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A Taxonomic Framework on Prevalent Collaborative Innovation Options between Corporations and Startups

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Abstract: Collaborative open innovation with technology startups is attracting considerable interest among large corporations around the world. Despite this practical relevance, an extensive and comparative analysis on collaborative open innovation options and its characteristics has not yet been a focus of research.

This paper characterizes and contrasts nine prevalent operational contexts in which large corporations engage in collaborative open innovation with tech startups to facilitate and benefit from innovation. Specifically, this paper proposes a taxonomic framework for corporate venture capital mergers & acquisitions, procurement, business incubators, corporate accelerators, corporate company builders, co-working spaces and startup platform programs and innovation labs. It then delimitates their characteristics based on a predefined set of traits (strategy, financing, startup target, structure, culture, resources, performance measurement and ecosystem-leverage). The study that forms the focus of this thesis involved conducting design science research following a literature review. The findings of this thesis provide a theoretical foundation for further studies and offers terminological clarifications for researchers as well as for innovation managers. Furthermore, it is anticipated that this research will form the basis for future research on the subject particularly in the validation and development of the framework's general applicability.

Keywords: Collaborative open innovation, corporate innovation, collaboration, startup, literature review, design science research

INTRODUCTION

Emerging technologies present corporations with both opportunities and challenges, given that they radically affect the business environment in which the corporations operate. So as to adapt to technological change and embrace innovation across products and services, it has become attractive for corporations to open their innovation processes to collaborations with startups [1][2]. Given this growing necessity for such entities to adapt to a rapidly changing environment [3], there is significant utility in carrying out a comparative assessment of prevalent options available to corporations for open collaboration with startups. Even though these options have been utilized in practice, as evidenced by the emergence of various collaborative programs, an extensive and comparative analysis on the characteristics of such options has not been carried out in past academic research. Next to traditionally rooted collaboration options such as mergers and acquisitions or corporate venture capital, nascent phenomena such as accelerators or incubators have recently received much attention both in Europe and across the globe [4].

The academic research on the subject is scant and the literature is limited to associated areas of research such as collaboration between large corporations and technology startups [5] [6]. The research is particularly scant on the appropriate choice between various collaboration options (e.g. corporate incubator vs. business incubator). Therefore, there is a clear gap identified in the research on the subject, in that rigorously developed presentation of relevant collaboration options is required.

Upon conducting extensive research, this paper identifies nine prevalent forms of collaborative open innovation and eight delimiting characteristics, as presented in the the proposed taxonomic framework (Appendix). The results contribute to the academic research in this field by providing a concise overview of relevant collaboration options, substantiated by citations of past research and examples of large European corporations engaging in Silicon Valley's startup ecosystem.

THEORETICAL BACKGROUND

Chesbrough [7] defines open innovation as “the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation, respectively”. It is increasingly becoming common for large corporations to innovate through the open innovation process. Opening up the innovation process to external partners has been recognized by both researchers and managers as being key to successful innovation [8] [9] [3].

Due to their agile, adaptive and resilient nature, startups are increasingly seen to disrupt established industries and play a key role in accelerating corporate innovativeness [10][11]. The practice of more formal partnerships, particularly collaborations with startups, has significantly increased in practice over the last ten years [12][10][13][14]

[11][2]. Thus, many large corporations have engaged in collaborations with startup in such ecosystems [15] [2][16] [17][12][11] [18]. Silicon Valley is renowned worldwide as an ideal ecosystem for technology innovation [19]. To keep up with this trend of rapid technological innovation and to stay relevant in a fast-changing economy, the development of instructive knowledge about different collaboration options with startups is of crucial strategic significance for innovation managers in large companies [20] [21].

Sarbacher et al. [22] identified eight different forms of collaboration between startups and established companies in the context of open innovation. These forms of collaboration were then compared in terms of the level of innovation (incremental vs. disruptive) and culture (internal vs. external culture) as shown in in Image 1.

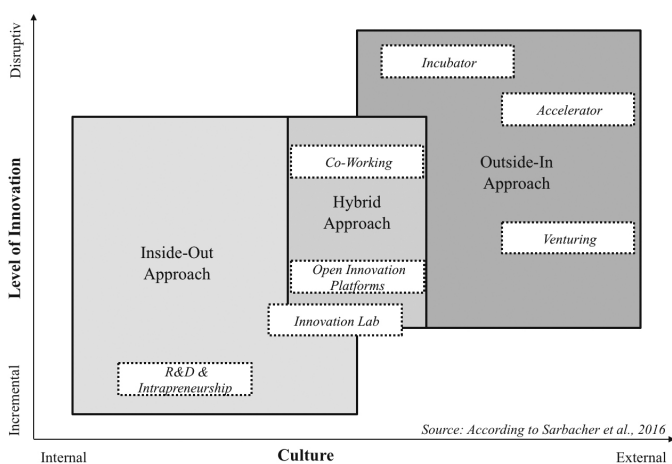


Image 1: Different types of collaboration forms between startups and established companies [22].

R&D and Intrapreneurship programs, the concept of cultivating an entrepreneurial mindset and skill set from within an existing organization, is enabling established companies to extract value through employee-powered corporate innovation [23] [24]. Innovation labs are dedicated facilities outside of the established departments of companies and operate independently in encouraging creativity and supporting innovative projects [25]. Open innovation or crowdsourcing platforms facilitate innovation by activating and leveraging the integration of heterogeneous outside knowledge resources, i.e the wider population of innovators [26]. Co-working spaces are creative open-plan office environments in which innovation managers work alongside other unaffiliated professionals [27]. Incubators are company-supported flexible working spaces with additional value-added services such as centralized legal or marketing support [28]. Corporate accelerators are company-supported programs of limited duration that support cohorts of startups via mentoring, education and company-specific resources [2]. Venturing permits corporations to participate in the success of external innovation and helps to gain insights into non-core markets and access to capabilities [11].

METHODOLOGY

In order to answer the research question, the Startup Collaboration Model (SCM) was used as defined in a previous study [29] as regulatory concept. The approach of design science research was employed to define the different forms of collaboration according to the dimension of the SCM [30].

Research carried out, was based on the results from literature reviews, field research, expert interviews (Appendix B) and focus group discussions. The research design consisted of four steps as shown in Image 2: (1) Elaborating the different forms of collaboration, (2) Developing the dimensions of the SCM, (3) Defining the forms of collaboration according to the SCM and (4) Validating the defined collaboration options by experts.

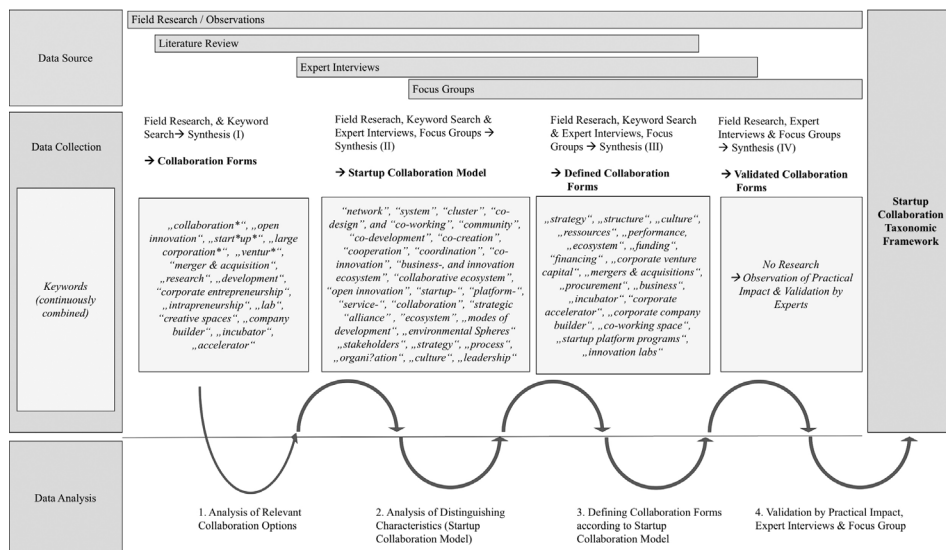


Image 2: Design and development of the taxonomic framework.

A BRIEF ANALYSIS OF RELEVANT COLLABORATION OPTIONS

To develop a complete definition of collaborative open innovation with regard to startup ecosystems, a systematic approach was adhered to with regard to the literature review, in accordance with standards of academic research in the IS field ([31] [32] [33] [34] [35]). According to Patton [36] any sampling performed in a systematic literature review should be in line with persistent sampling procedures, a guideline which was followed in this research. The surveyed literature consisted of English and German publications from peer-reviewed and practice journals. The publication search was done by means of a keyword search. The research began with general search terms, combining the keywords “collaboration*”, “open innovation”, “start*up*” and “large corporation*”, in order to gain a broad overview of existing knowledge. Over the course of the literature search, relevant collaboration options (e.g. accelerators, incubators, etc.) as well as dis-

tinguishing characteristics of those options (e.g. strategic goals, resources, etc.) could be identified. This evolved the combination of keywords to the search terms “venture*”, “merger & acquisition”, “research”, “development”, “corporate entrepreneurship”, “intrapreneurship”, “lab”, “creative spaces”, “company builder”, “incubator” and “accelerator”. For its corpora, the search made use of major databases such as the Oxford Dictionary, Google Scholar, Wiley, Springer, Emerald, Elsevier and libraries such as JSTOR and EBSCO [37]. Thereby, a lack of recognized basic literature in the form of textbooks and journal articles for the purposes of this thesis was noted. Therefore, it was vital that the understanding was furthered by referring to experience reports and publications as well as news and magazine articles, based on either the works of credible authors, practitioners and researchers or empirical data/evidence. The information from both academic and practical sources showed to be relatively sparse and thus needed to be further complemented with insights from expert interviews. The relevance of sources referred to in this thesis has been ensured by assessing the titles, keywords and/or the abstracts of the sources obtained from the search results and filtering the articles based on this information. Recent publications were preferred over older ones with the exception of foundational texts, in order to ensure contemporaneity and relevance.

The first selection of papers was performed by checking the keywords in the articles. Subsequent searches were done via a complete scan of the major concepts to ensure that the sample consisted of all the most relevant papers. The initial corpus selection process resulted in 142 articles from the databases searched. We then carried out a comparison of the results against other databases to identify and eliminate duplicate articles resulting in a minimized selection of 86 articles. The articles were investigated for their relevance to themes of research interest based on their titles, introductions, and contents, carried out in order to determine if they should be included in the data analysis. After this selection process, only 42 articles which were the most cited and appeared in most searches, were selected for further analysis. The definitions and perspectives of the authors of these articles were assessed with regard to the collaboration forms using the cross-reference technique. This was carried out to check if there were any additional papers that should still be incorporated in the review process [38] [39].

CHARACTERISTICS OF THE STARTUP COLLABORATION MODEL

This section provides a short background on the development of the SCM [29]. The dimensions of the SCM and the corresponding items were developed through a process of field research, literature analysis, interviews and focus groups. The field research at Swisscom involved the SCM implemented in practice through an iterative process. 136 different individuals within Swisscom were involved in creating and validating the SCM. Qualitative approaches like interviews, workshops, observations and focus group discussions were applied [35] [40].

Besides the qualitative field research, a literature review similar to that in Section 3.1 was conducted, but with the following keywords: „ “network”, “system”, “cluster”,

“co-design”, and “co-working”, “community”, “co-development”, “co-creation”, “cooperation”, “coordination”, “co-innovation”, “business-, and innovation ecosystem”, “collaborative ecosystem”, “open innovation”, “startup-”, “platform-”, “service-”, “collaboration”, “strategic alliance”, “ecosystem”, „modes of development“, „environmental Spheres“ „stakeholders“, „strategy“, „process“, „organization“, „culture“, and „leadership“. 116 academic publications on startup collaboration were analyzed, as well as 12 existing comparable assessment frameworks. In addition, 6 exploratory interviews with experts on startup collaboration were conducted. All literature and interview transcripts were open coded, which resulted in a set of criteria that were clustered into dimensions.

The first set of criteria and dimensions was evaluated in a focus group with 12 participants. The final eight dimensions of the SCM are (1) strategy, (2) structure, (3) culture, (4) resources, (5) performance, (6) startup, (7) ecosystem, and (8) financing, as shown below in Image 3.

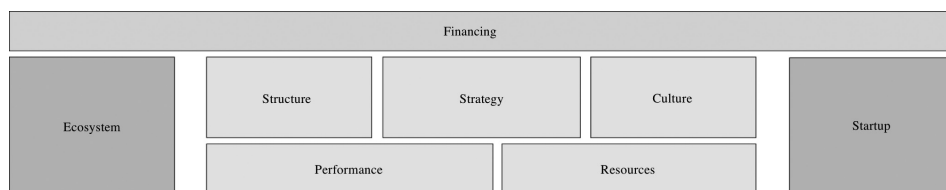


Image 3: Dimensions of the Startup Collaboration Model (SCM) [29].

After finalizing the dimensions based on the feedback and the observations at Swisscom, an item pool was written up and was evaluated for comprehensiveness, relevance and completeness with the focus group and the three experts within Swisscom. Based on the feedback, a set of 36 items was finalized.

DEFINING THE COLLABORATION OPTIONS

The concept of the framework is grounded in both deductive and inductive theoretical perspectives, iteratively derived from theoretical knowledge (literature review, management theory) and inputs from the environment (expert interviews, observations). A literature review based around the terms of the SCM „strategy“, „structure“, „culture“, „resources“, “startup” „performance, „ecosystem“, „funding“, “financing“; and around the different collaboration forms: „corporate venture capital“, „mergers & acquisitions“, „procurement“, „business“, „incubator“, “corporate accelerator“, „corporate company builder“, „co-working space“, „startup platform programs“, „innovation labs“

Initial insights from the literature review led to the inductive identification of six popularly researched options of collaboration. These options include: the Corporate Accelerator, the Business Incubator, the Corporate Venture Capital, Co-Working Spaces, Startup Platform Programs and Innovation Labs. Furthermore, three additional collaboration options emerging from practical relevance were identified based on insights

from expert interviews. Namely, these options are: Mergers and Acquisitions (M&A), Procurement and the Corporate Company Builder [40].

VALIDATING THE COLLABORATION OPTIONS

The framework was presented to professionals in the field to review and provide necessary comments to ensure the validity of this research paper. In addition to the expert interviews, information on collaboration options is also based on the field research at Swisscom. The paper was deemed reliable as all the formal steps required in the analysis were followed by the two authors. It met the minimum required standards but given that the time available for this research work was limited, it was not practical to include more information than what is presented. An inter-rater tool indicated that the inter-rater reliability is high. For transparency, every step of the research process was documented. The research paper was also validated internally by subjecting it to peer-critique in seminars and discussions with fellow researchers. This process served to validate the choice of scientific articles, resulting in a valid, reliable and comprehensive review of the literature [41] [42] [43].

RESULTS

Following the iterative derivation from the literature review and input from the experts and the field research at Swisscom, this paper proposes a taxonomic framework on open collaborative innovation options. Initial insights from the literature review led to the inductive identification of six popularly researched options of collaboration.

OVERVIEW OF THE OPTIONS OF COLLABORATIVE OPEN INNOVATION

Literature on both **CA** and **BI** is relatively well documented and accessible. In recent years, there has been an increase in the frequency of publications in academic research and practitioner case studies pertaining to the said collaboration options. However, there is a lack of clarity and difference of opinion on definitions of related concepts. Image 4 displays in some detail the relationships of some related concepts.

CVC has been the subject of considerable academic research, with particular emphasis on the fact that large companies have long sensed the potential value of investing in external startups [44] to facilitate and benefit from innovation. There is a growing interest in corporate management in VC investments from a primarily strategic rather than a primarily financial point of view. The VC-leverage of the ecosystem has increased in recent years owing to the entry of CVC into less traditional sectors.

CoS has similarly been the subject of considerable research attention in recent years. Given the high accessibility and social nature of corporate (semi-private-public) CoS, insightful knowledge on the characteristics and organization of such a collaboration is

readily available to individuals of varying authority and varying involvement within the scope of collaborative activity.

SPPs are found to be a commonly implemented form of collaboration in practice. A wide range of industry examples offer insights on the practice of such programs. However, extant literature on the subject is limited particularly in relation to analytical insights into the characteristics of these programs.

Similarly, research and case studies on **IL** are wide-ranging. However, it was found that interpretations of the term and practices of such labs are diverse and highly subjective, resulting in an inconsistency in the use of the term. Moreover, there appears to be little research interest in clarifying the properties that characterize ILs and in the formulation of a universal definition of ILs. Among the existing definitions, there were only a few shared characteristics noted. This suggests that in the future, when there is a clear consensus on definitions of collaboration forms, the results of this thesis may need to be tested again in relation to ILs.

For traditional options such as **M&A** and **Procurement**, the literature concerning startup collaborations in its nascent form is relatively scarce. Existing literature on M&A focuses primarily on larger and more established companies that are publicly traded [45] [11], whereas more recent M&A research takes interest in the effect of acquiring firms on the innovative capabilities of the acquiring organization [46]. There is still considerable uncertainty with regard to the characteristics of this collaboration option. Procurement is often researched within the context of acquiring of innovative capabilities, rather than procurement in terms of co-developing innovation.

To the best of the authors’ knowledge, despite the growing interest in **CCB**, almost no scientific literature can be found either in academia nor in corporate reports. The concept of CCB is thus, not widely understood. However, unlike ILs, there appears to be some consistency in definitions of the concept among the few sources on CCB.

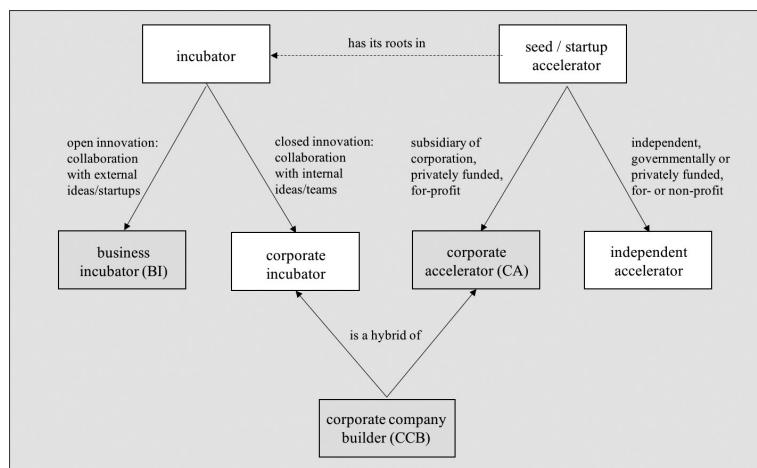


Image 4: Relationships of key concepts related to BI and CA.

Based on what is known from previously characterized collaboration models, we conclude that a company builder may be understood as a hybrid of a corporate incubator and a corporate accelerator. This conclusion is grounded in the fact that there has been some academic agreement on CCB characterizations, and that the ways in which these definitions are agreed upon are similar to the two stated models. Similar to a CA, a CCB supports startups in all of its growth phases: from founding to development and to growth – with the final aim being the sale of the venture, typically in the form of a spin-off or subsidiary [47] [22]. The fundamental difference between CCB and other collaboration options is that business ideas are predominantly conceived by the leaders of the CCB (inside-out), rather than by external startups (which is a common practice for corporate incubators). For the purposes of idea-execution, the CCB typically recruits or appoints a suitable external management-team to develop the idea and oversee the execution (outside-in). CCB leaders often deeply involved in the business functions of the internally founded startups [48] [49], which increases the likelihood of the venture serving the set joint purpose of the collaboration.

COLLABORATION FORMS ACCORDING TO THE STARTUP COLLABORATION MODEL

In the subsequent sections to follow, the nine predefined collaboration options are discussed and defined along eight dimensions i.e. strategy, structure, culture, resources, performance, startup, ecosystem, and financing of the previously recapitulated SCM.

CORPORATE VENTURE CAPITAL (OUTSIDE-IN)

CVC is a corporate investment program with the main **strategic** goal of direct extension of a corporation's existing innovation portfolio, focusing on the core- and growth business. Typically mid-term oriented, these investments are strongly driven by financial goals in ventures identified as having significant growth and profit potential [2][50][51]. With such investments, CVC facilitates entry into new markets (e.g. novel technological fields) along with gains in market-specific insights and influence (e.g. use of new ideas, possible strategic ownership) [21][11][51][45].

The **financial** revenue source of CVC mainly stems from exit values of successful equity investments and service-fees (e.g. fund management charges) [52][51]. The main cost drivers are capital investments, operating costs (including early stage pilot-) and HR costs. The level of investment is typically high (the earlier the investment, the higher the risk), which is associated with a relatively high risk level [53][104].

CVC typically involves investments in a narrow range of very small **startups** assessed to have high growth-potential in their early to late stages [54] [55], The collaborative efforts typically last between three to five years after investment, while the interactions of corporate management and other staff with the startups is episodic [2].

Given that the CVC firm is typically well-connected within a startup ecosystem, such collaborations are highly sought after and the application process of startups follows

a very selective and highly competitive **structure** [56][57]. The typical CVC screening process follows a process comprising of the initial scanning for potential startup investments, the coordination of due diligence, the monitoring of costs and the negotiation of exit strategies. CVCs support startups throughout all growth phases, where the desired graduation outcomes are pilot projects or successful exits (IPO, M&A, sales of stakes to third parties) [44][52]. CVC units are typically set up as an in-house VC arm [2]. Due to this integration, the level of corporate control is relatively high.

Top-level executives of large companies often have a conservative **culture** and mindset about new technology investments, whilst corporate decision processes are generally slow owing to bureaucracy. A minimal decoupled level of corporate control is considered beneficial to the performance of startups [104].

The main corporate **resource** provided to startups is capital. Collaboratively-oriented VC programs leverage their long-term senior executives and in-house experts in fostering the growth of the startup by the provision of advice and mentoring, development of business plans and technical and market insights gained from accumulated knowledge from other collaborations with startups [54]. Accordingly, legal expertise (concerning the composition of documents) and division expertise (guarantee of internal support) are particularly important corporate skillsets. Furthermore, the success of a startup is found to be dependent on its ability to build strong relationships internally (e.g. with senior executives and business unit managers) [55][53]. The corporate backing of startups often adds to the credibility of the startup to other agents within the ecosystem [56][45][2].

Typical CVC financial **performance** measures include Return On Investment (ROI), sales growth rate, earning per share, net income-to-sales or the standard deviation of Return On Assets (ROA). Innovativeness can be measured by metrics such as the number of collaborations, the number of successful pilots and their technology-specific performance (technology development), the number of investments per year, annual growth in the number of employees and subjective satisfaction measures [58].

The **ecosystem** leverage for this program is considered as high, because its community is diverse and strongly integrated and includes experts [56][45][2], **universities and think tanks** [104]. According to Bonzom & Netessine [21] the most typical industries represented by corporations operating a VC arm are (internet) technology, pharmaceuticals, telecommunication, financial services, insurance and semiconductors.

MERGERS & ACQUISITIONS (OUTSIDE-IN)

Mergers & Acquisitions (M&A) is the consolidation of two companies or their assets, contextually the combination of a large company and a startup, or a corporation's attainment of a startup's majority stake [45]. By acquiring smaller firms, a corporation is able to quickly solve business problems and boost their (typically core-) products and services, without having to create such capability directly themselves [45]. M&A may thus be a logical **strategic** extension of CVC and offers a long-term-oriented, fast and effective, and yet relatively expensive way of acquiring complementary technology,

capabilities or talent (acqui-hiring) [50][59][60]. Such M&As are often considered by corporations as a means of solving specific complex business problems (such as a lack of innovation) and entering new markets quickly [2][21].

M&A is **financed** by owning stake in startups (often because of a high cost pressure). Successful takeovers lead to synergy effects and hence, value creation for shareholders. Besides the costs of acquisition, another major expense is attributed to advisory costs [21][61]. Similar to CVC investments, the level of investment for M&A deals is typically high, and the financial risk-level is considered similarly high [104].

When acquiring **startups**, corporations sourcing for M&A typically focus on a small range of late-stage startups that are already successful and where it is anticipated that the acquisition will help the underlying business to grow and scale further [50]. The typical length of successfully acquiring a startup from the scanning of investment opportunities to the closing of the deal can take 1-3 years [62].

The process **structure** of M&A typically follows a highly selective search for acquisition targets, a negotiation and due diligence process, followed by its financing and closing. This investment space is very competitive with such M&A resulting in being highly favorable for growth of startups. Acquired startups are typically supported in their future growth phase, with the final aim of eventually being successfully integrated. M&A in large corporations is normally anchored as a loosely coupled, rather large M&A function or as a business-unit led M&A function, typically on-site and under a very high level of corporate control [62].

Culture has emerged as one of the most significant barriers to successful integration, since companies with different corporate cultures find it difficult to make the right decisions or to operate effectively when merged. To address this issue, culture is given due consideration as a major component of formal changes in management during the M&A process. Differing cultures particularly need to be considered in reorganization of organizational and HR management during the course of the Merger or Acquisition [63][64][65].

Resources of the involved parties are typically consolidated, resulting in synergy effects (e.g. consolidation of unique capabilities, expertise and HR, financial and physical capital, combination of market share) [104]. Given that unlike CVCs, the involved parties are no longer to be disconnected entities, and therefore the risks and rewards are common, and hence the level of support by the larger corporation in facilitating the process in this case is high.

The **performance** of M&A is typically measured by the synergies achieved if they are clearly defined and articulated in advance. Other common performance indicators used for M&A are the IRR or ROI [66].

The **ecosystem** of M&A typically includes law firms, investment banks, advisers and consultants to support the process. M&A of startups is a common practice within the technology industry. In specific, Google, Yahoo, Facebook or Oracle have counted among the top 10 buyers of tech companies since 2010 [21].

PROCUREMENT (OUTSIDE-IN)

In literature, procurement refers to the management of supplying a corporation with strategic and operational resources from external sources [67].

In the future, procurement is hypothesized to expand its traditional focus of supply-management to co-development with suppliers, which includes idea-sourcing and thus significantly affects the corporation's innovation performance [68][69][70].

Procurement's **strategic** objective is to co-develop new approaches to specific business problems or opportunities to challenges quick and at a relatively low cost [50]. With a short-term integration of innovative suppliers to the company's product development process [70], procurement can serve to provide access to disruptive technologies and new business models (future business). Innovations from suppliers may be sold-to (e.g., to a corporation itself) or sold-through (e.g. to a corporation's customers base, with the corporation as a partner of the supplier). Whilst sell-to procurement aims at direct internal improvements (in the self-interest of the company), the goal of sell-through is to make commission from resales and to profit from synergy effects in the existing portfolio [108].

Commissions from sell-through products constitute the major revenue source of procurement. Dominant cost-drivers are reported as HR costs, operational- and transactional costs such as search-costs, time-investments, costs associated with efforts towards internal approvals and the assessment of infrastructural compatibility [108]. Both, the investments necessary and the risk of procurement are lower than other collaboration forms considered previously [50].

Large corporations prefer to procure through small scale collaborations with early to late stage small **startups** with already developed, marketable and adaptable high-quality products and/or services. Within the co-developing process, a POC is typically devised within one to two months, although this process may take up to three years [108].

As to the **structure** of collaboration, there are two typical practices on how potential startups for procurement may be approached. Startups may be selected from their own applications to a given range of a corporation's fields of interest [108] or via a more strategic and demand-led approach, following the steps of project initiation, supplier qualification, evaluation and shortlisting, and contract negotiation [50].

While a procurement team is typically organized as an on-site subordinate to a corporate innovation unit, it is typical for the procurement team to also closely work with the purchasing department to act as a mediator [50].

The close teamwork between different units enables fluent transitions not only among the units, but also between the startups and the corporate units. This is further supported by members of the procurement team who have an entrepreneurial background and the team thus acts as a **cultural** intermediary, offering pragmatic solutions to the startups [50][70][68].

Physical **resources** are typically not offered, since most startups involved in procurement already have their own office spaces set up prior to collaborating with the corporation. Business assistance is provided, especially in the development of a POC, including the integration of new products into the corporation's processes and systems. Unrelenting support and internal knowledge of the corporation are resources utilized to integrate external solutions to run within the existing corporate context [108]. The startup benefits not only from the access to resources from within the corporate entity, but also the access to its network. This access enables startups to scale up, to convey essential validation for future customer acquisition and adds to the credibility of the startup. This boost in credibility can then be leveraged to convince other corporations to partner with the startup [18].

The **performance** indicators of procurement programs highly depend on the project. For sell-through products, revenue metrics such as sales revenue shares are common [18]. Umbenhauer & Sopher [68] propose that the future of procurement will necessitate its performance indicators to broadly be aligned with shareholder metrics (e.g. EBITDA, RONA or ROIC POCs, new customer acquisitions or new innovation fields explored).

Corporations that practice procurement contribute to their **ecosystem** by bridging startups with their customers. Typical procurement industries include those in the retail and high-tech sectors [68]. However, the practice is predicted to become commonplace in other industries as well in the near future [68][70].

BUSINESS INCUBATOR (OUTSIDE-IN)

A Business Incubator (BI) is a company-supported (on-site or off-site) office space that 'hatches' novel customer-centric ideas with the long-term oriented **strategic** goal of developing new business models from scratch [71][105]. The enhanced business portfolio of corporations may enable an improved access to professional services, capital or new markets [67].

For-profit BIs typically generate **financial** returns through fees from rent [4] or business support services provided to startups [6] in addition to an equity-share based on royalty agreements dependent on the startup's success [72][71]. HR- and facility costs are key cost drivers of BIs. The investment level and the risk level of BI as a collaboration form are both evaluated in literature as medium [21].

BIs mainly focus on medium to large early/seed **startups** with a strong tech-focus and customer-focus [28], with the aim of graduating them within a typical length of three to five years of continual exposure to the incubation environment [3][11][71][73] [21][4].

The **structure** of the selection process of BIs is typically open and non-competitive [74] [4]. However, startup companies usually are required to apply to ensure that they meet the demands of the incubator's criteria for consideration and its mission (industry, stage of company, founder demographics, etc.) [75]. BI accept and graduate startup ventures on an ongoing basis [4] and support them through all growth phases. This support is especially provided in the development of a Minimum Viable Product (MVP) based on

the identification of valued customer features through a process of engaging with early adopters [105]

A great challenge for BIs is to provide startups with a **culture** and environment in which radical innovation can take root. This is typically very different from the environment of a corporate overseer. The risk of overprotection due to corporate backing or close ties to the mother corporation might prevent the startups from pursuing partnerships with the parent's competitors or from developing competing products that might disrupt the corporate backer [11]. Interviewee B [105] strongly suggests holding a portfolio manager responsible for facilitating early market exposure, pivoting of the startup and shielding the startup from corporate complexity.

The vital need of BIs for high quality **resources** and their alignment to previously identified startup needs, as well as the startups' active use of such resources is identified as significant in the literature [67][71]. A consideration of significance for startups joining a BI is the access to tangible resources (i.e. physical capital and financial capital). Business knowledge whether developed through training, coaching or networking opportunities within the startup ecosystem, is the incubator's most valuable resource within the collaboration process [28][76][77]. Furthermore, access to resources is supported by social networks, established through the BI's mediation services [71][78][79][67][80]. Codevelopment of the products involving customers of the startup requires dedicated attention from corporate management and access to appropriate capabilities [81][82][78]. Also, a so-called "traction control function" which is responsible for setting and assessing the right metrics for customer adoption is beneficial to the success of BI programs [105].

For incubated startups, hard **performance** measures may include their survivability and outcome state (market reaction, sales turnover, profitability, growth, development of new markets/products, awards) or the number of new firms created per year [73]. Assessments of startups may also involve soft performance measures pertaining to professionalism, business skills, networks, knowledge or positive publicity [83][84].

Players within the **ecosystem** in which the startup and the BI operate include early adopters that play an important role in the testing of MVPs. During the development of a product, external mentors also act as important players in the ecosystem providing minimal tactical knowledge support. BIs seek to constantly expand their networks constituted of potential early-stage investors such as business angels or VCs, which in turn serves to reduce the search costs associated with the identification and selection of startups [28]. The BI model is applied in a diverse range of industries [51].

CORPORATE ACCELERATOR (OUTSIDE-IN)

There are two particular forms of accelerators to be differentiated. Corporate Accelerators (further referred to as CA) are a subtype of "startup/seed accelerators" (further referred to as "seed accelerators" or "accelerators"). While seed accelerators are typically independent institutions and either governmentally (non-profit) or privately (for-profit)

funded, CAs are particularly set up as subsidiaries of larger corporations and are therefore generally for-profit and funded by private sources [51][5][74].

The **strategic** goals of for-profit CAs' are mainly to achieve financial results through the commercialization of startups that are ready to enter the market and scale [50]. Additionally, CAs also seek to benefit from the integration of a diverse set of fast-moving innovation projects into their organization and achieve reductions of costs and risks [85]. Accelerators also serve to foster a company's ability to expand into new markets particularly if it is focused on non-core business innovations [2].

CA mainly gain **financial** revenues from the acquisition and future sales of their startups or IPOs. Although uncommon, revenue may also result from charging service fees including rent or business assistance. Equity investments are rare, since high investments into startups are associated with reduction in entrepreneurial drive in the founders of the startup and lower its attractiveness to future investors [2]. Given the quick growth or failure of accelerated ideas and in comparing CA with other collaboration programs, the financial risk level is classified here as relatively low and the investment level as medium.

Accelerators typically focus on a medium range [106] of seed and early stage startups with small teams [12]. The startups enter the CA programs in cohorts. They generally have minimal viable products and few to no customers [106]. The typical length of the collaborative arrangement ranges from three to six months, whereas most programs last three months [2].

As to the **structure**, the selection process is competitive, based on open application processes and set up cyclically in cohorts [2][74]. The application process for startups is usually based on an open call, where startups can apply and register online [28]. Accelerator programs both fund and support early startups with existing products or customers in their development and growth phase. Corporations typically advance teams into pilot projects, partnerships (corporation becomes a customer, distribution partner or investor) or acquisitions [2]. Petzov [86] suggests combining a CA with a BI in order to simultaneously target different market segments. Once a viable solution is validated with early adopters (by an initial incubation project), it is suggested to be scaled up for the mass market with the help of a CA. The location of a CA is typically on-site [87][2][75]) and thus bears the **cultural** risk of being too stringent, which may slow down the acceleration process. A short accelerator program with moderate corporate involvement, strong support from management, and minimal influence on a startup's operating business [2] offers needed flexibility to startup teams involved [106].

Regarding **resources**, CAs usually provide a small amount of seed capital but equity investments are rare. A physical working space is usually provided to companies for the duration of the program, (however, some accelerators run cohorts virtually [75]. Business assistance is provided through intense mentoring from internal and external experts [87]. Accelerator programs are often vertically specialized, meaning that their mentors have expertise in the industry in which the startups operate. In particular,

experts typically help with refining a concept or business model and market offerings through workshops with potential customers as well as pitching training for fundraising / human resource efforts [2]. Accelerators further offer a vast number of networking opportunities such as alumni engagement, demo-days or other relationship-building options. An unintended byproduct of structured and time-limited nature of such programs allow startups to enter and exit the programs in groups, which often serves to create positive group dynamics [2][4]. A CA is ideally managed by a general portfolio manager, who manages several business units and the market segmentation between old and new products [86]. Further, accelerator managers are necessary to provide startups with advice and access to the internal network as well as to ensure that the external innovations are used internally [2].

Performance measures are set very differently across partnerships, depending on the set aim or shared vision [5]. During its residency in the program, a startup typically aims to attain milestones such as a new product release, the acquisition of a major customer, or the receipt of a follow-on funding [106].

Particularly in regard to the financing environment, accelerators positively impact their regional startup **ecosystem** through their financing activities and investment spill-overs to other corporations [88][89]. The range of industries engaging in accelerator programs is broad. However, technology-related corporations are especially prominent in the ecosystem [106].

CORPORATE COMPANY BUILDER (HYBRID)

The literature on definitions and general information about CCB is scarce. To present relevant information on this collaboration option regardless, the following elaborations mostly discuss typical characteristics of CCBs through case examples. CCB may be either set up as an independent business model or may be operated by a corporation in addition to its core-business. However, apart from their organizational structures, no significant difference was observed between the two types. For the sake of completeness however, both types are studied here, by reference to case studies of CCB Rocket Internet SE (RI) (independent) and the CCB operated by Switzerland's leading telecoms company Swisscom (corporate-led), which is currently in its development phase.

The main **strategic** objective of a CCB lies in the fast and agile experimentation of many new ideas, followed by the building of new companies managed by an externally acquired team towards financial gains. Here, the focus of innovation is typically distant from the corporation's core business focus [90]. It typically takes several years (up to nine or more) to go from idea to a successful company, even though CCBs follow the common practice of copying existing business models and their implementation in emerging and developing markets/countries. [108].

The primary source of **financial** revenue of a CCB is the sale of its ventures/stakes. It may also benefit financially from profits generated by companies it has created, developed and that holds on to [92]. CCBs often require high investments funded by the corporation, even though external private investors are typically involved as well. The

main cost drivers, as in the case of RI's CCB are reported as operational and personal expenses [93].

CCBs generally aim at building a large number of seed **startups**. To co-execute internally generated startup-ideas, CCBs recruit cohorts of external management teams. Since startup ideas typically originate from a **structured** internal approach, exemplarily based on an investment thesis or a screening process for replicable business opportunities, startup teams typically do not approach a CCB by pitching for funding. In the case of RI, the HR process is streamlined, and in many cases, highly experienced managers from prestigious firms are hired to act as co-founders with attractive salaries [91][92]. Typically, CCB collaboratively supports its ventures all the way, until they either exit the venture or the venture is dismissed. A CCB is usually more hands-on and has a bigger stake in its ventures than CVC firms. Also, it usually holds onto its ventures longer than a BI or a CA. CCBs work on a portfolio of ideas in parallel and produce startups in a "serial production" mode [94].

The explicit definition and communication of shared values within the startup team is a major key factor in aligning the corporate and startup **cultures** [108].

With regard to **resources**, RI provides its startup ventures with financial capital, backed by a range of strategic investors. The startups can thus focus on growing the company and leaving the elaborate fundraising process to the CCB experts. Office space is often typically provided as an off-site co-working space [108]. The ventures are typically under the lead of the startup founders and benefit from working in tandem with a legion of in-house talent [49][22], which supports them in turning ideas into actual businesses. Entrepreneurs further profit from knowledge or career opportunities across a CCB's network of companies or of the broader ecosystem, by events such as university masterclasses, the participation in tech summits or in hackathons [93].

In the case of RI, the measurement of Key **Performance** Indicators (KPIs) is considerable significance. RI carried out a diligent and detailed comparison of its venture's performance against its existing portfolio. This allows for potential problems to be identified and solved swiftly through established best practices. Typical KPIs include: the ROI, the success-rate of ventures (typically 20% of startups must be successful), follow-up financing for startups to validate the ideas, the number of successfully established startups, the number of exits and soft factors such as talent acquisition or the satisfaction of employees [95].

CCBs highly leverage the **ecosystem** for potential startup employees. CCB further closely works with potential investors to ensure liquidity. Partnerships with several actors in the ecosystem is especially helpful in gaining new ideas to execute MVP testing or to outsource internally unavailable resources [95]. Interviewee E [108] observed that the few existing CCBs in Switzerland or Germany are mostly focused on innovations in industries pertaining to e-commerce and technology. However, the engagement of many other industries is incipient.

CO-WORKING SPACE (OUTSIDE-IN)

Co-working spaces (abbreviated as CoS) are generally understood as open, collaborative, community-based workspaces for like-minded individuals, early-stage startups or other parties engaged in non-routine creative work. CoS offer flexible workspace in the form of hot (flexible, shared) desks, private (dedicated) desks or offices [75] and are typically operated by for-profit corporations. These offices distinguish themselves from traditional ones with an explicit emphasis on social interaction and their aesthetic and material design of the spaces [96]. CoS are generally understood as open, collaborative, community-based workspaces for like-minded individuals, early-stage startups or other parties engaged in non-routine creative work.

The main **strategic** objective of CoS is to detect emerging trends and identify opportunities to innovate. By providing an infrastructure specially designed to facilitate social interaction, CoS foster serendipitous innovativeness in yet-to-be-explored business fields, which leads to improved or new business models [97][98].

The **financial** revenue stream of CoS mainly consists of its rent fees for space or membership dues [99]. The main cost drivers of a CoS are its operating costs such as property rent and office staff. Due to the simple concept of CoS, both the investment- and risk level are relatively low.

CoS are typically small in size including few members (in the case of **startups** typically in their early-stage) who utilize the office space, meet frequently and develop strong relationships [97]. CoS generally do not have established graduation criteria or competitive application processes. They are motivated to retain member companies as a sustainable revenue stream (versus graduating companies) [75].

The application process for startups is thus non-competitive, whereas the admission is based on a membership fee. Due to its social rather than operational **structural** nature of collaboration, there is no specific or active growth phase support. CoS are usually set up as stand-alone facilities, where the spaces are purposefully divided into working areas and social interaction areas [99][100].

In the case of CoS, **cultural** differences may be seen as an opportunity rather than a challenge. Opening up to an entrepreneurial environment serves as a source of inspiration for internal employees, which is beneficial to a more innovative culture [100][75].

As to the discussion of **resources**, CoS provide office-spaces and social spaces. Such an environment stimulates social interaction, trust and feedback between experts, which serves to promote creativity and the exchange of ideas and knowledge [100]. The infrastructure may include industry-specific equipment or even shared labs. Knowledge-development and network promotion in some cases may further be enabled through a variety of organizational platforms, optional and informal events, and learning opportunities [99]. The startup support level may thus be considered as relatively low.

Extant literature merely suggests soft factors to measure the **performance** of CoS, since the idea of CoS is heavily focused on the social business environment aspect. Jacobs [100] proposes the enhancement of an employee's job identity as a soft KPI. As a hard

performance measure, the increase in external brand awareness may be suitable [99]. Due to a typically low level of control and interference by the operating corporation, the **ecosystem** leverage is limited. Typical industries of corporations offering CoS are traditional industries such as consulting, but also creative and tech industries.

STARTUP PLATFORM PROGRAMS (INSIDE-OUT)

In their seminal paper of 2015, Weiblen & Chesbrough [11] advanced the theory on startup platform programs (hereinafter referred to as SPP) and characterized them as initiatives with a goal to stimulate complementary external innovation in order to push an existing corporate innovation (the platform).

The **strategic** goal of SPP is predominantly customer-centric. SPP identify and work with startups that are most aligned with the corporation's customer base from a short-to-mid-term perspective. The corporation then provides startups with an already established corporate technology platform upon which to (indirectly) build such a customer-centric innovation. There is no particular strategic business focus.

When startups commercialize their solutions to either existing or new corporate customers, the corporation makes **financial** revenue on license sales of the platform and on other software utilized by the customer in the process [11]. At a high level, the main cost drivers for SPPs are costs of HR and operating costs, including certification- as well as go-to-market-costs for taking high value startups to market [109]. Weiblen & Chesbrough [11] classify the investment level as low and the financial risk level as very low. SPP typically engage with a very high number of seed to early stage **startups** that are oriented on small solutions, with a strong corporate focus in the B2B software space with an existing marketable product. A startup typically goes through a rigorous development phase of 10-14 weeks, followed by a corporate verification of the MVP [109].

SPP reach out to startups through referrals, events or partnerships with incubators or accelerators, followed by an application and an internal validation stage. SPP's graduation objective is not to acquire the startups, but to foster the creation of a mainstream solution that solves customer problems. Typically, an SPP is organizationally anchored as a separate program office, under the leadership of a member of the executive board, and closely aligned with resource-providing partner organizations [11].

Cultural differences don't play a prominent role in SPPs, since the partnering startups typically work on their solutions independently. However, mutually defined boundaries such as basic contracts that address issues such as IP protection, confidentiality issues etc., greatly simplify the relationship [109].

SPPs do not provide startups with financial **resources** and since the programs are generally set up virtually, no physical support is needed. To assist startups in developing and connecting their solutions to the SPP platform, technical/business assistance is offered [11]. The assistance provided may be in relation to technology stack, testing, development and demo of licenses, architecture reviews, support from technical in-house experts and go-to-market readiness including customer engagement. Across all program phases (recruitment, technology-development and go-to-market), appropriately

experienced and/or skilled staff are needed to run and support the initiative. The roles of solution architects and go-to-market support are especially important [109].

Performance may be measured by the total number of startups a corporation engages with, the number of startups developing newer technology frameworks (e.g. Blockchain, Industry 4.0), the number of solutions purchased or piloted by customers, the number of startups that are able to raise rounds from professional venture capitalists (or get acquired), and the number of startups that have created entirely new industries/categories with their innovative solutions [109].

SPPs profit from their **ecosystem** (e.g. by being able to source startups from the global network), and vice versa contribute to the ecosystem by providing startups with a very legitimate path to technical development and onward commercialization. Interviewee F [109] does not observe SPP to be predominantly adopted by any typical industry in particular.

INNOVATION LAB (OUTSIDE-IN)

According to Gryszkiewicz et al. [101], the strategic aspiration of innovation labs is long-term oriented, and its aims primarily at “fostering systemic change” and “driving a collective social impact” through indirect core, adjacent, or new-to-the-business innovation.

ILs do not generate any direct **financial** revenue. The main cost drivers are HR costs and facilities. An IL’s financial investment level is relatively low and the risk level is very low [107].

Typically, IL focus mostly on a relatively high scale of early-stage **startups** that are at the forefront of disruptive trends. It is also common for teams to partner with more mature startups to supplement a lack of internal capability. For example, a startup may partner with an established entity to gain programming skills for prototyping and support in MVP development [51]. The typical time horizon of engagement spans up to three months [107].

ILs typically screen for disruptive startups and trends. The **structure** is flexible and allows ideas to flow through a top-down approach, by following a top-down theme, or a bottom-up approach through events or referrals [101]. Consequently, the application process is very open and non-competitive [107], and startups are typically supported through the whole development phase). This includes various stages of startup development such as internal identification of a customer pain point, collaborative ideation and clear prioritization of solutions, POC development and creation of an MVP [51][101]. ILs are often set up as a stand-alone lab-type facilities, separate from internal R&D units.

Due to the IL’s typical affiliation to startup ecosystems and its off-site character, **cultural** differences are not of concern in the screening process [107]. Testing and running innovation projects within an IL doesn’t influence the corporate culture because ILs are not physically attached to the corporate space and IL contributors are removed from corporate employees [51].

ILs may sometimes, but not necessarily always, offer physical **resources** to startups. Accenture's Fintech Innovation Lab accelerator for example, provides 15 startups with 30 desks over a period of three months [102]. The startups are typically offered access to technologies as well as coaching and consultation on design and prototyping matters [51][101]. Accenture's Fintech Innovation Lab provides its startups with mentorship from internal senior executives and banking professionals. Furthermore, labs offer relationship-building and networking opportunities through meetings and training sessions [43]. Innovation labs consist of small internal innovation teams that operate separately from the internal R&D unit [51].

Performance is measured by the success of pilots, identification of new customer-oriented, cost-effective and easy-to-implement solutions [43] and/or the acquisition of new talent [102]. From 2013 to 2015, the number of innovation labs has particularly surged in industries of consumer goods, financial services, media & publishing, and technology [12]. Aside from startups, ILs seek contributions from a wide range of participants, cutting across the boundaries of industries, professions and cultures (e.g. large digital leaders, salespeople, engineers or local experts [101][103]).

DISCUSSIONS AND CONCLUSION

A discussion of nine prevalent options of collaborative open innovation between a large corporation and a startup was provided. There is limited prior comparative research available on such collaboration options, and the present paper contributes to the open innovation literature by providing a comparison of corporate venture capital, mergers & acquisitions, procurement, business incubators, corporate accelerators, corporate company builders, co-working spaces, startup platform programs and innovation labs.

The presented body of work is novel as the proposed framework provides a comparison of those collaboration options along a set of characteristics, namely: strategy, financing, startup target, structure, culture, resources, performance measurement and ecosystem-leverage. The findings provide clarity on the commonalities and differences between the collaboration options, and thereby contribute to the literature on the subject. Hence, the framework is of utility to both, managerial practice and academic research.

On one hand, the framework is of benefit to managerial practice in providing the basis for the foundational knowledge of prevalent collaborative open innovation options. Dedicated departments and managers are instated in a number of large businesses. For innovation managers, the framework is of benefit in assessing the compatibility of a given option with a corporation's prerequisites. For instance, when considering pursuing an acquisition of a startup, the framework identifies that such a collaboration often places a high demand on corporate support. If provision of this support, whether in terms of time, human resources or any capability required for creating synergy effects is not feasible, the pursuit of this option may not be ideal. Moreover, if the entry into a

new market is the main strategic goal, the corporation may consider pursuing the CVC option instead.

Gaps in existing literature are also discussed and may aid researchers in the identification of future areas of research in the field of open collaborative innovation between large corporations and startups. For instance, the literature on more traditional partnership models such as M&A and procurement is relatively scarce when assessing these practices from a collaborative point of view (rather than as a sole corporation). Similarly, it is noted that despite the growing practice of corporate company builders, almost no scientific literature can be found either in academia or company reports addressing these strategies. To address this gap, important interrelationships between incubators, accelerators and corporate company builders are highlighted.

With some collaboration options, the information presented in this thesis is based on very limited data. Even though at their essence, collaboration options can be defined and assigned to specific characteristics, their actual prevalence and practice vary not only across corporations, industries and geographical regions, but also across time. The review further demonstrates that terminologies of options vary and are used differently by different practitioners. It is important to note, that definitions as presented here will likely evolve over time. It is anticipated that best work practices will evolve, leading to a smaller number of commonly implemented options, but the optimal implementation of which, is far better understood. The study contributes to the literature by providing generally-applicable definitions of the discussed options and highlighting their characteristics.

An obvious gap of literature concerns the research of collaborative open innovation practices of procurement, M&A and CCBs. Thus far, academic research on collaboration options has primarily focused on the more traditional options. Further research on the said options and their characteristics is therefore warranted. Quantitative studies in examining conclusions drawn from previous qualitative research is also warranted as it would serve to provide a reliable and valid bases for assessing collaborative open innovation options. Future studies should also investigate the role of corporate innovation managers, best practices as well as practical tools and guidelines on which option to consider when pursuing innovation through collaboration with external startups.

APPENDIX A (1/2): TAXONOMIC FRAMEWORK ON PREVALENT OPTIONS OF COLLABORATIVE OPEN INNOVATION

Criteria	Sub-Criteria	Archetype	Outside-In	Outside-In	Outside-In	Hybrid	Outside-In	Co-Working Space	Inside-Out	Outside-In	
Strategy	Main Strategic Goals	Concrete Criteria Direct Innovation Indirect Innovation Growth Business Future Business	Corporate Venture Capital	Merger & Acquisition	Procurement	Business Incubator	Corporate Accelerator	Corporate Company Builder	Co-Working Space	Startup Platform Program	Innovation Lab
	Strategic focus		X	X	X	X	X	X	X	X	X
	Financial returns		X	X	X	X	X	X	X	X	X
	Underlying capital goals		1) Entering new markets 2) Insights and influence	1) Acquiring 2) Solving business problems 3) Entering new markets	1) Solving business problems (quick, at low risk)	1) Customer-centric 2) Entering new markets	1) Efficiency 2) Scalability 3) Entering new markets	1) Copying existing building new companies 2) Experimentation 3) Entering new markets	1) Trend detection 2) Solving business problems 3) Corporate branding	1) Platform establishment 2) Solving business problems 3) Corporate branding	1) Trend detection 2) Solving business problems 3) Drive social impact
Strategic Term Orientation	Time frame of partnership	Mid-term	Long-term	Short-term	Long-term	Short-term	Short-term	Short-term	Short-mid-term	Long-term	
Financial Stream	Equity investments		X			X	Limited or no				
	Sponsorships / funding	Public									
	Sales / Exit	Private	X		X		X				
	Service fees	Buy R&D Platform usage Attractions/Support		X		X					
Main Cost Drivers	Capital investments, HR, operational costs		X								
	HR, innovation, and operational costs		High	Medium	Low	High	Medium	High	Low	Low	Facilities, HR
	High		High	Medium	Low	High	Medium	High	Low	Low	Facilities, HR
	High		High	Medium	Low	High	Medium	High	Low	Low	Very low
Startups	Characteristics	Scale (# of startup collaborations)	Very small	Small	Small	Medium-large	Medium	Small	Very large	Medium	Large
	Startup stage		Early-stage	Late	Early-stage	Seed	Seed-early	Early	Seed-early	Seed-early	Early (late)
	Startup types		Small with high growth-potential, relevant for strategy	Already successfully developed	Starting with existing customers and testable and marketable/adaptable product or service	Individual, tech- and customer-focused startups	Cohort of small teams, with existing MVP or customers	Cohort of executing management teams	Intense space users, proactive, outgoing	Corporate-centric platforms, corporate software space (big data and real-time analysis), with marketable product	Startup representing disruptive trends
	Time horizon of engagement		1-3 years	0.5 - 3 years	3 - 5 years	3 - 6 months	1-3 years	1-3 years	1-3 years	1-3 years	2-3 months
Startup Application Process	Screening / Selection process		Scanning for investment opportunities or sector-specific applications, due diligence	Scanning for acquisition targets, due diligence	Demand-led, push (call for offers) or opportunistic, pull (application for interest fields) validation of mission-fit opportunities, evaluation	Application selection with validation of mission-fit	Cyclical application selection based on interviews	Application for membership	Several outreach channels, followed by application on homepage, validation	Push-and pull screening for trends and startups, very open, non-competitive	Push-and pull screening for trends and startups, very open, non-competitive
	Growth phase support		Highly selective, competitive	Highly selective, competitive	Open, non-competitive	Open, non-competitive	Open, highly competitive	Open, non-competitive	Very open, non-competitive	Very open, non-competitive	Very open, non-competitive
	Graduation outcome		Founding, development, growth	Growth	Development, growth	Founding, development, growth	Development, growth	Development, growth	Development, growth	Development, growth	Development
	Organizational anchoring		Pilot projects, IPO, exits or sale of stakes	Successful integration, synergies	POC, (acquisition)	MVP verification by early adopters, corporate service or business, long-term partnerships or acquisition	Demo day, pilot projects, partnerships or acquisition	Membership retention	Membership retention	Certification of minimum problems, showcasing to larger customers	Verification by customers
Structure	General Level of Corporate Control		High	High	High	High	Medium	Low	Low	Low	Low
	Archetype		Operator	Location	On-site or Off-site	On-site	Off-site	Off-site	On-site	Off-site	Off-site
			On-site	On-site	On-site or Off-site	On-site	Off-site	Off-site	On-site	Off-site	Off-site
			High	High	High	High	High	High	High	High	High

APPENDIX A (2/2): TAXONOMIC FRAMEWORK ON PREVALENT OPTIONS OF COLLABORATIVE OPEN INNOVATION

Criteria	Archetype		Outside-In	Procurement	Business Incubator	Accelerator	Hybrid	Outside-In	Co-Working Space	Inside-Out	Outside-In
	Sub-Criteria	Concrete Criteria									
Culture	Knowledge of Cultural Differences	Corporate Venture Capital	Change management work stream to culture change behaviors, creating a identification with new brand	DBU employees with entrepreneurial background, acting as cultural initiators	Portfolio manager pivots and shields startup against corporate complexity	Short time spent with corporate involvement, commitment of company executives, no equity investments	Shared values, minimization of frictions, independence from mother company	Differences serve as a source of inspiration	Mutually defined boundaries (basic criteria e.g. IP protection, confidentiality)	Startup Platform Program	Innovation Lab
			Minimization of corporate control	Change manager, people-orientation and negotiating skills	Portfolio manager, software developer and corporate complexity	Portfolio manager, accelerator manager, members	Highly experienced former entrepreneurs, domain-specific talent from prestige firms as co-funders, who coach and mentor startups	Solution architects (development), go-to-market mandate	Small internal innovation-teams with rapid delivery	Physical detachment of operations	
Resources	Program Specific Resources provided to Startups	Corporate Venture Capital	Strong integration of top-level senior executives and legal-and division expertise	Procurement team with good access to diverse divisions, strong negotiating- and interesting skills	Portfolio manager, software developer and in-house experts	Office space, internet, specialized equipment	Office space, internet, specialized equipment	None	None	None	None
			Human resources / Skillset	Change manager, people-orientation and negotiating skills	Portfolio manager, software developer and in-house experts	Portfolio manager, accelerator manager, members	Highly experienced former entrepreneurs, domain-specific talent from prestige firms as co-funders, who coach and mentor startups	Solution architects (development), go-to-market mandate	Small internal innovation-teams with rapid delivery	Physical detachment of operations	
Resources	Physical capital	Corporate Venture Capital	None	(Office space)	Office space and other facilities	Office space	Office space	Office space, internet, specialized equipment	None	None	None
			Financial capital	Synergy	Synergy	Office space	Office space	Office space, internet, specialized equipment	None	None	None
Resources	Business assistance & knowledge	Corporate Venture Capital	Advice and mentorship on business plan development, technical and market insights, collective learning	POC development, intense support and knowledge on corporate infrastructure-integration	Advice and expertise from entrepreneurs, mentors, industry & social networks, fundraising workshops	Small amount of seed capital, limited or no equity stake	Operational hands-on support, significant economies of scale, cross-venture expert-knowledge, events	Technical assistance, go-to-market readiness, customer engagement	Technical assistance, go-to-market readiness, customer engagement	Technical assistance, go-to-market readiness, customer engagement	Access to technologies, prototyping, coaching and mentoring from internal experts
			Network	Synergy	Mediation services, credibility building, credibility	Mediation services, credibility building, credibility	Events, cross-venturing	Customer identification and direct/indirect customer contact, corporate's customer base (outreaching events)	Customer identification and direct/indirect customer contact, corporate's customer base (outreaching events)	Networking sessions	Networking sessions
General Startup Support Level	General Startup Support Level	Corporate Venture Capital	Medium-high	Medium	High	High	Very high	Low	Medium	Medium	Medium
			Startup Performance Measures	ROI, sales growth rate, earnings per share, net income-to sales or ROA, technology development, annual investments / growth number of employees	Aligned with departmental goals, sales revenue, shares, EBITDA, ROVA, ROIC, number of successful POCs, new customer acquisitions, new innovation fields explored	Sales turnover, profitability, growth, development of new markets or products, awards, number of new firms created	Project-individual milestones, typically product releases, customer acquisition, partner funding	Strict and detailed performance comparison against existing portfolio; ROI, success-rate of startups, number of exits	Total number of startup engagements, number of startups developing on newer technology frameworks, number of solutions purchased/implemented by startups or acquisitions by customers, number of startups that have created entirely brand new industries	Number/success of pilot testing, MVP performance, cost-efficiency	Quality of solutions, ease of solution implementation, talent acquisition
Performance	Hard	Corporate Venture Capital	Synergy effects, mostly income-related or ROI, IIR	No specific	Increase in sales, business skills, networks, knowledge, positive publicity	Stagnant, early adopters, financial investors	Stagnant, early adopters, financial investors	Stagnant, early adopters, financial investors, existing partners	Stagnant, early adopters, financial investors, existing partners	Stagnant, early adopters, financial investors, existing partners	Stagnant, early adopters, financial investors, existing partners
			Soft	Subjective satisfaction measures	Subjective satisfaction measures	Subjective satisfaction measures	Subjective satisfaction measures	Subjective satisfaction measures	Subjective satisfaction measures	Subjective satisfaction measures	Subjective satisfaction measures
Ecosystem	Community	Corporate Venture Capital	Typically integrated actors, institutions or organizations	Stagnant, law firms, investment banks, advisory, consultants	Stagnant, law firms, investment banks, advisory, consultants	Stagnant, law firms, investment banks, advisory, consultants	Stagnant, law firms, investment banks, advisory, consultants	Stagnant, law firms, investment banks, advisory, consultants	Stagnant, law firms, investment banks, advisory, consultants	Stagnant, law firms, investment banks, advisory, consultants	Stagnant, law firms, investment banks, advisory, consultants
			Environment	Typical industry	Technology	Technology	Technology	Technology	Technology	Technology	Technology
Ecosystem	General Level of Ecosystem Leverage	Corporate Venture Capital	High	Medium	Medium	High	High	Low	High	High	High
			Consumer goods, financial services, media & publishing, technology	Consumer goods, financial services, media & publishing, technology	Consumer goods, financial services, media & publishing, technology	Consumer goods, financial services, media & publishing, technology	Consumer goods, financial services, media & publishing, technology	Consumer goods, financial services, media & publishing, technology	Consumer goods, financial services, media & publishing, technology	Consumer goods, financial services, media & publishing, technology	Consumer goods, financial services, media & publishing, technology

APPENDIX B: LIST OF INTERVIEWEES CITED

Interviews					
Interviewee	Position	Main Collaboration Option Reference	Corporate Case Example	Date	Location
Interviewee A	Managing Partner at Polytech Ecosystem Ventures	Corporate Venture Capital	Stanley Black & Decker (Stanley Ventures)	August 28th, 2017	San Francisco, CA, USA
Interviewee B	Head of Technology & Innovation at Swisscom Outpost	Accelerator Incubator	Swisscom	August 29th, 2017	Palo Alto, CA USA
Interviewee C	Business Developer at German Accelerator	Accelerator	German Accelerator	August 29th, 2017	Redwood City, CA, USA
Interviewee D	Startup & Open Innovation Developer at AXA Winterthur	Innovation Labs	AXA Winterthur	September 18th, 2017	Zuerich, ZH, Switzerland
Interviewee E	Open Innovation Manager at Swisscom	Procurement Corporate Company Builder	Swisscom	September 29th, 2017	Video-Conference (Interviewee: Zuerich, ZH, Switzerland)
Interviewee F	Vice President and Global Program Head of Startup Focus	Platform Program	SAP SE	September 29th, 2017	Video-Conference (Interviewee: Palo Alto, CA, USA)

REFERENCES

- [1] Yoo, Y., Henfridsson, O. and Lyytinen, K. (2010). The new organizing logic of digital innovation: An agenda for information systems research. *Information Systems Research*, 21(4), 724–735.
- [2] Kohler, T. (2016). Corporate accelerators: Building bridges between corporations and startups. *Business Horizons*, 59(3), 347–357.
- [3] Dee, N., Gill, D., Weinberg, C. and Mctavish, S. (2015). Startup Support Programmes: What's the difference? Nesta. Retrieved from https://www.nesta.org.uk/sites/default/files/whats_the_diff_wv.pdf.
- [4] Cohen, S. (2013). What Do Accelerators Do? Insights from Incubators and Angels. *Innovations*, 8 (3), 19-25.
- [5] Isabelle, D. (2013). Key Factors Affecting a Technology Entrepreneur's Choice of Incubator or Accelerator. *Technology Innovation Management Review*, 16–22.
- [6] Kim, J.-H. and Wagman, L. (2012). Early-Stage Financing and Information Gathering: An Analysis of Startup Accelerators. SSRN Scholarly Paper. Rochester, NY: Social Science Research Network. Retrieved from <http://papers.ssrn.com/abstract=2142262>.
- [7] Chesbrough, H. (2006). Open innovation: A new paradigm for understanding industrial innovation. In *Open Innovation. Researching a New Paradigm*, ed. H. Chesbrough, W. Vanhaverbeke & J. West, 1-12. New York, NY: Oxford University Press.
- [8] Aubert, B. A., Kishore, R. and Iriyama, A. (2015). Exploring and managing the “innovation through outsourcing” paradox. *Journal of Strategic Information Systems*, 24(4), 255–269.
- [9] Chesbrough, H. (2003). *Open Innovation: The New Imperative for Creating and Profiting from Technology*. Cambridge, MA: Harvard Business School Press.
- [10] Schättgen, N. and Mur, S. (2016). The age of collaboration. Retrieved from http://www.adlittle.com/downloads/tx_adlreports/ADL_MatchMaker_The_Age_of_Collaboration.pdf.

- [11] Weiblen, T. and Chesbrough, H. W. (2015). Engaging with Startups to Enhance Corporate Innovation. *California Management Review*, 57(2), 66–90.
- [12] Ringel, M., Taylor, A. and Zablit, H. (2016). The Most Innovative Companies 2016: Getting “Not Invented Here.” The Boston Consulting Group (BCG). Retrieved from <https://media-publications.bcg.com/MIC/BCG-The-Most-Innovative-Companies-2016-Jan-2017.pdf>.
- [13] Neyens, I., Faems, D. and Sels, L. (2010). The impact of continuous and discontinuous alliance strategies on startup innovation performance. *International Journal of Technology Management*, 52(3/4), 392-410.
- [14] Banerjee, S., Bielli, S. and Haley, C. (2016). Scaling Together. Overcoming Barriers in Corporate-Startup Collaboration. Nesta. Retrieved from <https://www.nesta.org.uk/report/scaling-together-overcoming-barriers-in-corporate-startup-collaborations/>.
- [15] Spender, J.-C., Corvello, V., Grimaldi, M. and Rippa, P. (2017). Startups and open innovation: a review of the literature. *European Journal of Innovation Management*, 20(1), 4–30.
- [16] McCafferty, D. (2015). Why Enterprises and Startups Collaborate. *CIO Insight*, 10/15/2015, 2.
- [17] Oshri, I., Kotlarsky, J. and Gerbasi, A. (2015). Strategic innovation through outsourcing: The role of relational and contractual governance. *Journal of Strategic Information Systems*, 24(3), 203–216.
- [18] De la Tour, A., Soussan, P., Harlé, N., Chevalier, R. and Duportet, X. (2016). From Tech to Deep Tech – Foster in Collaboration between Corporates and Startups. The Boston Consulting Group (BCG) Media Publication. Retrieved from <http://media-publications.bcg.com/from-tech-to-deep-tech.pdf>.
- [19] Engel, J. and del-Palacio, I. (2009). Global networks of clusters of innovation: Accelerating the innovation process, *Business Horizons*, no 5., vol. 52, 493-503.
- [20] Mind the Bridge (Ed.) (2017). European Corporate Innovation Outposts - The Who's Who. San Francisco V 1.0, March 2017 Crowd Companies: The Corporate Innovation Imperative. Retrieved from <http://www.web-strategist.com/blog/2017/02/21/report-the-corporate-innovation-imperative/>.
- [21] Bonzom, A. and Netessine, S. (2016). How do the world's biggest companies deal with the startup revolution. Retrieved from <http://698640.hs-sites.com/500corporations>.
- [22] Sarbacher, M., Schildhauer, T., Schleicher, T. and Näfelt, A. (2016). Die 2. Welle der Open Innovation. Skubsch & Company and Institute of Electronic Business. [PowerPoint slides]. Retrieved from <https://www.jku.at/ham/content/e35389/e318923/e318945/e318946/DownloadVortragThomasSchildhauer.pdf>.
- [23] Hisrich R.D. and Peters, M.P. (1998). *Entrepreneurship: Starting, Developing, and Managing a New Enterprise* (4th Ed), Irwin, Chicago, IL: Irwin Publishing.
- [24] Stevenson, H.H. and Jarillo, J.C (1990). A paradigm of entrepreneurship. *Entrepreneurial management Strategic Management Journal*, 11, 1990, 17-27.

- [25] Lewis, M. and Moultrie, J. (2005). *The Organizational Innovation Laboratory*. Wiley, Volume 14 Number 1 March 2005.
- [26] Chanal, V. (2010). The Difficulties involved in Developing Business Models open to Innovation Communities: the Case of a Crowdsourcing Platform. *M@n@gement*, 2010/4 (Vol. 13).
- [27] Spinuzzi, C. (2012). Working alone together: coworking as emergent collaborative activity. *Journal of Business Technology, Communication* (26), 399–441.
- [28] Bruneel, J., Ratinho, T., Clarysse, B. and Groen, A. (2012). The evolution of business incubators: Comparing demand and supply of business incubation services across different incubator generations. *Technovation*, 32(2), 110-121.
- [29] Peter, L. (2018). *Gestaltungsbereiche für Grossunternehmen zur Kollaboration mit Startups: Das Startup-Collaboration-Model*. Unpublished paper (submitted to *Die Unternehmung*, 2018).
- [30] Hevner, A., March S., Park, J. and Ram, S. (2004). Design science in information systems research. *MIS Quarterly*, 28(1), 75–105.
- [31] Cumbie, B. A., Jourdan, Z., Peachey, T., Dugo, T. M., and Craighead, C. W. (2005). Enterprise resource planning research: where are we now and where should we go from here?. *JITTA: Journal of Information Technology Theory and Application*, 7 (2), 21-36.
- [32] Palvia, P. (2015). Methodological and topic trends in information systems research: A meta-analysis of IS journals. *Communications of the Association for Information Systems*, 37 (1), 30.
- [33] Gough, D., Oliver, S. and Thomas, J. (2012). *An Introduction to Systematic Reviews*. Thousand Oaks, CA: SAGE Publications.
- [34] Petticrew, M. and Roberts, H. (2006). *Systematic reviews in the social sciences: a practical guide*. Hoboken, New Jersey: Blackwell Publishing.
- [35] Mayring, P. (2002). *Einführung in die Qualitative Sozialforschung: Eine Einleitung zu qualitativem Denken* (5. Auflage). Basel: Beltz Verlag.
- [36] Patton, M. Q. (2015). *Qualitative Research & Evaluation Methods: Integrating Theory and Practice* (4 ed.). Thousand Oaks, CA: SAGE Publications.
- [37] Datenbank-Infosystem (DBIS) (2019). *Universitätsbibliothek St. Gallen*. Retrieved from http://rzb1x10.uni-regensburg.de/dbinfo/fachliste.php?bib_id=ubsg&lett=l&colors=&ocolors=.
- [38] Mumford, E. (2001). Advice for an action researcher. *Information & People*, Vol. 14, Iss: 1, 12-27.
- [39] Coleman, B.L., Fadel, S. A., Fitzpatrick, T. and Thomas S.-M. (2017). *Influenza and Other Respiratory Viruses*. John Wiley & Sons Ltd., Vol 12, No 3.
- [40] Brewerton P. and Millward, L (2001). *Organisational research methods*. London: Sage.
- [41] Brandenburg, M., Govindan K., Sarkis, J. and Seuring, S. (2014). Quantitative Models for Sustainable Supply Chain Management: Developments and Directions. *European Journal of Operational Research*, 233 (2), 299–312.

- [42] Reim, W., Parida, V. and Örtqvist, D. (2015). Product–Service Systems (PSS) Business Models and Tactics – A Systematic Literature Review. *Journal of Cleaner Production*, 97, 61–75.
- [43] Accenture (2015). Harnessing the power of entrepreneurs to open innovation. G20 Young Entrepreneurs Alliance Summit, Istanbul.
- [44] Chesbrough, H. (2002). Making sense of corporate venture capital. *Harvard Business Review*, 80 (3), 90–99.
- [45] Lerner, J. (2013). Corporate Venturing. *Harvard Business Review*, 2013.
- [46] Andersson, M. and Xiao, J. (2016). Acquisitions of start-ups by incumbent businesses: A market selection process of “high-quality” entrants?. *Research Policy*, 45(1), 272–290.
- [47] Velten, C., Michel, J. and Özdem, A. (2016): Digital Labs - How to build, how to run. Strategien zum erfolgreichen Aufbau und Betrieb von digitalen Innovation Labs in großen und mittelständischen Unternehmen. Kassel: Crisp Research.
- [48] Handelsblatt (2017). Ein Company Builder gibt Antworten auf wichtige Geschäftsfragen. Handelsblatt Online. Retrieved from <http://unternehmen.handelsblatt.com/company-builder.html>.
- [49] Jäger, M. (2016). Company Builder am Beispiel von Rocket Internet. Founders Owl. Retrieved from <http://www.founders-owl.de/glossar/company-builder/>.
- [50] Mocker, V., Bielli, S. and Haley, C. (2015). Winning together – A Guide to Successful Corporate Startup Collaboration. Retrieved from <https://www.nesta.org.uk/publications/winning-together-guide-successful-corporate-startup-collaborations>.
- [51] Brigl, M., Hong, M., Roos, A., Schmiegl, F. and Wu, X. (2016). Corporate venturing shifts gear. How the largest companies apply a broad set of tools to speed in-novation. The Boston Consulting Group. Retrieved from http://image-src.bcg.com/Images/BCG-Corporate-Venturing-Shifts-Gears-Apr-2016_tcm102-150374.pdf.
- [52] Gompers, P.A and Lerner, J. (2004). *The Venture Capital Cycle* (2nd ed.). Cambridge, CA: MIT Press.
- [53] Dushnitsky, G. and Lenox, M. (2006). When does corporate venture capital investment create firm value? *Journal of Business Venturing*, 21, 753–772.
- [54] Brigl, M., Roos, A., Schmiegl, F. and Watten, D. (2014). Incubators, Accelerators, Venturing, and More: How Leading Companies Search for Their Next Big Thing. The Boston Consulting Group. Retrieved from https://www.elkarbide.com/sites/default/files/incubators_accelerators_ven_turing_more_jun_2014_tcm80-163819.pdf.
- [55] Drover, W., Busenitz, L., Matusik, S., Townsend, D., Anglin, A. and Dushnitsky, G. (2017). A Review and Road Map of Entrepreneurial Equity Financing Re-search. *Journal of Management*, 43(6).
- [56] Ferrary, M. and Granovetter, M. (2009). The role of venture capital firms in Silicon Valley’s complex innovation network. *Economy and Society*, 38(2), 326–359.

- [57] KPMG. (2015). On the road to corporate startup collaboration. Retrieved from <https://assets.kpmg.com/content/dam/kpmg/pdf/2016/04/On-the-road-to-corporate-startup-collaboration-16-12-2015.pdf>.
- [58] Baierl, R., Anokhin, S. and Grichnik, D. (2016). Coopetition in corporate venture capital: the relationship between network attributes, corporate innovativeness, and financial performance. *International Journal of Technology Management*, 71(1/2), 58–80.
- [59] Coyle, J. F. and Polsky, G. D. (2013). Acqui-hiring. *Duke Law Journal*, 63(2), 281-346.
- [60] Fantasia, R. (2016). Acqui-hiring: A New Process for Innovation and Organizational Learning. In: Ricciardi F., Harfouche A. (Ed.) *Information and Communication Technologies in Organizations and Society. Lecture Notes in Information Systems and Organisation*, 15(1). Springer.
- [61] Gans, J.S. and Stern, S. (2003). The product market and the market for “ideas”: commercialization strategies for technology entrepreneurs. *Research Policy*, 32 (2), 333–350.
- [62] Schalast, C. (Ed.) (2016). *Aktuelle Aspekte des M&A-Geschäftes*. Frankfurt am Main: Frankfurt School Verlag.
- [63] Kelly, C. and Ma, C. (2016). How Do Established Companies Acquiring Startups Re-tain the Innovative Thinkers and Leverage this Thinking? Retrieved from <http://digitalcommons.ilr.cornell.edu/student/137>.
- [64] Owyang, J. and Szymanski, J. (2017). The Corporate Innovation Imperative: How large corporations avoid disruption by strengthening their ecosystem. Crowd Companies. Retrieved from https://de.slideshare.net/jeremiah_owyang/the-corporate-innovation-imperative-how-large-companies-avoid-disruption-by-strengthening-their-ecosystem.
- [65] Dixon, I. (2005). Culture Management and Mergers and Acquisitions. Society for Human Resource. Retrieved from <https://www2.deloitte.com/content/dam/Deloitte/us/Documents/mergers-acquisitions/us-ma-consulting-cultural-issues-in-ma-010710.pdf>.
- [66] Hodgson, A. and Haas, R. (2013). What Shape is Your Curve? A.T. Kearney. Retrieved from http://www.atkearney.co.uk/latest-article/-/asset_publisher/ION5IOfbQl6C/content/what-shape-is-your-curve-/10192.
- [67] Van Weele, A.J. and Essig, M. (2017). *Strategische Beschaffung Grundlagen, Planung und Umsetzung eines integrierten Supply Management*. Wiesbaden: Springer.
- [68] Umbenhauer, B. and Sopher, S. (2013). Charting the course: Why procurement must transform by 2020. Deloitte Consulting LLP. Retrieved from <https://www2.deloitte.com/content/dam/Deloitte/us/Documents/process-and-operations/us-cons-charting-the-course-071013.pdf>.
- [69] Taga, K., Pichai, H. and Doemer, F. (2015). Telecom operators: Open Innovation with startups. Arthur D. Little White Paper Series. Retrieved from http://www.adlittle.com/downloads/tx_adlreports/ADL_Telco_Start-ups_OpenInnovation.pdf.
- [70] Batran, A., Erben, A., Schulz, R. and Sperl, F. (2017). *Procurement 4.0: A survival guide in a digital, disruptive world*. Frankfurt am Main: Campus Verlag.

- [71] Robinson, S. and Stubberud, H. A. (2014). Business incubators: What services do business owners really use? *International Journal of Entrepreneurship*, 18 (December), 29–39.
- [72] Gassmann, O. and Enkel, E. (2004). Towards a Theory of Open Innovation: Three Core Process Archetypes. *R&D Management Conference (RADMA)*, 7-9. July 2004, Lisbon, Portugal.
- [73] Hackett, S. and Dilts, D. (2004). A systematic review of business incubation research. *The Journal of Technology Transfer* 29 (1), 55–82.
- [74] Hathaway, I. (2016). What Startup Accelerators Really Do. *Harvard Business Review*, 7.
- [75] InBIA (2017). Operational Definitions: Entrepreneurship Centers. Retrieved from <https://inbia.org/wp-content/uploads/2016/09/InBIA-IndustryTerms.pdf?x84587>.
- [76] Mian, S., Lamine, W. and Fayolle, A. (2016). Technology Business Incubation: An overview of the state of knowledge. Retrieved from <https://doi.org/10.1016/j.technovation.2016.02.005>.
- [77] Sullivan, D.M. and Marvel, M.R. (2011). Knowledge acquisition, network reliance, and early-stage technology venture outcomes. *J. Manag. Stud.* 48, 1169–1193. In: van Weele, M., van Rijnsoever, F. J., and Nauta, F. (2017). You can't always get what you want: How entrepreneur's perceived resource needs affect the incubator's assertiveness. *Technovation*, 59.
- [78] Sá, C. and Lee, H. (2012). Science, business, and innovation: Understanding networks in technology-based incubators. *R & D Management*, 42(3), 243–253.
- [79] Borgatti, S.P. and Foster, P.C. (2003). The network paradigm in organizational re-search: a review and typology. *Journal of Management*, 29 (6), 991–1013. In: van Weele, M., van Rijnsoever, F. J. and Nauta, F. (2017). You can't always get what you want: How entrepreneur's perceived resource needs affect the incubator's assertiveness. *Technovation*, 59, 18-33.
- [80] Lewis, D.A. (2001). Does technology incubation work? A critical review of the evidence. Athens, OH: National Business Incubation Association. In: Robinson, S. & Stubberud, H. A. (2014). Business incubators: What services do business owners really use? *International Journal of Entrepreneurship*, 18, 29–39.
- [81] McGrath, H. and O'Toole, T. (2013). Enablers and inhibitors of the development of network capability in entrepreneurial firms: A study of the Irish micro-brewing network. *Industrial Marketing Management*, 42(7), 1141–1153.
- [82] Zhu, Y., Hong, J. and Liang, L. (2014). How the incubator managers act as the niche manager? Empirical evidence from China. *18th Pacific Asia Conference on Information Systems, PACIS 2014*.
- [83] Voisey, P., Gornall, L., Jones, P. and Thomas, B. (2006). The measurement of success in a business incubation project. *Journal of Small Business and Enterprise Development*, no.3, vol.13, 454-468.
- [84] Stephens, S. and Onofrei, G. (2012). Measuring business incubation outcomes. *Entrepreneurship and Innovation*, 13 (4), 277–285.

- [85] Crichton, D. (2014, August 25). Corporate Accelerators Are An Oxymoron. TechCrunch. Retrieved from <https://techcrunch.com/2014/08/25/corporate-accelerators-are-an-oxymoron/>.
- [86] Petzov (2017). Corporate Innovation as a System. Medium. Retrieved from <https://medium.com/@petzov/corporate-innovation-system-3b05e6a2fa7f>.
- [87] Cohen, S. and Hochberg, Y.V. (2014). Accelerating Startups: The Seed Accelerator Phenomenon. SSRN Journal, 1(16).
- [88] Fehder, D.C. and Hochberg, Y.V. (2014). Accelerators and the Regional Supply of Venture Capital Investment. Retrieved from <http://dx.doi.org/10.2139/ssrn.2518668>.
- [89] Clarysse, B., Wright M. and Van Hove, J. (2015). A look inside accelerators: Building businesses. Nesta. Retrieved from https://www.nesta.org.uk/sites/default/files/a_look_inside_accelerators.pdf.
- [90] Scott, M. (2014). Copycat Business Model Generates Genuine Global Success for Start-Up Incubator. New York Times. Retrieved from <https://www.nytimes.com/2014/02/28/technology/copycat-business-model-generates-genuine-global-success-for-start-up-incubator.html>.
- [91] The Economist (2014a). Rocket Internet's IPO: Launching into the unknown. The Economist. Retrieved from <https://www.economist.com/news/business/21621820-predicting-rock-et-internets-trajec-tory-hard-want-predecessors-launching>.
- [92] The Economist (2014b). Tech startups: Building Companies: Rocket Machine. Special Report. The Economist. Retrieved from <https://www.economist.com/news/special-report/21593586-how-build-companies-kit-rocket-machine>.
- [93] Rocket Internet (2017). Company Homepage. Retrieved from <https://www.rocket-internet.com/>.
- [94] Stryber (n.d.). German Company Builders have stopped company building – How can they evolve? Stryber AG Switzerland. Retrieved from <https://stryber.com/german-company-builders-have-stopped-company-building/>.
- [95] Rao, L. (2013). The Rise of Company Builders. TechCrunch. Retrieved from <https://techcrunch.com/2013/02/16/the-rise-of-company-builders/>.
- [96] Waters-Lynch, J. and Potts, J. (2017): The social economy of coworking spaces: a focal point model of coordination. Retrieved from <https://doi.org/10.1080/00346764.2016.1269938>.
- [97] Pohler, N. (2012). Neue Arbeitsräume für neue Arbeitsformen: coworking Spaces. Österreichische Zeitschrift für Soziologie. 37, 65–78.
- [98] Corsi, P. (2017). Case Study: Growth Through Cooperation, Work, Time and Space, in Going Past Limits to Growth: A Report to the Club of Rome EU-Chapter. Hoboken, NJ: John Wiley & Sons, Inc..
- [99] Bouncken, R.B. and Reuschl, A.J. (2016). Coworking-spaces: how a phenomenon of the sharing economy builds a novel trend for the workplace and for entrepreneurship. Heidelberg: Springer.

- [100] Jacobs, E. (2016). Big business moves into co-working spaces. The Financial Times. Retrieved Retrieved from <https://www.ft.com/content/c8255158-fffe-11e5-ac98-3c15a1aa2e62>.
- [101] Gryszkiewicz, L., Lykourantzou, I. and Toivonen, T. (2016). Innovation Labs: 10 Defining Features. Stanford Social Innovation Review. Retrieved from https://ssir.org/articles/entry/innovation_labs_10_defining_features#bio-footer.
- [102] Wallis, I. (2016, June 13). Europe's 25 Corporate Startup Stars. Startups – The UK's No.1 starting a business resource. Retrieved from <http://startups.co.uk/europes-25-corporate-startup-stars/>.
- [103] Tardy, F. (2013). Frédéric Tardy, Chief Marketing & Distribution of AXA Group announces the creation of the AXA Lab [Video File]. Retrieved from <https://www.youtube.com/watch?v=bdoH5Mg4-rc>.

INTERVIEW REFERENCES

- [104] Interviewee A, personal communication, August 28th, 2017
- [105] Interviewee B, personal communication, August 29th, 2017
- [106] Interviewee C, personal communication, August 29th, 2017
- [107] Interviewee D, personal communication, September 18th, 2017
- [108] Interviewee E, personal communication, September 29th, 2017
- [109] Interviewee F, personal communication, September 29th, 2017