Understanding the heterogeneity of corporate entrepreneurship programs

Selig, C.J.

8 Concluding on the effective management of CE programs

In this chapter, the answers to the three research questions (RQs) and to the problem statement (PS) will be given.

In Section 8.1, the answers to the three RQs, as given in Chapters 4 to 7, will be reviewed and discussed briefly. In Section 8.2, our answer to the problem statement will be presented. Section 8.3 focuses on the limitations that must be taken into account for our study. Section 8.4 will highlight the scientific contributions, and Section 8.5 will do the same for the practical contributions. In Section 8.6, avenues of future research will be given.

8.1 Answering the three research questions

The aim of this thesis is to understand the heterogeneity of CE programs better. For this purpose, we distinguish and define different types of CE programs to explore the heterogeneity of the organizational design of CE programs (RQ1). By identifying different types of outputs created by a CE program (RQ2), a more detailed understanding of the value creation is provided. This formed a solid basis for successfully mapping the CE program types onto the outputs (RQ3) to create a holistic and comparative understanding of their differences. The answers to each of the three RQs are provided in Subsections 8.1.1 to 8.1.3.

8.1.1 Understanding the organizational designs of CE programs

In Chapter 4, the unclarities of the CE programs have been discussed and it has been shown that the heterogeneity of the organizational designs is at the moment not well understood. There are at least two reasons why a better understanding of the types of CE programs and their differences is important.

First, there is ambiguity regarding novel CE programs that emerge in practice. Often, multiple names describe the same phenomenon, or the same name is used for different organizational designs. This ambiguity makes it difficult to understand which knowledge base already exists and can lead to misinterpretations and unclarities (cf. Kurpjuweit & Wagner, 2020; Shankar & Shepherd, 2019; Moschner et al., 2019; Gimmy et al., 2017).

Second, in practice, it is often unclear which CE program types are being operated by a company. Hence, it is rather difficult for practitioners to learn from new scientific insights and

improve the management of CE programs based on these insights (see Hill & Georgoulas, 2016). To address these issues, the RQ1 was formulated as follows.

RQ1: What are the different types of CE programs?

By deriving relevant design elements to define and distinguish CE program types and developing a systematic approach for analyzing them, Chapter 4 served as a basis for answering RQ1. The approach uses a morphological analysis combined with 26 design elements that were derived from literature and our data set. The analysis offered a systematic way to compare and distinguish CE programs clearly.

In Chapter 5, the approach was applied to the 54 cases from our data set. Using the approach resulted in identifying nine CE program types and three types of the radical innovation unit (no CE programs, see 5.6.3). The analysis did also unveil distinct design elements that are suited for clearly distinguishing the CE program types. For each CE program type, an overview was provided (see Section 5.4), which uses these design elements to illustrate the differences between the organizational designs.

The nine CE program types that provide an answer to RQ1 will be briefly presented below. The three types belonging to the category of radical innovation units will not be considered since they are not counted as CE programs and hence do not answer our RQ. The nine CE program types are split into (A) internal CE programs and (B) external CE programs (see Figure 8.1) and are described below.

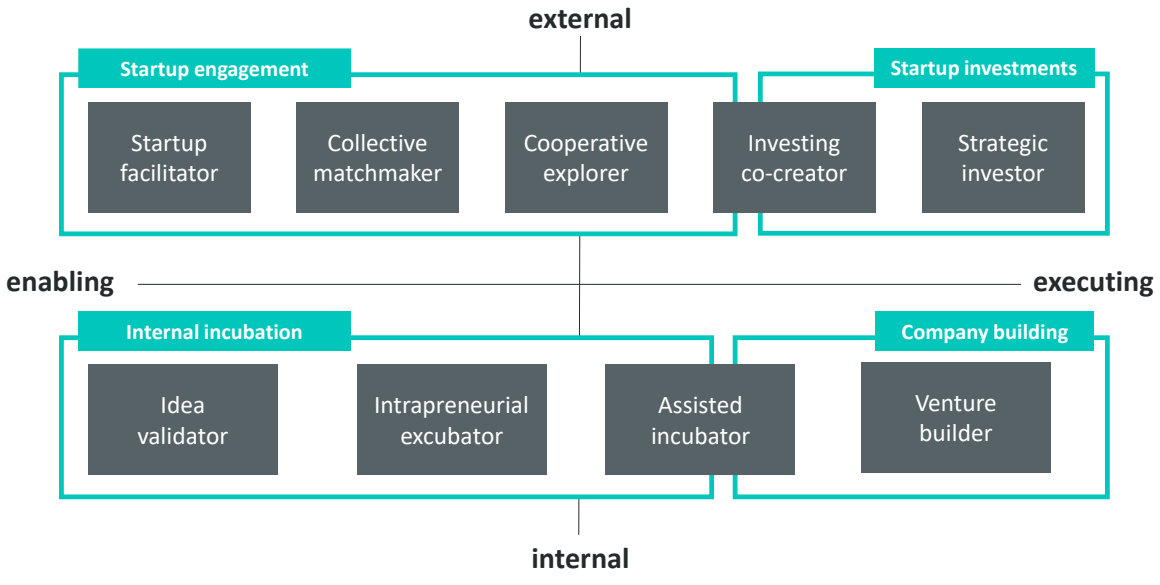

Figure 8.1: Overview of the nine CE program types

A: Overview of internal CE programs

- *Idea validators* support the core organization in validating innovation ideas with an unclear fit to the core business. In order to create a decision basis whether or not to terminate the ideas, their business fit is validated using entrepreneurial methods.
- *Intrapreneurial incubators* support entrepreneurial employees in developing innovations beyond the core business by providing them with incubation services such as access to resources, training, autonomy, or a supportive environment.
- *Assisted incubators* enable the core organization to develop innovation ideas that require new capabilities by providing incubation services and support of CE program specialists who temporarily join innovation teams of the core organization.
- *Venture builders* create and implement rather discontinuous innovation ideas themselves with the aim to build new businesses that usually result in new companies (spin-offs) or new business units.

B: Overview of external CE programs

- *Startup facilitators* identify startups with innovative solutions that address company-internal challenges and organize proof-of-concept projects with the core organization as a starting point to enable a potential customer-supplier relationship.
- *Collective Matchmakers* are open innovation platforms where several established companies with a common thematic focus join forces to gain access to external innovation by attracting startups and collaborating with them.
- *Cooperative explorers* scout and explore relevant startups with promising technologies that form the basis for collaboration or joint innovation development to expand and open up the company's research and development process.
- *Investing co-creators* collaborate and invest in startups that have strategic relevance to the core business. Therefore, investments are mainly made to strengthen a partnership and enable the co-creation of new solutions.
- *Strategic investors* scout and invest in financially promising startups that show a strategic relevance for the core organization. The scope is rather broad, and the main focus is set on the investments themselves.

8.1.2 Understanding the value creation of CE programs

Table 8.1 shows the seven outputs categories and 27 outputs created by CE programs that were identified in the course of my research.

Output category	Category description	Outputs
Innovation capability	New capabilities and structures that are created to support and enhance the development of discontinuous innovation	(1) innovation services & expertise
		(2) additional innovation path
		(3) digital capabilities
		(4) roles or formats to support innovation
Innovation culture	Changes in the culture and openness of core organization towards becoming more innovation-friendly	(5) sensitized senior management
		(6) increased awareness for innovation
		(7) increased openness for innovation
Innovation ecosystem	External links to startups that are established through the activities	(8) strategic partnership
		(9) venture portfolio
		(10) reputation within innovation ecosystem
Innovation know-how	Exploration of relevant know-how for the company's future business	(11) intelligence on trends
		(12) technological know-how
Intrapreneurial empowerment	Impact the activities have on intrapreneurial employees and their network	(13) entrepreneurial skills & methods
		(14) network of supporters
		(15) intrapreneurial community
New business offering	Changes in a company's product offering that are impacting the current and future business	(16) validated innovation idea
		(17) new product
		(18) new stand-alone business
		(19) value adding service or feature
		(20) new market
		(21) reconfigured business model
Organizational transformation	Changes within the core organization to support the overall transformation	(22) increased efficiency
		(23) new ways of working
		(24) digital infrastructure
		(25) improved flexibility & speed
		(26) improved corporate image
		(27) employer branding

Table 8.1: Output categories and outputs created by CE programs

Previous studies have shown that the value creation of CE activities is manifold (see Section 2.1). At the same time, CE's performance measurement in literature mainly focused on financial performance indicators. However, this financial focus does not reflect the diversity of value creation and the use of CE programs in practice (see Bierwerth et al., 2015).

The lack of understanding about the full potential of value creation leads to different challenges. From a practical perspective, it is unclear what kind of value creation can be expected from CE programs. This unclarity can lead to ineffective or incorrect use of CE programs by management. From a scientific perspective, the focus on financial performance neglects the diversity of contributions and may lead to misguided findings of the effectiveness and the adequate use of CE programs. To address these challenges, the second RQ was formulated as follows.

RQ2: What types of outputs are created by CE programs?

In Chapter 6, we focused on answering RQ2 by examining the types of outputs that can be created by CE programs. For this purpose, we analyzed which outputs were created by the 54 cases of our data set. As a result, a harmonized set of seven output categories and 27 outputs, that are mutually exclusive and applicable across the CE program types was identified (see Table 8.1). The seven output categories and 27 outputs provide an answer to the RQ2.

For a definition and detailed description of the 27 outputs, see Section 6.2. While the 27 outputs were derived directly from the coding process, the seven output categories are based on thematic clustering. Regarding the categories, it should be noted that generally, different categories are possible depending on the focus of the clustering of the outputs.

In general, CE programs are used to create outputs that would be difficult or even impossible for the core organization to create. However, when looking at the 27 outputs individually, it seems that some of the outputs (e.g., increases awareness for innovation, employer branding, or new products) could also be created in the core organization using other means such as HR activities or in R&D departments. At the same time, a major part of the outputs, e.g., the creation of a new stand-alone business or entrepreneurial skills & methods, seems rather difficult to be created by the core organization.

CE programs are typically not initiated to create a single output but rather a combination of different outputs (mirrored in their objectives). If the intended outputs could also be created

by other means, it should be questioned whether a CE program is an appropriate choice whereas if outputs focus on rather discontinuous innovations (see Definition 1.2), CE programs seem to be suited well for their creation. For companies, it is crucial to gain a clear understanding of the objectives and the related outputs for which the results of Chapter 6 form a sound basis.

8.1.3 Describing the relationships between CE programs and their outputs

Having understood the heterogeneity of the organizational designs (RQ1) and the outputs of CE programs (RQ2), next, we focused on their relationships. Investigating the relationship between these two aspects will contribute to a better understanding of how the CE program types differ regarding their value creation (Hill & Georgoulas, 2016). To address this problem, the third RQ was formulated as follows.

RQ3: Can causal relationships between CE programs and their outputs be identified?

In Chapter 7, this research question was partly answered. Between the CE program types and the outputs, different relationships have been identified. In general, it can be observed that the different CE program types did show a specific set of outputs, whereby each set is different (see Section 7.2).

Each CE program type did show strong relationships to a certain subset of the 27 outputs (defined based on the frequency of occurrence), which can be used as an indicator to evaluate how likely an output is being created by the respective CE programs (see Section 7.2 and 7.4). In addition to the CE program types themselves, we have shown that (a) the design elements can also be used to explain differences in the output creation and (b) the company-internal and company-external context influences the occurrence of certain outputs.

Generally, our results describe the organizational designs of CE programs on four levels: (1) on the category-level (internal CE programs and external CE programs, see), (2) on the group-level that describe a thematic cluster of CE program types, (3) on the program-level of the CE program type (see Subsection 8.1.1), and (4) on the design element-level (see Subsection 7.3.1). Figure 8.2 illustrates the different levels at which the CE programs were analyzed.

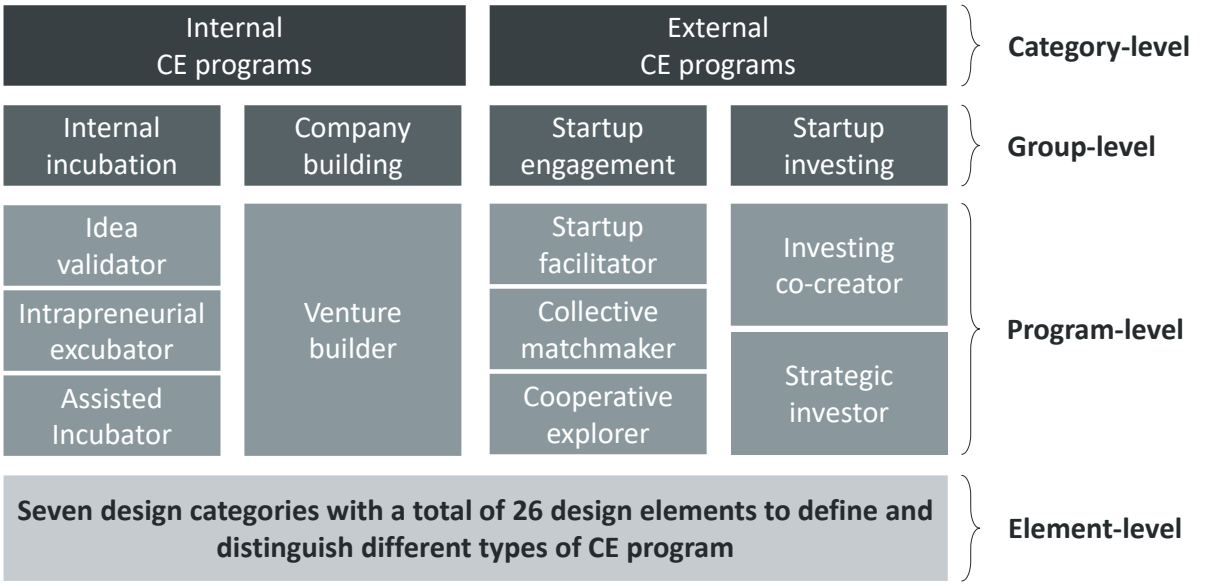

Figure 8.2: Different levels to describe organizational designs of CE programs

From a managerial perspective, the level of the CE program types is most useful when deciding what type of objectives should be achieved and which organizational designs are suited best to create the respective outputs for the objective. The level of the design elements itself is essential when it comes to implementing a CE program. Depending on the objective and the company's context, certain design elements can be adjusted to fit the company's needs.

Even though our results showed that different types of relationships between CE programs and outputs exist, e.g., regarding the strength or distribution among CE program types, our study did not prove causality between them. The results from Subsection 7.3.1 (influence of design elements) indicate that there might be causal relationships explained by the structure of a CE program. We have shown that some design elements can explain the mechanism of the relationships, which is a crucial aspect of understanding the causality between CE program types and outputs. In addition, the context of the CE program (see Subsection 7.3.2) seems to play an essential role as it seems to influence the occurrence of certain outputs as well as the decision on which CE program type is implemented.

However, further research seems to be required for better understanding causality in the relationships between CE programs and the various outputs. It would be important to understand the mechanisms that are leading to the creation of certain outputs, which allows (a) to investigate causality and (b) provides operational insights into the management of CE programs and how certain outputs can be achieved more effectively.

8.2 Answering the problem statement

The results of this study aim to answer the problem statement (PS), which reads as follows.

> **PS: How can established companies effectively use CE programs to support their organizational transformation?**

The answer for the PS is given based on the three results of the three RQs that were presented in Chapters 5 to 7. For the effective use of CE programs, two basic things are important, (a) a clear understanding of the different organizational designs that are available for implementation and (b) the various outputs that can be achieved through these CE programs. Building on this knowledge, the final answer for the PS can be provided by linking the different CE programs with the outputs. Below, we will describe how the results of this study contribute to answering the problem statement in at least the following three ways.

- First, by identifying the various types of outputs that can be created by CE programs, it becomes clearer what the value proposition of CE programs actually is. This serves as a basis for defining more appropriate objectives (intended output or combination of outputs). Without clear objectives, it is difficult to align CE program activities with those of the core organization, which can lead to challenges in transferring outputs back or getting the core organization to recognize the value of CE programs. The set of outputs indicates what results can be expected from CE programs in general and thereby manages expectations. Organizations are often disappointed with the results of CE program activities (see Burgelman & Välikangas, 2005). To some extent, this disappointment might be caused by a lack of knowledge about possible outputs.
- Second, by defining the nine different types of CE programs, the ambiguity regarding different organizational forms has been resolved. By using a systematic approach to studying and describing CE programs, it is possible to clearly identify them. As a result, researchers can be more precise when examining CE activities at the program level, and managers have more clarity about their options for using and designing CE programs to meet their needs.
- Third, by linking CE programs and outputs, it becomes clear (a) how CE programs differ in their value creation and (b) which type of CE program is better suited to achieve a particular objective. For the effective use of CE programs, this is a basic requirement, as it is essential to ensure that the objective matches the organizational design.

Furthermore, the results have shown that, in addition to the objective, the contextual factors of a CE program also influence the selection, and companies are partially limited in their choices.

Generally, it seems rather obvious to align the two dimensions of (1) the organizational designs (CE program types) with (2) the objectives (intended outputs). However, due to the lack of a basic understanding of the heterogeneity of CE programs, previous to this thesis, this was not possible. The results of our study allow CE programs to be used more effectively because it has become clearer for what type of value creation they can be applied and which CE program type is better suited to create the intended outputs.

8.3 Limitations of the study

Having described how the results contribute to answering the RQs and the PS, we will now discuss the limitations associated with our study. Starting with a general limitation, which is then followed by specific limitations for each of the three RQs.

The focus was set on established companies, which means that they exist already for several decades (average age of 108 years). These companies have a core business that is either focused on hardware or services but not on digital businesses by their origin. Resulting out of the ongoing digital transformation, these companies must renew their organization to ensure competitiveness in a digital age. This impacts the transferability of the results, in particular to companies that are rather young, e.g., the case for many Chinese companies, or to companies that have their core business in the digital domain, e.g., Microsoft or Apple, which can also be described as established companies but with a digital business at their core.

Besides this rather general limitation of our study, there are additional ones that have an impact on the respective RQs. Next, these limitations will be discussed.

Limitations for RQ1: For RQ1, which focused on understanding the heterogeneity of CE programs by defining and distinguishing the different types of their organizational design, the following limitation apply. The data set is comparatively large for a qualitative study and was well suited to understanding the heterogeneity of the different CE program types. However, the number of cases for each CE program type individually can be rather small. While up to nine cases were collected for some CE program types (e.g., the intrapreneurial excubator), the definitions of other types are based on only three cases (e.g., the venture builder). The rather

small number of cases may not capture the full range of design elements, and the identified configurations may be slightly adjusted with an increasing number of cases.

Limitations for RQ2: For RQ2, which focuses on the value creation and outputs of CE programs, the following three limitations must be considered.

First, the study did focus only on the program-level of CE activities. All interviews were conducted with employees of the CE program. Hence, only the information that is known by the people working in the CE program is covered. The venture perspective, which focuses on the specific innovation ideas of the CE program, is not fully covered. Based on this observation, it can be assumed that there might be some outputs that were not identified in our study. In particular, (a) the outputs that can be observed after a rather long time when the innovation has left the CE program and (b) the outputs that occur within the core organization as a result of the specific innovation idea. Hence, more outputs are possible but not identifiable when focusing on the CE program perspective.

Second, the strength of the outputs is not fully evaluated in our investigation as the focus was set on using the frequency of occurrence as a measurement for the strength of a relationship. For example, when a new business is created, it is not investigated how this impacts the core business. Questions like “is the new business cannibalizing the existing one?” or “is it a new business that supports the diversification?” were not directly considered, since the aim was to understand the variety of the value creation and not to create a measurement of different strengths. However, for understanding the value creation in more detail, it is important to also consider the impact or strength of the outputs.

Third, the larger a company is, the less clear it becomes whether (a) the observed outputs are caused only by the respective CE program, or if there are other mechanisms that cannot be observed, and (b) whether the outputs are valid for the whole company or just for certain departments or business units. For example, when a business unit is running a CE program, that contributes to increased awareness. Is this also the case for other business units, or does the effect remain within the boundary of the one that is operating the programs?

Limitations for RQ3: For the third RQ, which aims at understanding the relationship between the CE programs and the different outputs, the following two limitations must be considered.

First, for describing the relationships between the CE programs and outputs, the ones that show a frequency of occurrence higher than 50% were declared as being strong ones. This comes in hand with the limitation, that in particular for the CE program types with a small number of cases the impact of the statistical failure is rather high. In particular, for the CE program types that cover only three cases, an observed relationship that occurs by coincidence has an impact of 33% and consequently a strong impact on the declaration of whether a relationship is strong or not.

Second, due to the focus on the frequency of occurrence, the results from RQ3 do only show which CE programs are more likely to create a certain type of output. This, however, does not imply the effectiveness of the CE program in creating the output nor the strength of the outputs themselves. Future studies may focus on developing a measurement instrument that allows the evaluation of the effectiveness in achieving an output and its strength. Hence, additional information would be helpful when selecting a suited CE program type.

8.4 Theoretical contributions

In this section, the theoretical contributions will be described. They are split into (a) contributions that are adding to the existing knowledge about CE and CE programs in Subsection 8.4.1, (b) a brief discussion on the generalizability of the results in Subsection 8.4.2, and (c) contributions to the research method in Subsection 8.4.3.

8.4.1 Adding to corporate entrepreneurship research

The results of our study contribute to research on CE in the following five ways.

A: Improved understanding of the organizational designs

First, the results improve the understanding of the different organizational designs of CE programs. In Chapters 4 and 5, we showed that there was a certain level of ambiguity regarding the different organizational designs of CE programs. The ambiguity was rooted in at least the following two reasons.

1) Novel types of CE programs emerged in practice, which did lack empirical investigations at all.

2) Some existing and well-established CE programs have been defined rather vaguely and broadly, e.g., the corporate incubator or the external corporate accelerator (see Subsection 5.6.1 and 5.6.2).

On the one hand, our results contribute to a better understanding by providing nine clearly defined CE program types and presenting design elements that are suited to distinguish them. By providing a systematic approach to analyze CE programs and an updated overview about the current types, the ambiguity regarding rather novel CE programs is resolved that are currently discussed under different names (see Kurpjuweit & Wagner, 2020; Shankar & Shepherd, 2019; Gimmy et al., 2017).

On the other hand, established concepts of CE have been understood in a more nuanced way, e.g., the *idea validator*, the *assisted incubator*, and the *intrapreneurial excubator* for internal incubation (see Subsection 5.1.5) or the *investing co-creator* and the *strategic investor* for startup investment (see Subsection 5.2.6).

The nine CE program types can be used in future studies to improve the clarity of the findings on CE on the program-level as they resolve the ambiguity about the subject of investigations.

B: Improved understanding of the value creation

The results contribute to the knowledge about the value creation of CE programs by presenting a harmonized set of outputs that reflects the variety of values that can be created. Moreover, the detailed distinction into different types of outputs shows that a pure focus on financial performance indicators, which are often used in the field of CE, is not sufficient (see Bierwerth et al., 2015). Applying pure financial performance indicators (e.g., turnover, profit, or cost savings) is not sufficient to cover the positive impact that CE activities have on the culture, the capabilities, or the transformation of an organization and may lead to wrong decisions when focusing only on them.

By offering a harmonized set of outputs that reflects this heterogeneity, the results can build the basis for future studies to develop more precise and more diverse measurement instruments to assess the performance of CE activities. For this purpose, researchers may use concepts from related fields, such as human resource management or marketing, to evaluate the performance, which typically goes beyond pure financial indicators. This would also impact the goal-setting of a CE program. Based on the set of outputs, more realistic objectives can be

defined that (a) match with the respective CE program type and (b) are more accurate, which means the different aspects of value are covered in the objective.

C: Differences in the value creation of CE program types

The results contribute to a better understanding of value creation and how these different types of value can be achieved through the various CE programs. By showing the relationships between CE programs and outputs, it becomes clearer how the different types of values associated with CE can be achieved on a more operational level. This resolves the lack of understanding about how the CE programs differ regarding their value creation (see Hill & Georgoulas, 2016). By presenting this relationship between the different CE program types and outputs, future studies can build on it when focusing on comparing CE programs. From a managerial perspective, a more detailed understanding of the differences in the value creation allows a better (more suited) selection of CE programs by the management of an organization (see Section 8.5).

D: Exploration and exploitation through CE programs

CE is often associated with the exploration of new knowledge and technologies. However, different outputs that were identified in this study (e.g., increased efficiency and improved flexibility and speed) imply that CE also covers exploitation activities, which typically result in the optimization of the core business. Therefore, the results from Subsections 7.2.2 and 7.2.4 form the basis for better understanding which CE program types are rather exploitation-oriented and which ones are more oriented towards exploration. In particular, types of the external CE program group that focus on startup engagement show exploitative outputs (Selig & Baltes, 2020). These results indicate that even though CE programs are generally more associated with exploration and the core organization is typically linked with exploitation, this distinction cannot be generalized.

It is essential to understand that if some CE programs focus more on exploitation whereas others more on exploration, they require different types of management (see Benner & Tushman, 2003). Furthermore, the management of expectations regarding the results should be different either (see, e.g., Gupta et al., 2006; March, 1991). For example, when insourcing already existing solutions from startups to solve problems in the core organization, the results should become visible after a shorter period of time than if the CE program focuses on building new businesses from scratch.

E: Relevance of organizational context

Our results show that it is important to investigate the context of the CE program. The context consists of (a) the company-internal environment (the company where the CE program is embedded) and (b) the company-external environment (the market the company is acting in). Even though the context elements were not the main focus of our study, the results indicate that they have a moderating impact on the occurrence of the outputs created by a CE program as well as on the selection of the CE program.

These findings are in line with the configuration theory that was applied as a theoretical perspective in our study. It states that for understanding the performance of an organization in achieving a certain objective, the organization must show an internal and an external fit (see Subsection 2.2.3). Our results suggest that this also applies to investigating CE programs and illustrate with a few examples how the context can have an influence on CE programs.

F: Differences between CE and R&D

The study shows that, among other outputs, CE programs are used to explore new technologies and develop new products. This is a type of activity that is done in the classical R&D departments of a company. However, the two activities (of CE programs and R&D departments) differ in that CE programs do not focus on developing new technology or product only but also on the business around them. For this purpose, the participants in a CE program (particularly for internal CE program types) are organized like a new venture consisting of technology and market experts. In contrast, R&D departments focus mainly on the technological aspect reflected in the circumstance that they employ technical experts only. In addition to the broader focus of CE programs (developing new businesses), CE programs also differ from classical R&D departments as they address various types of innovation (process innovation, service innovation, product innovation, and business model innovation). On the other hand, R&D departments mainly focus on product innovation and related technologies.

8.4.2 Generalizability of the results

From a qualitative perspective, the results are based on a relatively large data set of 54 cases. The cases cover twelve different industry classes (see Subsection 3.2.1) and four different countries (Germany, Austria, Switzerland, and the United States of America). Therefore, we expect the results to be generalizable to companies and organizations outside the DACH

region. This is supported by the fact that the analysis of the company-external context as a possible influencing factor on the relationship between CE program types and outputs has shown no significant differences depending on the location of the CE program or the core organization.

The main limitation in terms of generalizability of the results focuses on the maturity of the organizations. As mentioned in Section 8.3, our study focused on established companies with an average age of 108 years. These are currently facing the challenge of the digital transformation of their organization. This challenge does not seem to apply to companies that are much younger and whose business model is based on digital technologies. Therefore, it remains questionable whether the results are applicable to these companies, which can be considered digital natives.

In today's volatile markets, every company faces the need for changes in their organization, which may be caused by different reasons such as sustainability or increasing competitiveness. Consequently, we believe that the results for the CE program types are applicable regardless of the maturity level of the company, while the results for the outputs might be slightly different for younger companies (fewer outputs), as their need for transformation is likely to be lower. This can be observed, for example, in the case of Alphabet Inc. (parent organization of Google), which runs multiple CE programs like a strategic investor (Google Ventures) or a venture builder (“Google” X). These activities aim to diversify the businesses of Alphabet but not to transform the core organization, which is different from most activities of the established companies of our study.

8.4.3 Adding to methodology

Besides the theoretical contributions that improve the understanding of the heterogeneity of CE programs, our study shows a contribution regarding the research method that was applied. Analyzing organizational designs is a relevant topic in many fields. The systematic approach that was used in this study to explore the different types of CE programs is suited to be replicated in other fields of research, such as studies on startups or the management of research and development activities.

The approach will be briefly summarized below.

Step 1 – Design elements: Identifying relevant design elements using a grounded theory approach to describe an organizational unit. For this purpose, the data (in our case, the interviews and process descriptions) are examined for all concepts that describe the organization's structure, process, and strategy. Depending on the existing knowledge base, the elements derived from the data can be combined and aligned with elements used in previous studies. The aim is to identify all design elements that can be used to describe and to distinguish the organizational units (purely descriptive design elements are not used).

Step 2 – Morphological box: Creating a morphological box based on these design elements. This box, which consists of two dimensions and should be structured as follows. The first dimension (vertical) is reflecting the different design elements, e.g., the focus of the organization, the governance mode, the roles of employees, etc. The second dimension (horizontal) covers the manifestation that belongs to each design element, e.g., sales, marketing, engineering, etc., for the design element “roles of employees”. For each case, such a morphological box will be created that reflects its specific organizational design.

Step 3 – Identifying configurations: Having created a morphological box for each case, they will be compared to identify the ones with a similar organizational design. These similar cases will be grouped together and analyzed for the design elements that show the same (or similar) manifestations among the cases in the group. This step leads to the identification of a subset of design elements and their manifestations which are characteristic for each of the groups. If a case does not fit to the characteristic set of design elements, the case is removed from the group. This procedure is applied until all cases are assigned to a group. For each group, a characteristic set of design elements is identified. The groups and their design elements represent the respective organizational configurations (in our case, the nine CE program types, see Section 5.1 & Section 5.2).

Step 4 – Understanding the value creation: As a next step, the configurations (CE program types) are investigated regarding their value creation (in our case, the outputs that are created by CE programs). Linking the identified CE program types and the outputs allows a more detailed understanding of the value creation and how the configurations (CE program types) are different regarding the value they are creating.

This approach is combining (a) grounded theory approach to derive relevant design elements with (b) morphological analysis as a framework to systematically analyzing and distinguishing organizational designs. The relevant design elements can be derived either from the data and/ or from existing studies, which makes the approach can be flexibly applicable in a variety of contexts. The approach can be used to create taxonomies of organizational designs (independent from the level of analysis) to investigate and understand the practical phenomenon.

8.5 Practical contributions

In this section, the practical contributions of our study will be described. Our results provide three concrete recommendations for established companies that want to use CE programs. After each recommendation, questions (indicated by bullets) will be summarized that should be considered by the management to ensure a more effective use of CE programs.

The practical contributions focus on: (A) clear understanding of the objective, (B) adjusting CE programs to the company's need, and (C) measuring the performance of CE programs.

A: Clear understanding of the objective

In Chapter 6, we have presented a harmonized set of outputs that shows that CE programs can be used for various outputs. Before starting the implementation of a CE program, it must be clear what types of outputs are desired. This forms the basis for defining a clear objective (consisting of one or multiple intended outputs).

Starting with a clear definition of the objective is the ideal way to implement a CE program. Nevertheless, we recognize that the use of CE programs is not common knowledge for established companies. As a result, implementing a CE program is often seen as an experiment itself. This experimentation can be seen as a driver for creativity and is one reason for the emergence of novel CE program types. However, at the same time, companies must be aware that after a certain period of time, the CE program must leave the stage of experimentation and find a stable state (configuration) in order to create value for the core organization.

Several cases within our data set did have no objectives at all or only unclear objectives (Lang et al., 2021). When having no clear understanding of the concrete objective, there is a high chance that wrong expectations exist (mostly in the core organization). In these cases, the results created by the CE program are not perceived as valuable. To avoid this problem and to

achieve good expectation management, the 27 outputs from Chapter 6 can be used as a basis for precise goal setting. However, it must be acknowledged that the objectives are more than a combination of the different outputs that were identified in our study. For example, the objective is typically not only “to create new businesses” but also covers a more strategic component, e.g., the area the businesses should be targeting.

After defining the objective, it must be evaluated which types of CE programs are generally suited to achieve the outputs related to the objective. In Chapter 7, we have analyzed the relationship between CE programs and the outputs. These findings can serve as a basis for selecting a suited CE program type.

In practice, the selection of the organizational design was often made before the objective was clear. It must be understood that having selected a certain CE program type limits the possible objectives that can be pursued. Therefore, the management must be aware of these dependencies and manage stakeholder expectations.

- What is the aim I want to pursue with this CE program?
- Do the intended outputs fit together, or must a trade-off be considered?
- Can the outputs be created by one CE program, or are multiple CE programs required?
- Can the intended outputs be achieved by other means instead of using CE programs?

B: Adjusting CE programs to the company’s need

The nine CE program types presented in Sections 5.1 and 5.2 show that a certain set of design elements is characteristic for each type. Therefore, it is important to consider the relationship and interdependencies between these design elements when designing and implementing a CE program. For example, when creating an innovation adjacent to the core business, the preferred exit path should not be the transfer to the core organization since it can be expected that the structures and competencies do not fit.

The results presented in Chapter 5 can serve as the basis for designing a CE program as they show the typical design elements for the respective type. However, they do not serve as a blueprint that can be copied since every CE program has different options depending on the context in which they are implemented.

- How well do the characteristics of the design elements fit to the objective?
- When implementing certain design elements differently from the characteristics of the respective CE program type, how will they influence the other design elements?
- Considering the trade-off: How well is the CE program suited to achieve its objective vs. how well does the CE program fit to the core organization?
- If the CE program is designed to fit to the core organization, does it still suit to achieve the intended objective?

C: Measuring the performance of CE programs

A third practical contribution might be based on the different outputs that were identified. It is crucial to use performance indicators that are suited for measuring the performance of a CE program, which are aligned with the respective outputs. Depending on the CE program type, different outputs can be created that are ranging from new products over new technologies to new ways of working. This variety of outputs demands a diverse but accurate measurement that goes beyond (a) the pure focus on financial indicators such as turnover or costs savings and (b) rather descriptive indicators such as the number of innovation ideas supported by the CE program.

For example, one case in our data set hat multiple objectives ranging from supporting the cultural change, over creating new products, to increase efficiency. Even though there were multiple objectives assigned to the CE program, the performance was measured only based on the costs that were saved by the digitalization activities. The measurement of cost savings, however, was not suited to evaluate the performance of the other objectives and shows a clear mismatch between the objectives and performance measurement.

Although, the set of outputs can be used as a basis to develop performance indicators for CE programs that reflect the actual value creation. Accurate performance indicators would allow an effective management as well as a better management of expectations in the core business. Many of the outputs are related to other areas of a company, such as human resources, research and development, or corporate development. Hence, the management does not necessarily have to develop new indicators but maybe combine and adjust the performance measurement and the controlling that is already applied in other areas of the company.

- What are the main objective and the time horizon expected to see the first results?
- If multiple outputs are expected, do we have a priority regarding the results?
- Do the performance indicators cover all outputs that are intended to be created?

8.6 Future research

This section focuses on the recommendations for future research avenues. Our results have contributed to a better understanding of the heterogeneity of CE programs, in particular about their organizational designs and value creation. At the same time, these new insights have led to many new questions that did arise during our research.

The recommendations for future research are grouped into two areas. In Subsection 8.6.1, we focus on recommendations that did arise out of practical challenges in the management of CE programs we have observed. Subsection 8.6.2 presents recommendations that are building on the theoretical contributions of our study.

8.6.1 Recommendations based on their practical relevance

Even though many companies are operating CE programs, we are still at the beginning of understanding how they can be managed effectively and how CE can become a crucial part of an organization. During our study, many questions did arise regarding how the management can be improved and how CE activities could become more successful. Based on these questions, five avenues for future research will be presented.

A: Transfer of innovation ideas

Many studies focus on the design, the management, or the performance of CE activities themselves. However, CE activities do not serve their own purpose, but they are carried out to create added value for the core organization. Inevitably, the innovation ideas supported by a CE program reach a point where they experience a type of transfer to the core organization.

Often, this transfer has been mentioned as a challenge or even as the reason why innovation ideas fail. Two classes of examples are: (1) some innovation ideas were not mature enough to survive the processes and standards in the core organization, and (2) capabilities in the core organization were missing to operate and scale the innovation ideas appropriately. The transfer challenge is not only the case for CE programs but more general for all types of radical innovations that must be integrated into the core organization (see Gassmann et al., 2012).

Future research on CE programs may address the transfer of innovation ideas by investigating (a) the reasons why the transfer of innovation ideas is challenging, (b) the mechanisms that can be applied to reduce the negative impact on the innovation ideas, and (c) why these mechanisms differ for the various CE program types. We believe that a better understanding of this "end-to-end" process" of CE programs could improve the success rate of innovation ideas resulting out of their activities.

B: CE programs and the type of innovation

A second recommendation for future research focuses on the types of innovation. Often, CE programs are initiated to work on rather discontinuous types of innovation. However, there are different levels (or strengths) of discontinuity and different effects an innovation can have on the core business. For example, is it cannibalizing the current core business or is it contributing to the diversification?

It would be interesting to understand whether certain types of CE programs are better suited for certain types of innovations. The results of our study have shown that the CE program types show differences regarding their innovation focus exists. However, it was not investigated whether they are also better in doing so.

For investigating this question, two things would be relevant. On the one hand, a better understanding of discontinuous innovations itself seems to be required, as the degree of discontinuity (radicality) seems not to be well understood yet. On the other hand, it would then be interesting to understand which CE program types are suited for the more discontinuous innovation and if this might be explained by their structure.

Deepening the knowledge on this topic would be highly relevant for established companies, as it seems that in particular, the types of innovation with a high degree of radicality or even a disruptive impact on their business are a huge challenge for them (see, e.g., Baltes & Freyth, 2017), e.g., Kodak and the introduction of digital cameras (see Lucas & Goh, 2009) or Nokia with the switch from mobile phones to smartphones (see Laamanen et al., 2016).

C: Goal setting of CE programs

The goal setting process for CE programs has been identified as one field which is still in its infancy. In general, the following three issues regarding the target setting of CE programs have been unveiled during the research process.

1) *No objectives*: The CE program had no objectives at all or objectives that were defined on their own, but not aligned with the management in the core organization.
2) *Unclear objectives*: The objectives were defined vaguely or ambiguous, which led to a certain level of unclarity about the concrete objective of the CE program.
3) *Multiple objectives*: The CE program had a broad range of different objectives, which led to a variety of (sometimes conflicting) activities and an unclear focus.

In order to understand the effective management of CE programs and to evaluate their performance, the goal-setting process of CE programs must be better investigated. It can be assumed that the target setting differs from the core organization since CE is often accompanied by a higher level of uncertainty.

Furthermore, CE programs do not only create new products or optimize the core business, but they can also support the organizational transformation and the development of new capabilities. To cover this variety, it is important to investigate the target setting of CE programs. This would also be a precondition for investigating the performance and success of CE programs.

D: Performance measurement

A major part of the studies using purely financial indicators for measuring the performance of CE (see Bierwerth et al., 2015). As shown by our results in Chapter 6, the value creation of CE programs shows a high level of heterogeneity covering different outputs, such as the creation of new business or products, cultural transformation, as well as insights about current trends and developments. These different outputs are, however, not covered when using purely financial indicators only.

Based on the seven output categories and 27 outputs identified in our study, future research may address the question of how companies can improve the measurement of the value of CE programs and develop instruments that can be applied in research and practice.

E: Differences regarding the innovation focus

Generally, CE programs do show a general focus on either (a) leveraging internal innovation potential or on (b) using external sources of innovation. Even though the results of our study show that both categories can lead to similar outputs, it is yet not well understood how they may differ in the long-term (outcomes).

Answering this question seems to be relevant since general differences between internal and external CE programs can be expected. Whereas internal CE activities lead to the rather direct creation of new capabilities for the company, external ones often show a rather transactional character, e.g., by creation a customer-supplier relationship.

Hence, from a managerial perspective, it would be interesting to understand if and how CE programs are different regarding their long-term impact (outcome). This type of investigation would require a more longitudinal research approach that does not only focus on the outputs that are created but also on evaluating their impact. For this purpose, a multiple case study design seems to be suited for further deepening the understanding of the value creation of CE programs.

8.6.2 Recommendations based on the theoretical contributions

In this subsection, we will present three additional avenues for future research that are based on the theoretical contributions of our work and topics that did arise during the research process. They are: (A) the internal fit of CE programs, (B) the external fit of CE programs, and (C) the relevance of time.

A: Internal fit of CE programs

This study follows a configuration theory perspective as the theoretical framework. Due to the lack of understanding about both the organizational design and the value creation of CE programs, the primary focus of our work was to understand them in more detail. This detailed understanding of CE program types and outputs is required for applying configuration theory on the program-level of CE.

The results mainly contribute to the understanding of the internal fit of CE programs by (a) providing definition for nine CE program types, (b) presenting design elements that can be used to distinguish the CE programs, (c) giving an overview of the value creation (outputs) of CE programs and (d) identifying relationships between CE program types and the outputs.

In particular, the identified relationships between CE program types and the outputs serve as a first indicator of the internal fit. By comparing the objective of a CE program and the outputs that are likely to be achieved, it can be evaluated how well they fit together. However, this perspective does not focus on the performance in achieving the outputs. Based on these results, it is recommended to further investigate the internal fit of CE programs.

For this purpose, it seems to be required to develop constructs that can be applied in a quantitative study, since measuring and comparing the performance seems to be rather difficult in a qualitative approach. This could build the basis for evaluating the internal fit of CE programs and to identify the ones that are suited best to achieve certain outputs. The design elements from Chapter 4 can be used as a starting point for developing constructs to measure and analyze the different organizational designs in quantitative studies.

B: External fit of CE programs

The external fit focuses on the question of how well the organization fits with its environmental context. The context for CE programs is divided into (a) the company-internal context, reflected by the characteristics of the core organization, and (b) the company-external context, which is described by the market environment the company is acting in.

The results indicate that the context has an influence on the occurrence of the outputs and on the selection of CE programs themselves. However, since understanding the context was not the primary objective of our study, a detailed understanding of the contextual elements is still lacking. Future research could focus on investigating the context in at least three aspects. First, what factors are describing the context of CE programs? Second, which context factors have an influence on the performance? Third, what type of influence can be observed?

This would contribute to an improved use of CE programs in established companies since the selection of a suited CE program is not only based on the objective the company wants to achieve but also based on the situation of the company, which is reflected by the company-internal and company-external context.

C: Relevance of time

Configuration theory assumes that the organizational designs of a configuration are relatively stable over time, alternating episodically with periods of change that occur to meet shifting requirements (see Meyer et al., 1993). Mirroring this to the field of CE, it can be assumed that (a) relatively stable configurations of CE programs can be observed and (b) that these configurations reach a point where they experience changes in their organizational design.

Our results have shown that different configurations of CE programs could be observed in different contexts (type of companies and age of the CE programs), which supports the assumption that rather stable configurations exist.

However, previous studies have shown that CE programs can reach a point where a re-design of their structure takes place to improve the fit to the company's current needs (see Gutmann et al., 2020). Changes in the organizational design were also observed in our study, which suggests that investigating the role and relevance of time in the research on CE programs could be a future avenue on which studies might focus.

For the organizational design, questions might arise if there are natural evolutions from one CE program type to another one or if some CE programs have a rather temporary nature whereas other CE programs are more longevity. These questions are linked with a life cycle for CE programs that exist, which was mentioned in previous studies (see, e.g., Ma, 2020; Burgelman & Välikangas, 2005).

A second time relevant aspect focuses on the temporary nature of certain outputs. Due to the current challenges that arise with the ongoing digital transformation, many companies have implemented CE activities to support their organizational change. However, it can be assumed that at one point, the core organization has created the required digital capabilities and does not require an additional entity, like a CE program, to drive digital projects. If this assumption holds true, some outputs seem to have a temporary nature, whereas others are always relevant. Hence, it looks promising for future studies to consider the relevance of time and what conclusions can be drawn from it.

Final remarks on research avenues

To conclude on the avenues for future research, it can be stated that this study provides a basis for studies that focus on the investigation of CE programs and their value creation. Now that we understand the heterogeneity of (a) organizational designs and (b) value creation of CE programs, this will allow future research to focus on the complex relationships between them. In addition, the nine CE program types and the 27 outputs form the basis of applying quantitative studies, which seem to be better suited for an understanding of the performance of CE programs and to generate new insights into the influence of contextual factors.

8.7 Concluding on the research

The aim of this study was to gain a deeper understanding of CE programs and how they can be used by established companies to support the creation of discontinuous innovation and drive organizational transformation. By answering the PS and the three RQs (see Section 8.1

and Section 8.2), we have shown how our results contribute to a better understanding of the heterogeneity of CE programs.

As shown in Section 1.2, it is crucial for established companies to implement different types of innovations simultaneously. In this regard, the implementation of more discontinuous innovations is particularly challenging for established companies. The results of our study show that CE programs can be used to create different types of innovation and that the type of innovation varies depending on the CE program type. While some CE program types, e.g., the startup facilitator, are suitable for implementing process innovations (see Subsection 7.4.7), other CE program types, e.g., the intrapreneurial excubator, are more suitable for creating innovations that lead to the creation of new businesses (see Subsection 7.4.6). A clear understanding of how the nine CE program types can be used to create specific types of innovations and how they support the organizational transformation of a company can be used to complement a company's overall innovation and transformation activities.

In summary, CE programs provide a wide range of different types of value to established companies. Their effective use can contribute to a company's dynamic capabilities and strengthen its competitiveness in a volatile environment such as we have in our world today.