business Hubs' New Venture Target Selection Process . . . . .	209
Figure 37	Corporate Business Hub's Investment Period . . . . .	213
Figure 38	Corporate Business Hubs Financing Strategies . . . . .	217
Figure 39	Management's Best Practices to Run & Control a Corporate Business Hub . . . . .	224
Figure 40	Management Framework for Corporate Open Innovation Initiatives. . . . .	242

**Tables**

Table 1	Existing Corporate Open Innovation Initiatives in the German Market	41
Table 2	Total Results of the Empirical Analysis	43
Table 3	DAX-listed Companies	49
Table 4	MDAX-listed Companies	50
Table 5	Companies > €10bn in Sales	52
Table 6	Companies €10-5bn in Sales	53
Table 7	Companies €5-2bn in Sales	55
Table 8	Companies < €2bn in Sales	56
Table 9	Interview Partners	81

---

## List of Abbreviations

CBA	Corporate Business Accelerator
CBH	Corporate Business Hub
CBI	Corporate Business Incubator
CVC	Corporate Venture Capital
IRR	Internal Rate of Return
KPI	Key Performance Indicator
MVP	Minimal Viable Product
NPS	Net Promoter Score
RBV	Resource-Based View
R&D	Research and Development
RI	Radical Innovation
ROI	Return on Investment
SaaS	Software as a Service
SME	Small and Medium-Sized Enterprises
USP	Unique Selling Proposition
UX	User Experience
VC	Venture Capital



## 1.1 Problem Statement

The German economy and its traditional large-scale incumbent companies are enjoying flourishing conditions. The nation's GDP has risen from €2.220bn in 2004 to €3.277bn in 2017 (Statistisches Bundesamt, 2018). Furthermore, the unemployment rate has reached its lowest point since the unification of the country in 1990 (Bundesagentur für Arbeit, 2018). Additionally, the leading German stock index 'DAX' has witnessed a significant increase from 5.898 points in 2011 to 12,383 points in mid-September of 2018 (Bloomberg, 2018).

Nevertheless, as proven by Christensen (1997), well-performing companies can also face the so-called innovator's dilemma. Christensen shows that industry-leading companies in particular are subject to on-going attacks by new market entrants or shifts in technology. Furthermore, he observes that successful companies rely too long on their well-established business models and do not open themselves to innovations, especially those created outside their own internal R&D departments. Moreover, he sees a tendency among incumbents to favour incremental innovation over radical ones.

Consequently, despite the actual excellent business environment in Germany, Tier 1 managers are afraid. They are unsure of how long their companies can maintain their industry-leading positions. Therefore, they want to avoid the innovator's dilemma and are open to using the time of success to prepare their organization for future developments. Up until now, the megatrend of globalization has influenced Germany's incumbents positively. Increasing exports have been the major driver of Germany's growth during the last decades. Companies have been able to export their high-quality products, like cars or manufacturing machines, to many global markets. Whether the latest megatrends of industry 4.0, demographic change, and urbanization will have the same positive influence will be seen in the future.

These trends, and especially the industry 4.0, are bringing about change in a very complex and difficult-to-predict manner. It is changing the existing business models and the traditional ways of not only how companies work, but also how the society itself functions. This development creates uncertainty. Furthermore, new very agile and fast-acting start-up companies are entering different market segments and trying to attack well-established traditional companies by offering customers innovative, handy, and usually digital services or products. Normally, these companies do not tackle the complete value chain of a traditional service provider, but are focusing on a single niche like the sales channel in the banking industry.

On realising that their companies, due to size, regulations, lack of suitable human capital, and traditions, are often not able to compete with these new companies in finding innovative ideas for services or products, managers are interested in finding new ways to overcome this problem. Moreover, they want to hedge themselves from possible new developments, which can disrupt their business model, as happened to Kodak (Willy, 2016) or Nokia (Laamanen et al., 2016).

As a counter-measure, more and more incumbent managers are trying to establish independent self-managed subsidiaries or business units, which try to take advantage of external start-up companies' knowledge and processes on behalf of the mother company. Additionally, by imitating a start-up company's business practices or by intelligent cooperation models with start-ups, these subsidiaries or business units aim to bring innovation to the mother company, apart from the classical R&D activities.

The integration of innovation, which is created outside an incumbent's R&D department—the so-called *open innovation* (Chesbrough, 2003)—is gaining increasing focus in the research community (Dushnitsky & Lenox, 2005; Becker & Gassmann, 2006a; Becker & Gassmann, 2006b; Chesbrough & Weiblen 2015; Allmendinger & Kuckertz, 2016). Recently, research has underlined that open innovation is not merely a single procedure or step in the innovation process. Rather, it includes the innovation process as a whole on a repeated basis (Chesbrough, 2014). Furthermore, literature describes the existence of corporate initiatives, which try to integrate open innovation into the organization in a clearly structured and repeated process. These can be performed by one's own business unit or a subsidiary (Chesbrough & Weiblen, 2015; Allmendinger & Kuckertz, 2016).

Since the 1990s, different literature streams have given evidences about how open innovation processes can be structured and used by incumbents, namely in the incubator literature. Allen and McCluskey (1990) describe the activities of incubators in order to promote new business in the USA during the 1980s. More actual sources in this literature stream are also available and include under the term 'incubator' several different incumbents' activities in order to integrate innovation

into a company. Here also, corporate venture capital (CVC) units are defined as a form of incubator (Becker & Gassmann, 2006a; Becker & Gassmann, 2006b).

Other sources do not follow this classification (Battistini et al., 2013) and do not link corporate venturing directly to incubation. Without taking the existing incubation literature as a starting point, CVC units were analysed and the literature stream of *corporate venturing* was created (Chesbrough, 2002). One year later, corporate venturing was described as a possibility to bring *open innovation* to an incumbent (Chesbrough, 2003). It was shown that corporate venturing offers companies access to new technology and services. Moreover, increased long-time innovativeness of the organization as a whole could be proven (Dushnitsky & Lenox, 2005; Henley, 2007; Kuratko et al., 2009; Anokhin et al., 2011). These authors focused on corporate venture capital and left other forms of corporate innovation initiatives aside.

Also, *science park* literature (Westhead et al., 2000) and *innovation hub* literature (Chan & Lau, 2005; Chan et al., 2010) are present. Both describe special physical zones, created by governments or private companies, with technological facilities and service-related assets for nurturing new venture start-ups (Westhead et al., 2000). It is mentioned that incubation processes can take place in these environments, but this literature does not consider these facilities as incubators or as part of the incubation literature.

Furthermore, the research stream of *corporate entrepreneurship* gives some valuable insights about how companies can integrate open innovation into an incumbent by creating an entrepreneurial spirit inside the organization. Its primary focus is more on how to facilitate entrepreneurial behaviour inside a company. It is not about concrete cooperation programmes with start-ups, but provides touch points by describing internal factors that are necessarily present in an incumbent to facilitate cooperation with start-ups (Covin & Slevin, 1991; Sharma & Chrisman, 1999).

Another research stream that runs parallel to the previously mentioned ones is *radical innovation* literature. Leifer et al. (2001) describe a radical-innovation hub as a possibility for an incumbent to create disruptive innovations within separated business units (O'Connor et al. 2002). Moreover, Leifer et al. (2001) observe that different companies use different names for these radical innovation hubs. O'Connor and DeMartino (2006) describe innovation hubs as a tool for incumbents to manage the radical innovation process. By conducting a multiple-case study, they developed seven different models for companies to organize the RI process, two of them involving lone-standing business units.

The picture about concrete initiatives that exist for incumbents to integrate open innovation into their organization is very fragmented and cannot be allocated to

one concrete research stream. Moreover, the structuring, management, and control of these initiatives have not yet been investigated. So, in order to close this research gap, it is necessary to develop a taxonomy derived from literature, which aims to cluster all existing structured corporate open innovation initiatives and to carry out a test for validity within a suitable sample. Afterwards, a detailed analysis is necessary via a grounded theory approach in order to build a scientific basis to how a company should carry out such a classified initiative.

---

## **1.2 Structure of the Dissertation**

This dissertation begins with a general definition and a scene setting of what can be understood by the newly derived scientific topic of corporate open innovation initiatives. This includes a detailed presentation of relevant literature in the fields of open innovation, corporate venturing, and radical innovation. Furthermore, the relevant strategic theory of the firm comprises the topic-related parts of the resource-based view. Due to the fact that corporate open innovation initiatives are not a saturated or established term in academia and management praxis yet, a broader view of literature has to be undertaken, which also lists the related research literature for the topics of management fashion, incubator literature, and science park literature. In order to show a holistic picture of the relevant literature, an overview framework clustering the existing relevant literature is presented. Furthermore, this framework is used to show existing gaps in literature and illustrate the research gap. It clearly shows the lack of a concrete holistic picture of how structured activities or vehicles of open innovation, often created by external start-ups, can be integrated into the R&D funnel of an incumbent. In particular, a differentiation depending on the development stages of a new venture is not present. Consequently, the research questions are formulated on this basis. In the next step, the suitable research approach is outlined, which includes mainly two steps. First, the development of a taxonomy that can be used to cluster existing corporate open innovation initiatives into a limited number of pre-defined groups, followed by a scientific verification. Second, the identification of organizational and controlling structures of corporate open innovation initiatives from the incumbent's perspective via an in-depth set of interviews with industry experts.

Answering the derived first set of research questions starts with the development of a taxonomy for corporate open innovation initiatives based on existing literature, in combination with further existing and scientifically verified sources. This results in the definition of five different initiatives. In order to test the scientific validity

of this taxonomy, the German market is selected as the population. The sample is limited to Germany's 500 biggest companies in terms of sales. Additionally, Germany's 50 biggest banks and 30 biggest insurances are also part of this sample. Since banks and insurances, by German law, have other financial statement regulations than other companies, they are handled separately.

In order to deepen the understanding and reach a multi-layered understanding of the practical relevance of corporate open innovation initiatives, the evaluation is added by an industry- and turnover-dependent analysis.

After answering the first set of research questions via an empirical secondary data research method, the second set of research questions —tackling the organizational structure and management's best practices for the different corporate open innovation initiatives— is answered via a qualitative explorative primary data multiple-case study in the design of a grounded theory approach. Via open semi-structured expert interviews with leading managers from the five identified different types of corporate open innovation initiatives used by incumbents active in different industries, the initiative's specific success factors for these topics are identified.

Subsequently, the scientific findings are analysed, resulting in the development of a taxonomy management framework for corporate open innovation initiatives. By combining the developed taxonomy with the amended findings from the multiple-case study, a scientifically derived framework is presented, which should function as a handy tool for the incumbent companies' innovation managers. Additionally, it also helps in visualizing the academic research contribution of this dissertation.

Finally, the research method and the academic findings are evaluated critically, which also includes the limitations of this dissertation and shows directions of future research.



# Conceptual Basis and Status Quo of Research

# 2

---

## 2.1 Definition of Corporate Open Innovation Initiatives

To date, there is no systematic research about the types of independent self-managed subsidiaries or business units — dealing with open innovation— of well-established incumbent companies present (Allmendinger & Kuckertz, 2016). Since no definition of this phenomenon exists and managers start these initiatives to take advantage of innovations created outside an organization, I define these subsidiaries or business units as corporate open innovation initiatives.

---

## 2.2 Theoretical Framework & Status Quo of Research

### 2.2.1 Literature Review

Corporate open innovation initiatives do not suit one explicit research stream and is connected to several different research fields, which have to be analysed and put together in a new suitable way in order to create an applicable taxonomy. Subsequent to the first starting point, a structured literature review was done (Greenhalgh, 1997; Fink, 2005). Mr Constantin Moxter, M.Sc. student at EBS University, supported this initial research and was allowed to use the results in his M.Sc. thesis, supervised by Prof. Dr. Diane Robers and myself in 2016.

The following search terms were used: ‘Corporate Innovation Initiatives’, ‘Corporate Venture Capital’, ‘Corporate Incubator’, ‘Business Accelerator’, ‘Corporate Innovation Management’, ‘Innovation Hub’, ‘Innovation Lab’, ‘Innovation Ecosystem’, ‘Corporate Venturing’, ‘Corporate Entrepreneurship’, and ‘Open Innovation’.

Relevant papers were selected by a four-step approach. In order to ensure academic relevance, only peer-reviewed journals were considered (Light & Pillemer,

1984; Cooper, 1989; Hunter & Schmidt, 1990). The 'EBSCO Business Source Complete database' was used as the academic digital library.

The first step resulted in 6,620 suitable academic papers. After cancelling double-listing and analysing the papers' abstracts, 692 were left; a detailed analysis was done on them. Finally, 139 relevant papers were selected and analysed for usability in this new topic.

As a result, it can clearly be stated that corporate open innovation initiatives are not a research stream on their own. Within the corporate venturing literature, corporate venture capital units are analysed up to quite saturated level; apart from these, within in the open innovation literature, corporate business incubators (CBIs) and corporate business accelerators (CBAs) are also described, but not to a significant degree (Chesbrough, 2002; Covin & Miles, 2007; Schwartz & Hornych, 2008; Benson & Ziedonis, 2009; Covin et al., 2009; Clausen & Rasmussen, 2011). Other initiatives that can be found in practitioner's reports, like Hubs or Labs, but are not covered by research or are covered only in a lopsided context. Research streams of open innovation, corporate entrepreneurship, or radical innovation do not include concrete manuals how corporate open innovation initiatives look like and should be structured (Birkinshaw, 1997; Dyduch, 2008; Maier & Zenovia, 2011). Thus, the findings of the performed literature review are limited. The results are taken as a starting point for in-depth research in identified relevant topics. The following chapters give an overview of what information has been identified.

### **2.2.1.1 Strategic Theory of the Firm**

As outlined by the conducted structured literature review, a clear allocation to one literature stream is not possible. The main reason is the different perspectives taken by authors in analysing aspects of the new topic of corporate open innovation initiatives. The same holds true for connected theories of the firm. One approach is frequently taken into consideration by corporate entrepreneurship literature and also by the open innovation one —the resource-based view. Consequently, the following sub-chapter outlines the touch points with corporate open innovation initiatives.

#### **2.2.1.1.1 Resource-Based View**

Penrose (1959) created the RBV theory of identifying a company as a bundle of resources, which are in control of the organization and together lead to the company's success. Furthermore, by owning certain resources that are limited in availability, cost-intensive to acquire for competitors, and not interchangeable with substitutes, a competitive advantage can be achieved (Penrose, 1959; Porter, 1979). In the overall academic management literature, the RBV has reached an outstanding role and sets the theoretical basis for numerous management theories (Barney et al., 2001).

Its influence on entrepreneurship literature has been limited up until now, but is gaining importance in more recent studies (Alvarez & Busenitz, 2001; Kellermanns et al., 2016). It is described by literature that companies realize that start-ups are holders of resources that are lacking in bigger corporations. These resources are velocity, agility, and knowledge of digitalization, which can be applied to different industries (Kellermanns et al., 2016). Consequently, in connection with the innovator's dilemma (Christensen, 1997), company's managers have to find structured ways to get access to these resources. According to Teltumbde (2006), for the mid- and long-term development of companies, it is essential to develop a strategy to use innovation from outside their own innovation funnel. Consequently, the resource of being able to take advantage from open innovation, especially by new ventures, is developing into a key resource. Furthermore, this resource must include the ability to perform this procedure in a manner that is efficient, financially profitable, and nurturing for the development of the external venture and for the incumbent. Additionally, cooperating with a specific incumbent should create an inimitable USP for the venture and the incumbent. Existing literature does not identify the resources that are required by an incumbent to realize this kind of USP.

### 2.2.1.2 Open Innovation

Generally, open innovation research focuses on how a company can benefit from innovations created outside the classical R&D department and how it is possible to benefit from innovations that are created by the classical R&D department, but are beneficial not for the company on its own but possibly for open-innovation-environment parties (Chesbrough, 2003).

It is important to note that open innovation is not a single procedure or step in the innovation process; rather, it includes the innovation process as a whole (Chesbrough, 2014). In this process, three different ways of knowledge transfer are possible (Gassmann & Enkel, 2004).

The *inside-out process* describes the externalization of knowledge that is created inside a corporation but is not used by it for the operative business or does not fit as an innovation into the company's strategy. An example could be an unused patent that is sold to another company via a licence fee (Gassmann & Enkel, 2004).

The *outside-in process* defines the opposite case. Here, external knowledge is integrated into the innovation process of a company. In theory, external knowledge can be created by a range of sources, e.g. by customers or suppliers (Gassmann & Enkel, 2004).

The *coupled process* portrays a combination of the previous described processes. Here, a company tries to get access to external knowledge in order to mix it with existing internal developments and create or improve an existing or new product

or service. Another form can involve a company selling a product and making it possible for other companies to use their product as a platform for their business modes; e.g. all kinds of open-source products fit into this category (Gassmann & Enkel, 2004).

Literature describes open innovation as a key element for companies to generate growth by integrating outside influences, which can lead to innovation beyond the scope of the actual company's R&D abilities (Ebersberger et al., 2012). Caused by actual technical developments —mainly the digitalization— and multi-layered dimensions of innovation creation processes for all industries, it is nearly impossible for single-industry-specialized companies to create innovation, not including incremental in-house innovation. Consequently, cooperation with innovation creators outside the own R&D department is becoming increasingly important (Chesbrough & Crowther, 2006; Ebersberger et al., 2012).

### **2.2.1.3 Corporate Venturing**

The research field of corporate venturing is connected to open innovation and is directly linked to how corporates can buy shares of new ventures. Corporate venturing can take place as an unstructured approach that is followed by a corporate's management whenever a suitable target company and situation is present. Alternatively, it can take place in a very structured manner by running an own CVC unit. Corporate's activities in using its own CVCs saw its first boom phase during the dotcom bubble in the beginning of the 2000s. Afterwards, risk capital investments quickly declined and started to grow again in 2003. The financial crisis in 2007 created a major setback for the industry. Nevertheless, since 2009, CVC activities of corporates have been increasing again, which shows that corporate venturing activities are highly influenced by the overall market development. Corporate venturing offers companies the opportunity to have access to new technology and services by investing in new and quickly developing ventures (Kuratko et al. 2009; Dushnitsky, 2011; Engel, 2011; Lantz et al., 2011). By using and mixing these innovations with a corporate's internal capabilities and resources, traditional established companies can be in an exposed situation of being able to push an innovation faster into a market and profit from it more than a single start-up could do (Battistini et al., 2013). Moreover, CVC units, as part of a company's strategy, which opens the organization more to innovations outside the traditional R&D department, have been proven to be beneficial for the long-term innovativeness of the organization as a whole and are an effective tool to access innovation, which can also be radical ones. It can be stated that corporate venturing literature describes CVCs as a handy tool to profit from innovations created by start-ups outside the classical R&D funnel. Furthermore, literature portrays CVCs as a tool, which is suitable to cooperate with

ventures that already have a functioning business model and sales (Dushnitsky & Lenox, 2005; Henley, 2007; Anokhin et al., 2011).

#### **2.2.1.4 Corporate Entrepreneurship**

Corporate entrepreneurship as a research field has to be seen as one subcategory of entrepreneurship research, but as a lone-standing concept (Allmendinger & Kuckertz, 2016). Furthermore, it concentrates on how a corporation can integrate entrepreneurial spirit and activities into their existing structure in order to increase its innovation output (Covin & Slevin, 1991). In addition, an individual within a corporation can create this kind of internal innovation by forming a new subsidiary or independent business unit (Sharma & Chrisman, 1999). Moreover, Corbett et al. (2013) describe intrapreneurship as a form of corporate entrepreneurship and a key element to ensure the mid- and long-term development and market existence of companies. Intrapreneurship is seen as a handy tool to generate new strategic ways and a redefinition or expansion of the company's USPs into new markets or the future (Sathe, 1989; Guth & Ginsberg, 1990; Vozikis et al., 1999). Moreover, intrapreneurship describes the combination, inside a corporation, of entrepreneurial innovative thinking and industry-relevant strategic knowledge, necessary for industry-related success. Lots of industries are very specialized in terms of market participants, customer relationships, value chain complexity, and technological expertise. At the same time, they are touched by new trends, e.g. digitalization. Consequently, the combination of digitalization expertise with internal company expertise via an intrapreneurship project can be very beneficial and can protect the incumbent from new market entrants (Ireland et al., 2003). Moreover, Corbett et al. (2013) underline that this does not mean necessarily that a new venture is created. It can also be an internal project, which integrates external knowledge or is inspired by new trends. Internal framework conditions have to be optimally set to foster corporate entrepreneurship activities of employees (Ma et al., 2016). This includes motivational aspects via interesting tasks and especially incentive programmes for intrapreneurs. Moreover, low bureaucracy and the possibility to allocate certain percentages of the working capacity to innovation projects are decisive aspects. Furthermore, direct participation in possible ROIs of projects is helpful in fostering employee involvement in these projects (Monsen et al., 2010). Finally, Teltumbde (2006) see the involvement, organization and successful execution of corporate entrepreneurship project as key strategic element for today's companies for enduring market success.

### **2.2.1.5 Radical Innovation**

In order to analyse the status quo of research in the field of corporate open innovation initiatives, the radical innovation literature also has to be taken into consideration. Connected to the innovator's dilemma, many established companies are very good in their industry niche. A classic example for Germany is the car manufacturing supply industry, with companies that are hidden champions and market leaders in producing very special parts of diesel engines, e.g. cylinder head gasket. For this kind of product, a decade-long production expertise and an accuracy of higher than 99% is necessary (Ludwig et al., 2001). Companies with a focus on one technology area are able to constantly improve their product and create innovation within their field of expertise. This kind of innovation is incremental innovation (Ettlie et al., 1984). Another example is the German car brand manufacturing industry itself, which is leading in terms of the production and efficiency of diesel engines. Based on this expertise, these companies are able to achieve good profit margins with their products. Consequently, this industry has been improving the quality of diesel engines as an on-going process. At the same time, new technologies, mainly based on electrification, have not been in the focus of the German manufactures (Dijk & Yarime, 2010). Consequently, when a company is making good profits with an existing product, there is a tendency to focus on incremental innovation. In this case, constantly improving the diesel engine instead of focusing on radical innovations like electric cars (Christensen, 1997).

Leifer et al. (2001) performed a multiple-case study describing a radical-innovation hub as a possibility for an incumbent to create radical innovations. Under the assumption that incumbents can create only incremental and not radical innovation in-house, it can be a way for companies to create separate independent organization focusing on innovations outside the internal R&D funnel (O'connor et al., 2002). Further insights into management's best practices for these hubs have not been analysed.

### **2.2.1.6 Management Fashion**

Management fashion theory, first mentioned and analysed by Abrahamson (1996), has to be considered when trying to identify reasons for an incumbent's managers to decide to integrate open innovation on a repeated structural basis in their innovation management procedures. Abrahamson (1996) analyses the influence of peer group developments and trends on managers' behaviour. Connected stakeholders are one of the most influential drivers for a company's strategic behaviour (Abrahamson, 1996). Consequently, it is of interest for corporate open innovation initiatives research to identify the drivers behind initiating an own corporate open innovation

initiative. As the main creators for trends in certain management behaviours, Abrahamson (1996) identifies industry-related specialized press, consultancies, universities, and well-known successful managers. Initiated by these trendsetters, a certain strategy is promoted, spread around by describing success stories, and consequently becoming the reason for initiating a certain strategy in another company. Often, stakeholders —commonly the shareholders— or the company's management identify similarities between the situation of a foreign management team that applied a certain new strategy, and the own company. Comparable to a trend in fashion, a strategy that can be characterized as a management fashionable one spreads around quite quickly after a certain triggering effect (Madsen & Stenheim, 2013). Unfortunately, this very quick expansion and application makes it impossible for practitioners and academia to collect enough dependable industry and situation data in order to give insights regarding whether the applied fashionable strategy is useful for different industries and different companies in different situations. Moreover, one trigger effect cannot determine whether a certain strategy really leads to lasting repeatable innovation. This can lead to quick decrease in the application of a certain strategy after realizing that is not successful, or only successful under certain circumstances (Carson et al., 2000). Nevertheless, managers of stock-listed companies in particular have to show the shareholders innovative strategy approaches to ensure the mid- and long-term development possibilities. This mainly holds true for stock-listed companies, because stock prices tend to mirror the investor's perception of the future development of a company and not just the actual performance. Hence, traders tend to evaluate a certain trend in innovation management as a good method, without waiting for academic and practical validation. Finally, this puts pressure on managers to execute a certain fashionable strategy. Thus, it is of interest for this dissertation project to show if corporate open innovation projects are only a short-term fashionable trend or whether they can be a lasting handy tool for the innovation management (Madsen & Stenheim, 2013).

### 2.2.1.7 Incubator Literature Stream

Numerous academic papers use the term *incubator* synonymously for incubators and accelerators (Barbero et al., 2014; Gobble, 2016). Furthermore, incubators are also used as a general term for all kinds of profit-oriented activities between incumbents and all kinds of innovation creators, apart from the classical innovation process, e.g. one definition of a CVC unit describes it as a subcategory of an incubator (Becker & Gassmann, 2006a; Becker & Gassmann, 2006b). Nevertheless, the general tendency in the innovation literature does not follow this generalization and applies further precision (Chesbrough, 2002; Gobble, 2016).

Literature describes incubators as an arrangement of a shared office space that aims to foster the creation of business ideas (Allen & McCluskey, 1990; Hackett & Dilts, 2004; Grimaldi & Grandi, 2005). Business support can include the topic of finance, budgeting, industry-specific knowledge, research facilities, legal issues, office space, and entrepreneurial management tools (Löfsten & Lindelöf, 2002; Grimaldi & Grandi, 2005; Phan et al., 2005; Totterman & Sten, 2005; Dettwiler et al., 2006; Hughes et al., 2007; Patton et al., 2009; Barbero et al., 2014). Moreover, the provided network, consisting of the incubator's senior and junior employees, the incubators' successful alumnus ventures, angel investors, and research centres, is typical and decisive for the success (Hackett & Dilts, 2004). Incubators are managed with a higher focus on developing the business model of a venture further by actively interfering with the management procedure and also with own new employees. Consequently, the focus during the screening phase of potential target companies is not on balance sheet figures, but more on the development potential of the created innovation in combination with the incubator's assets or access to those (Becker & Gassmann, 2006a).

Incubators focus on ventures in the earlier development stages of a company's development cycle. Furthermore, they can be run as subsidiaries or own business units of an incumbent company in order to integrate open innovation into a company (Zider, 1998; Becker & Gassmann, 2006a).

According to Becker and Gassmann (2006), the group of for-profit incubators can be clustered into four different types: *Fast-profit incubator*, *Leveraging incubator*, *Insourcing incubator*, and *Market incubators*.

In conclusion, it can be stated that the incubator literature is at a saturated level. Moreover, incubators managed by companies are also part of the research process.

### 2.2.1.8 Science Park Literature Stream

Without connecting their academic research to one of the previously mentioned categories, Chan and Lau (2005) and Chan et al. (2010) performed research on innovation centres known as *innovation hubs* and *science parks*. In their research, they use sciences parks and innovation hubs simultaneously for the same phenomena. These science parks are special physical zones where technological facilities and service-related assets are present. Furthermore, these assets have been proven to accelerate the development of settled-down companies (Westhead et al., 2000). Normally, these areas are designed by governments, or are based on state finance and operated by private companies in order to foster the development of a certain technology or industry in a certain area. Often sciences parks have linkages with research institutes like universities. Moreover, a management runs these zones in an active manner. They have to ensure knowledge transfer between the settled-down

companies and external stakeholders (Chan & Lau, 2005). Furthermore, innovation hubs or science parks, in this described manner, are similar to special economic zones, which can also host a structured incubator or single incubation activities that actively promote the development of new ventures (OECD, 1999). The speciality of the research by Chan and Lau (2005) and Chan et al. (2010) is the coordinating function between different innovation drivers, which has not been identified in other topic-related research streams.

---

## 2.3 Research Gap

The integration of innovation created outside an incumbent's R&D department, so-called open innovation (Chesbrough, 2003), is gaining increasing focus in the research community (Dushnitsky & Lenox, 2005; Becker & Gassmann, 2006a; Becker & Gassmann, 2006b; Chesbrough & Weiblen, 2015; Allmendinger & Kuckertz, 2016). Recently, research has underlined that open innovation is not merely a single procedure or step in the innovation process; rather, it includes the innovation process as a whole on a repeated basis (Chesbrough, 2014). Furthermore, literature describes the existence of corporate initiatives that try to integrate open innovation into the organization in a clearly structured and repeated process, which can be performed by the own business unit or subsidiary (Chesbrough & Weiblen, 2015; Allmendinger & Kuckertz, 2016).

Since the 1990s, different literature streams have given evidences about how open innovation processes can be structured and used by incumbents, namely in the incubator literature (Allen & McCluskey, 1990). Newer sources in this literature stream include under the term 'incubator' several different incumbent activities in order to integrate innovation into a company. Here also, corporate venture capital units are defined as a form of an incubator (Becker & Gassmann, 2006a; Becker & Gassmann, 2006b).

Other sources do not follow this classification (Battistini et al., 2013) and do not link *corporate venturing* directly to incubation. Rather than taking the existing incubation literature as a starting point, corporate venture capital units were analysed and the literature stream of corporate venturing was created (Chesbrough, 2002). One year later, corporate venturing was described as a possibility to bring *open innovation* to an incumbent (Chesbrough, 2003). It was shown that corporate venturing offers companies the opportunity to have access to new technology and services. Moreover, increased long-time innovativeness of the organization as a whole could be proven (Dushnitsky & Lenox, 2005; Henley, 2007; Kuratko et al.,

2009; Anokhin et al., 2011). This research focuses on corporate venture capital and leaves other forms of corporate innovation initiatives aside.

Additionally, *science park* literature (Westhead et al., 2000) and *innovation hub* literature (Chan & Lau, 2005; Chan et al., 2010) are present. Both describe special physical zones created by governments or private companies, with technological facilities and service-related assets that can help to nurture new venture start-ups (Westhead et al., 2000). It is mentioned that incubation processes can take place in these environments, but this literature does not consider these facilities as incubators itself.

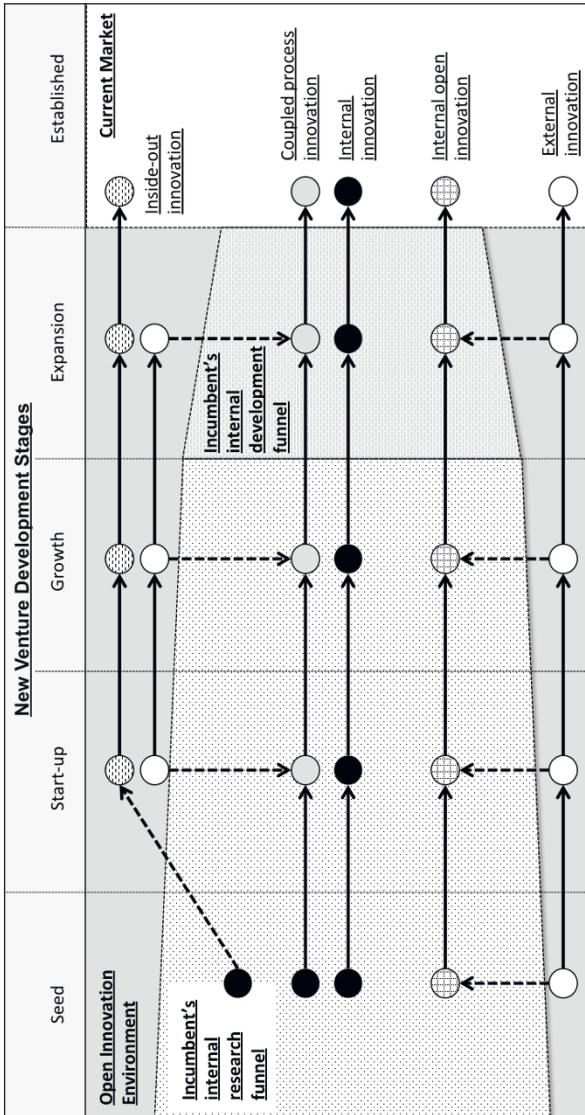
Furthermore, the research stream of *corporate entrepreneurship* also gives some valuable insights about how companies can integrate open innovation into an incumbent by creating an entrepreneurial spirit inside the organization. Its primary focus is more on how to facilitate entrepreneurial behaviour and not about concrete cooperation programmes with start-ups that could bring open innovation to a company (Covin & Slevin, 1991; Sharma & Chrisman, 1999).

Another research stream that runs parallel to the previously mentioned ones is radical innovation literature. Leifer et al. (2001) describe a radical-innovation hub as a possibility for an incumbent to create disruptive innovations (O'Connor et al., 2002). Leifer et al. (2001) observe that different companies use different names for these radical innovation hubs. O'Connor and DeMartino (2006) describe innovation hubs as a tool for incumbents to manage the radical innovation process. By conducting a multiple-case study, they developed seven different models for companies to organize the RI process—two of them including lone-standing business units.

The picture about concrete initiatives that exist for incumbents to integrate open innovation into their organization is very fragmented and cannot be allocated to one concrete research stream.

Furthermore, the number of research papers in the field of open innovation, corporate entrepreneurship, and corporate venturing declined after the financial crises, but has been rising steadily since then, which underlines the importance of academic discourse.

Illustration of existing direct relevant literature



**Fig. 1** Status Quo of Research. Source: Own illustration, adapted from 'Porter, 1979; Zider, 1998; Chesbrough, 2003; Weitnauer, 2011; Allmendinger & Kuckertz, 2016'