Understanding the heterogeneity of corporate entrepreneurship programs

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5 Identifying and defining CE programs

This chapter aims at providing an answer to RQ1, which reads as follows: *What are the different types of CE programs?* In order to answer RQ1, it will be divided into the following two sub-questions.

- RQ1a: *What types of CE programs can be defined?*
- RQ1b: *Which design elements are suited for distinguishing these CE programs?*

Parts of the results in Chapter 5 are based on the following two publications:

- C. J. Selig, T. Gasser and G. H. Baltes, "**How Corporate Accelerators Foster Organizational Transformation: An Internal Perspective**," 2018 IEEE International Conference on Engineering, Technology and Innovation (ICE/ITMC), Stuttgart, 2018, pp. 1-9, doi.
- C. J. Selig and G. H. Baltes, "**Towards an effective management of corporate entrepreneurship activities**," 2019 IEEE International Conference on Engineering, Technology and Innovation (ICE/ITMC), Valbonne Sophia-Antipolis, France, 2019, pp. 1-9.

To answer RQ1, we will present a taxonomy of CE program types that is based on the design elements presented in Chapter 4 (that are suited to define and distinguish different types of CE programs). In total, twelve types of organizational designs will be defined, which belong to the three CE program categories (see Subsection 3.2.2). Each identified CE program type will be presented in a separate subsection.

There are four internal CE program types presented in Section 5.1. They are followed by five external CE program types (Section 5.2) and three types of the radical innovation unit category (Section 5.3). In Section 5.4, we will compare the different organizational designs of the CE program types and provide an overview of their differences (using the design elements from Chapter 4). Section 5.5 will present the background information in relation to the twelve CE program types. In Section 5.6, the results will be discussed and embedded into the existing literature. Section 5.7 will conclude on the CE program types and how the results answer RQ1.

5.1 Defining internal CE program types

In Section 5.1, we will present the four internal CE program types that were identified in our study. The first CE program type is the *venture builder*. It will serve as an example of how the systematic approach was applied to identify the CE program types and how the definition was derived using the design elements and design categories.

The definitions presented in Section 5.1 – 5.3 will provide an answer to RQ1a - *What types of CE programs can be defined*?

5.1.1 Venture builder

The *venture builder* is the first CE program type of the internal CE program category. The definition of the venture builder is based on three cases (n=3). This is the smallest number of cases per CE program type in our study. The rather small number of cases has two causes. First, the venture builder is one of the most novel types (average age of 3.3 years in our data set) and still shows comparatively low adoption in practice (compared to other CE program types). Second, three cases declared themselves as venture builders but were originally assigned to another CE program type, according to our analysis.

In order to derive a definition of the venture builder, the three cases were coded using the morphological box, which provides an understanding of the design elements and element characteristics of a venture builder.

In general, the morphological box consists of four columns, which are (1) design dimension, (2) design category, (3) design element, and (4) element characteristics.

1) The first column *design dimension* consists of *strategy* and *structure*, which reflect the general assignment according to configuration theory (see Subsection 2.2.3).
2) The second column *design category* serves as a thematic bundle for the identified design elements and is used to increase the clarity of the morphological box. A total of seven design categories were identified (see Section 4.3).
3) The third column *design element* consists of the 26 design elements that were derived in Chapter 4. They are identified as the ones that can be used to define and distinguish between the CE program types (see Section 4.2).
4) The fourth column *element characteristics* differs from the others in that it consists of several sub-columns. Depending on the design element, the columns vary in number.

In total, 138 element characteristics were identified, representing the manifestations of all design elements, which reflects the heterogeneity of organizational designs.

The overall morphological box for each CE program type is created as follows. For each case of the venture builder, a separate morphological box is created that represents its specific configuration. These specific morphological boxes per case are then merged into one overall morphological box for the venture builder (illustrated by Figure 5.1). Summing up the morphological boxes (and setting them into relation with the total amount of cases) leads to a certain percentage per element characteristic, which describes how often the element characteristic has been observed for the CE program type. The ones with a high percentage can be understood as being typical for the respective organizational design.

The organizational design of the venture builder

In Figure 5.1, we have highlighted the results for the venture builder with color-coding. The darker an element characteristic is visualized, the higher the percentage for the particular design element to which it belongs (see description after Figure 5.1). In the case of the venture builder, it means that for the design element *innovation type*, the element characteristic *business model* is the most significant one (100% of the cases), followed by the element characteristic of *service* (67% of the cases). Consequently, they are two element characteristics of the design element innovation types that are typical for the venture builder.

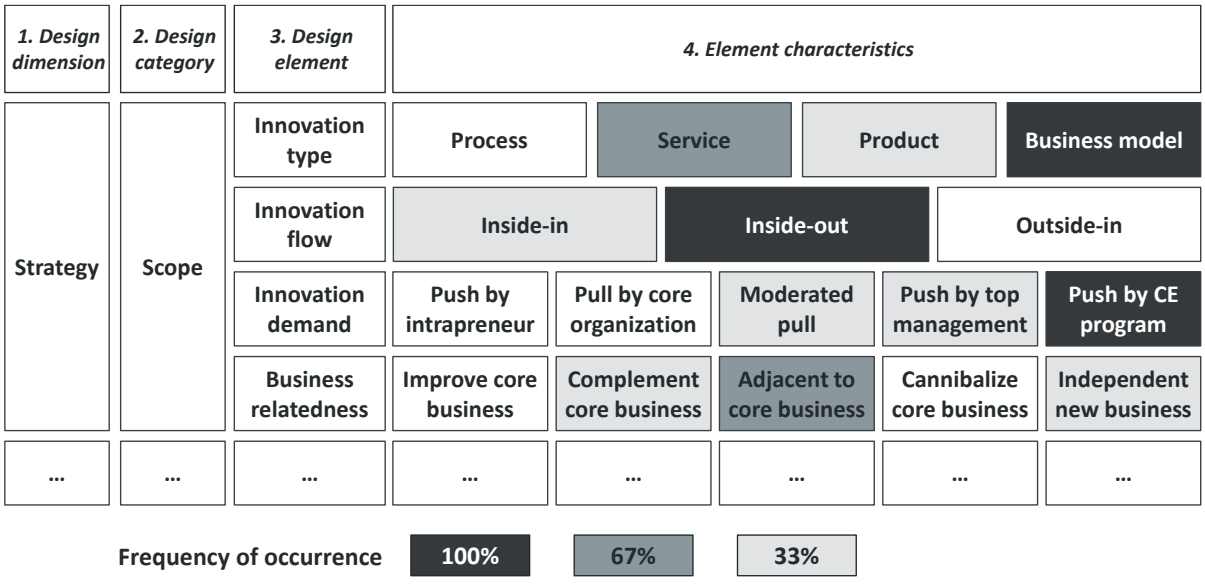

Figure 5.1: Extract of morphological box for the venture builder

The process described above is illustrated in Figure 5.1 and has been executed for the 26 design elements from Table 4.4. It forms the basis for deriving a precise definition for a venture builder. Building on the full morphological box for the venture builder (see Appendix 6), the organizational design of this CE program type can now be described systematically.

Figure 5.1 shows that multiple element characteristics (column 4) can be assigned to a design element (column 3). However, there is usually one dominant characteristic (defined by the frequency of occurrence higher than 80%). The dominant element characteristics are the focus of our investigation since they can be understood as those that are typical for the respective CE program type. Regarding the percentages for the element characteristics of a design element, it must be noted that they can result in a number larger than 100%. This can be explained by the fact that multiple element characteristics can occur for a design element, which results in a total of more than 100% occurrence when summing them up.

The design elements

Subsequently, the design elements from Figure 5.1 (3rd column) will be described based on the element characteristics that were identified for them.

- *Innovation type:* The venture builder shows a strong focus on business model innovation and service innovation. The focus on product innovation is rather unclear, whereas it can be stated that process innovation is not pursued by venture builders.
- *Innovation flow:* The main innovation flow is inside-out, which means that innovation ideas are (1) spun-off into their own legal entity or (2) become a business unit that is separated from the core organization. In some cases, the expertise of venture builders is used as a service by the core business, an inside-in innovation flow can be observed.
- *Innovation demand:* The main driver of the innovation ideas is the venture builder itself, which may be explained by the fact that the aim is to develop businesses that are mainly spun-off and consequently require less cooperation with the core business. Again, for cases where the venture builder is used as a service provider, the demand can be triggered by or in cooperation with internal departments.
- *Business relatedness:* The innovation ideas that are being developed by a venture builder show a strong focus on businesses that are adjacent to the current core business. This goes in line with the inside-out innovation flow and the fact that the innovation idea is driven by the venture builder itself.

By summarizing the element characteristics for each design element as described above, we build the basis for a definition that is empirically derived. However, it is important to acknowledge that, in general, not every single design element has to be considered for the final definition due to the following two reasons.

1) The design elements do not have a clear pattern, e.g., when the element characteristics occur equally distributed and show no dominant characteristic.
2) The design elements are not suited to distinguish the CE programs one from the other, e.g., when all have the same element characteristic.

By removing the "unsuited" design elements, the content becomes more clear and typical for the respective CE program type. The remaining design elements will then be aggregated one more time to the level of the design category. The goal of aggregating the design elements into the respective design category is to achieve more clarity since precisely these design elements are used for the respective CE program type. Table 5.1 on the next page shows the seven design categories (from Section 4.3) and their manifestation for the venture builder, which provide a clear description.

The derivation process described in this subsection is exemplary for the twelve CE program types identified in our study. For the eleven remaining types, we will use a summarized presentation based on the three types of information (a) the general information about the cases, (b) the table describing the seven design categories, and (c) the definition of the respective CE program types, which is contributing to answering RQ1a.

The descriptions of the seven design categories (see below) and Definition 5.1 are based on three cases of the venture builder that are covered in our data set.

Design category	Description
Purpose	*Venture builders* place a strong emphasis on creating strategic value, which in some cases may be accompanied by the aim of increasing the financial value of their own portfolio companies created by their activities.
Scope	Innovation ideas within a venture builder are mainly focused on business model innovations and service innovations that are adjacent to the core business.
Process	The innovation ideas are developed in and by the venture builder itself. Support from the program lasts until the ideas have reached the maturity of an independently operating company.
Governance	Due to the rather independent character of a venture builder, they are often organized as a separate legal entity, equipped with the resources to develop new businesses.
Operations	Activities focus mainly on idea generation and new business development, which are spun off into stand-alone units. This capability is also partially requested by the core organization as a service to solve internal innovation challenges.
Support type	The financing of the innovation idea and the resulting initial funding of the corporate venture is driven by the program itself, either by having its own fund or formalized processes to make the investment decision.
People	Venture builders mainly work on innovation ideas with their own employees and hence, typically have technical and business capabilities to create and operate new businesses themselves.

Table 5.1: Description of the venture builder and its design categories

Based on the description of the seven design categories for the *venture builder* in Table 5.1, Definition 5.1 is formulated for the venture builder.

> **Definition 5.1** *Venture builders* are defined as units that are equipped with the capabilities and resources to develop new businesses that are adjacent to the core business themselves.

5.1.2 Idea validator

The *idea validator* is the second internal CE program type that has been identified. In our data set, we cover four cases (n=4) belonging to this type. Table 5.2 describes the seven design categories that form the basis for the definition.

Design category	Description
Purpose	*Idea validators* mainly aim at the exploration of innovation ideas that seem to have strategic relevance for the core organization.
Scope	The innovation ideas focus on improving and complementing the core business. This typically is done with service, process, and product innovations that are driven either by individuals or departments of the core organization.
Process	The program is usually organized in batches with fixed starting and ending points. It focuses on validating the problem-solution fit before the ideas are transferred back to the core organization.
Governance	Idea validators are organized as programs within the hierarchy of the core organization and are usually located on company premises.
Operations	The main activity is to *incubate* the innovation ideas during their validation. This is done by creating a supportive environment (freedom, resources, and training) until innovation ideas are validated and transferred back to the core organization.
Support type	The support within the program focuses mainly on providing the teams some dedicated time to work on the idea. In addition, the teams can access relevant expertise (innovation methods) and have a small budget for validating the ideas.
People	The teams consist of employees from the core organization. They are supported by coaches who are either employed by the CE program or mandated by it.

Table 5.2: Description of the idea validator and its design categories

Based on the descriptions for the seven design categories, Definition 5.2 is formulated for the idea validator.

> **Definition 5.2** *Idea validators* are focusing on the early phase of the innovation process by offering a supportive environment, services, and resources that allow a fast validation of innovations with an unclear fit to the core organization.

5.1.3 Intrapreneurial excubator

The *intrapreneurial excubator* is the third internal CE program type that was identified in our study. We have covered nine cases (n=9) of this CE program type. Table 5.3 presents the seven design categories of intrapreneurial excubators and forms the basis for its definition.

Design category	Description
Purpose	*Intrapreneurial excubators* focus on exploring and leveraging internal innovation potentials. They support employees in developing rather discontinuous innovations that seem to have strategic relevance for the company.
Scope	They focus on product and business model innovation. Since the ideas are driven bottom-up by intrapreneurs, they vary in terms of their relatedness to the core business. The innovation flow is inside-in and inside-out to a similar extent.
Process	The program is usually open to all employees and has a fixed duration of several months, with support until the idea reaches a product-market fit. They often have multiple phases with different thematic focuses. At the program's end, the main exit paths are (a) becoming a separate business unit or (b) becoming a spin-off.
Governance	Most often, they are organized as a central office, which serves the purpose that the program is open to all employees and their ideas.
Operations	Two key activities are (1) *incubating* the ideas by creating an environment (resources, capacity, process, etc.) that is supportive and (2) *educating* the individuals by teaching methods/skills that are helpful for creating innovations.
Support type	Program support is mainly focused on providing an initial budget for the innovation idea, educational resources, and the capacity (time) to work on the idea, often for 100% of their time once they have reached a certain maturity.
People	The program participants are mainly employees of the core organization, sometimes supported by external experts. The program itself typically employs innovation coaches and persons to facilitate the innovation process.

Table 5.3: Description of the intrapreneurial excubator and its design categories

Based on the seven design categories and their descriptions the definition 5.3 is formulated for the intrapreneurial excubator.

> **Definition 5.3** *Intrapreneurial excubators* support employees in developing rather discontinuous innovation ideas by providing them access to resources, entrepreneurial training, and autonomy from daily business.

5.1.4 Assisted incubator

The *assisted incubator* is the fourth of the internal CE program category that was identified. In our study, seven cases (n=7) can be counted as this CE program type. Table 5.4 summarizes the design categories of the assisted incubator and forms the basis for defining it.

Design category	Description
Purpose	*Assisted incubators* support the core organization in developing innovations with strategic relevance to the core business that requires a high level of exploration.
Scope	They have a clear scope on market-oriented innovation, distributed in a balanced way between product, service, and business model innovation that complement the core business with an inside-in innovation flow.
Process	The program start is rolling and can have different starting points, which keeps the hurdles low and thus helps to embed it into the core organization. Usually, the process consists of multiple phases and supports the innovation idea up to a minimum viable product before they are transferred back to the core business.
Governance	Assisted incubators are usually located close to the core organization and are mainly structured as a central office.
Operations	The main activity besides (a) *incubation* (supportive environment and resource access) and (b) *education* of methods is (c) the *assistance* in the implementation of the innovation ideas. Experts from the assisted incubator join and assist the teams (adding required capabilities for the innovation development) during the program phases until the innovations are transferred back to the core business.
Support type	The support includes initial funding, the capacity to work on the innovation idea (released from the daily business), and the support and expertise of the CE program's employees who are working temporarily within the innovation teams.
People	Participating teams are a mix of employees from the core business and employees from the CE program. The assisted incubators employ specialists in business development, user experience, and digital technologies.

Table 5.4: Description of the assisted incubator and its design categories

Based on the design categories described in Table 5.4, Definition 5.4 is formulated for the assisted incubator.

> **Definition 5.4** *Assisted incubators* are specialized units that support the core business in the cooperative development of strategically relevant innovations that require a high degree of exploration and capabilities that are new to the core organization.

5.1.5 Conclusion on internal CE programs

In Section 5.1, we have presented four internal CE program types that were identified in our study. They are enhancing the current literature on CE programs, which focuses mainly on internal corporate incubators (see Section 4.1), by providing a more nuanced understanding of the internal organizational designs of CE programs.

The focus of support

Based on the descriptions and definitions of the four different internal CE program types, we derived an additional design element, namely the *focus of support*. The focus of support is understood as a continuum describing the CE program's activities that range from *enabling innovation ideas* at one end to *executing innovation ideas* themselves at the other end. Typically, the closer the continuum is to the execution end, the higher the degree of ownership that the particular CE program has for the innovation ideas in the program.

Using the *focus of support* design element shows that the four internal CE program types can be distinguished according to their intensity of support (illustrated in Figure 5.2). This further underlines that the four internal CE program types are distinct in their organizational design and their mission for what they are used by established companies.

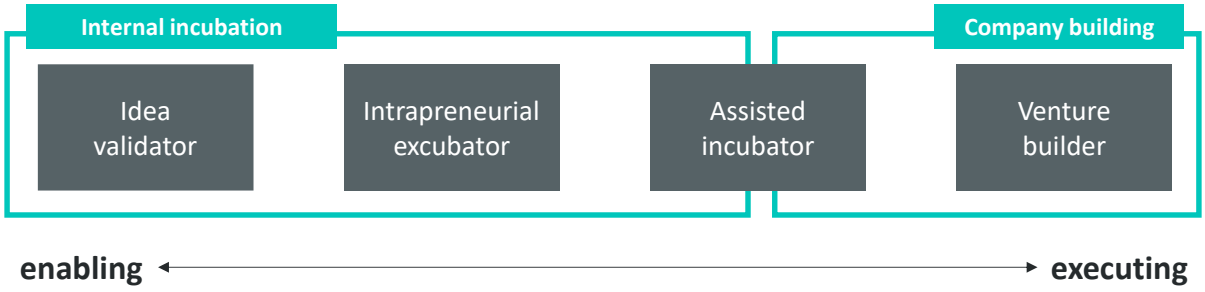

Figure 5.2: Overview of different types of internal CE programs

Internal incubation and company building

In addition to the *focus of support*, Figure 5.2 contains another layer of information. The mint-colored frames are used to group the CE program types by the *type of activity* the respective CE programs are mainly pursuing. The type of activity is focusing rather on the work of the CE program from a content perspective and can be distinguished into the following two groups for the internal CE program types.

1) *Internal incubation:* The CE programs in the group of internal incubation focus on leveraging internal innovation potentials by supporting intrapreneurial employees in implementing their innovation ideas. For this purpose, they provide access to resources and grant a certain degree of freedom from the daily business, which is referred to as incubation.
2) *Company building:* The CE programs in the group of company building are designed to create new businesses and thus contribute to diversification. As such, they have the required resources, capabilities, and structures to develop innovations themselves.

As shown in Figure 5.2, there is also a hybrid type that is combining elements from both groups. The assisted incubator aims to support employees from the core business in the development of innovation ideas (*internal incubation*). For this purpose, the assisted incubator does not only provide the required resources and the appropriate environment but also assists in the actual development through the competencies and capacities of the employees of the CE program, who temporarily join the innovation team (*company building*).

To conclude, the four internal CE program types and the two groups (internal incubation and company building) are enhancing our understanding of the organizational designs of internal CE activities.

5.2 Defining external CE program types

Below we will continue with the *external CE program types*. In our study, we have identified five distinct types that will be presented in the following Subsection 5.2.1 – 5.2.5, focusing on the general information of the cases, the seven design categories, and the definition for the respective external CE program type.

In Subsection 5.2.6, the five *external* CE program types will be briefly discussed and aligned with the results of the *internal* CE program types to gain a better understanding of their differences.

5.2.1 Startup facilitator

The *startup facilitator* is the first out of five external CE program types. It is a rather novel type that experiences much attention in practice and is with six cases (n=6) the most common external type in our data set. Table 5.5 illustrates the design categories of startup facilitator.

Design category	Description
Purpose	*Startup facilitators* focus on solving problems of the core business by connecting them with startups. This can have an explorative or exploitative orientation, depending on the type of problem that has to be handled (and solved).
Scope	They mainly focus on improving the core business. The startup solutions that are scouted must show a fit to the current business problems. The innovation demand is jointly elaborated with the core organization and mostly results in process innovations.
Process	The program start follows either a batch-logic or a rolling format. Startups are selected based on scouting or a call for application. The program focuses on developing a proof of concept to validate whether the startup solves the problem.
Governance	Startup facilitators are mostly organized as central offices as they aim to address all departments of the core business with their service.
Operations	The key activities focus on scouting, which covers (a) internal business problems and (b) startups for assisting in handling the respective problems. In addition, they facilitate the proof-of-concept process with the core business.
Support type	The participating startups mainly benefit from access to the company and the direct connection to the various departments of the core business.
People	The CE program's employees are responsible for the scouting activities and for facilitating the proof-of-concept projects. The startups occur mostly in a later stage; they can be qualified as a supplier.

Table 5.5: Description of the startup supplier and its design categories

Based on the design categories described in Table 5.5, Definition 5.5 is formulated for startup facilitators.

> **Definition 5.5** *Startup facilitators* aim at insourcing innovative solutions to solve business problems. By facilitating proof of concept projects to validate the problem-solution-fit and the interaction between the startup and the core organization, they provide access to solutions that would not fit into the company's purchasing process.

5.2.2 Collective matchmaker

The *collective matchmaker* is the second external CE program type. The descriptions of the design categories are given in Table 5.6, and the definition is based on three cases (n=3). In contrast to the other CE program types, this one is run by multiple established companies. The three cases were collected with the companies that were initiating the CE program.

Design category	Description
Purpose	*Collective matchmakers* aim at both exploratory and exploitative activities by building an open platform to attract startups that are strategically relevant.
Scope	The scope is rather broad and includes product, service, and process innovation, which is reflected in the intention to complement, enhance, or expand the core business by opening up the innovation process to external startups.
Process	The program phases have fixed start and end dates (batches with thematic focus) that are carried out several times a year. During the program phase proof-of-concept, projects are used to validate the identified innovation ideas.
Governance	Collective matchmakers are organized as central offices with multiple locations in different countries. A key difference from all other CE program types is that multiple corporate partners are involved in the program.
Operations	The main activities are scouting (a) startups with relevant innovation and (b) problem owners in the core organization. In addition, they support proof-of-concept projects during the program phase. A second activity is the management of the platform and its partners by the founding companies.
Support type	The most important support for ideas is the network of the platform itself, which provides both the startups with access to potential customers and the partner companies with access to a wide range of startups.
People	They typically employ innovation scouts, project facilitators, business developers, and community managers. The participating startups have a higher level of maturity, which is crucial for cooperation after a successful proof of concept.

Table 5.6: Description of the collective matchmaker and its design categories

Building on the seven design categories, Definition 5.6 is formulated.

> **Definition 5.6** *Collective matchmakers* are jointly organized innovation platforms that are connecting promising startups with multiple established companies with the aim to make the innovation of the startups accessible for the corporate partners.

5.2.3 Cooperative explorer

The *cooperative explorer* is the third external CE program type. The descriptions of the design categories and the definition are based on three cases (n=3). Table 5.7 is presenting the seven design categories that are characterizing the cooperative explorer.

Design category	Description
Purpose	*Cooperative explorers* aim at exploring strategically relevant technologies with the potential to enhance or extend the current product portfolio of the company.
Scope	The focus is mainly set on product and service innovations that are adjacent or complementary to the core business. The innovation demand is triggered either by (a) the CE program itself or (b) through a joint process with the core business.
Process	They are mainly organized in a rolling format, which fits with continuous scouting activities. Innovation ideas within the program are supported until the product-market fit and are transferred to the core organization after the programs end.
Governance	Cooperative explorers are structured as own legal entities or central offices. This is supportive for their exploration activities. They have a budget to drive proof of concepts and to develop prototypes to experiment with new technologies.
Operations	The main activities of the program focus on scouting and evaluating promising startups and the initial support of the collaboration projects, which mainly cover business development and education to bridge cultural differences.
Support type	Innovation ideas focus on R&D, which is the main point of contact for the startups participating in the program. The cooperative explorer provides financial resources to fund the development of prototypes, in some cases via investment.
People	Cooperative explorers mainly employ innovation scouts, project facilitators, and business developers. The participating startups tend to be rather mature startups. The innovation idea projects are usually staffed with people from the core business, the startups, and the CE program.

Table 5.7: Description of the cooperative explorer and its design categories

Building on the seven design categories described above, Definition 5.7 is formulated for the cooperative explorer.

> **Definition 5.7** *Cooperative explorers* focus on identifying and implementing innovation opportunities, whereby the company partners with startups to jointly develop new products in order to improve or expand the core business.

5.2.4 Investing co-creator

The *investing co-creator* is the fourth type of external CE programs. The descriptions and definition are based on five cases (n=5) of this CE program type. The descriptions of the seven design categories are summarized in Table 5.8.

Design category	Description
Purpose	*Investing co-creators* aim at developing strategically relevant partnerships with startups that either can have an explorative and exploitative nature.
Scope	The scope mainly focuses on product innovations that aim at complementing or at extending the core business. The demand for the innovation is initiated by the CE program itself and rather pushed into the core organization.
Process	The process builds on ongoing screening activities to identify startups for collaboration with the core organization. Since they focus on collaboration and/or investing in startups, there is no “standard” process of the program. After the startups are connected to the core business, the program's support decreases.
Governance	They are mostly organized as their own legal entities and are located either close to the headquarters of the core organization or in an innovation hotspot.
Operations	In addition to scouting and investment activities, they focus on initiating collaborations with startups, which also entails business development activities.
Support type	They are designed to invest in startups. However, an investment is not mandatory since collaboration has a higher priority. Providing funding to the startups is mainly done to strengthen a strategic partnership.
People	Investing co-creators employ innovation scouts, investment managers, and business developers supporting the initial phase of the startup collaboration. Typically, the startups have launched their first products on the market or are in the growth phase of their business.

Table 5.8: Description of the investing co-creator and its design categories

Based on the descriptions presented in Table 5.8, Definition 5.8 is formulated for the investing co-creator.

> **Definition 5.8** *Investing co-creators* focus on building partnerships with startups that show a rather immediate strategic value for the core organization, either by partnering with or investing in them.

5.2.5 Strategic investor

Strategic investor is the fifth external CE program type that was identified. This CE program type is rather popular and has already experienced much attention in research (Gutmann, 2018; Weber & Weber, 2005; Chesbrough, 2002). The descriptions of the design categories in Table 5.9 and the definition are based on three cases (n=3).

Design category	Description
Purpose	They have a balanced orientation, meaning investments must show a strategic link to the core organization while at the same time being financially promising.
Scope	The investment scope is broad and not focused on one specific type of innovation. A tendency for new businesses apart from the core business can be observed. The innovation demand is driven rather autonomously by the strategic investor itself.
Process	The starting point for investment comes from a continuous screening of startups and trends. Unlike the other CE programs, there is no formalized "program-like" process. The preferred exit path is either an IPO or an exit to another investor.
Governance	The strategic investors were structured as separate legal entities located in an innovation hotspot. They were directly subordinate to the C-level management of the company and had their own investment fund.
Operations	The two main activities are identifying of and investing in promising startups. As a by-product of their scouting activities, they connect startups with the core organization to increase the strategic value they are providing.
Support type	With their investment, they provide equity funding for the startup as well as access to the company's network and relevant domain expertise (which is one main difference to independent venture capitalists).
People	They mainly employ innovation scouts and investment managers. In some cases, they had business developers to leverage the value of their investments. The focus is set mostly on later-stage startups that secured multiple financing rounds.

Table 5.9: Description of the strategic investor and its design categories

Building on descriptions of the seven design categories in the table above, definition 5.9 is proposed for the strategic investor.

> **Definition 5.9** *Strategic investors* are semi-autonomous investment vehicles that aim at building a portfolio of promising startup investments that deliver strategic benefits for the core organization and simultaneously creating financial value.

5.2.6 Concluding external CE programs

In Section 5.2, we have presented five external CE program types identified in our study.

The focus of support

To provide an overview of the different types of external CE programs, we will order them according to their *focus of support*, which is illustrated in Figure 5.3.

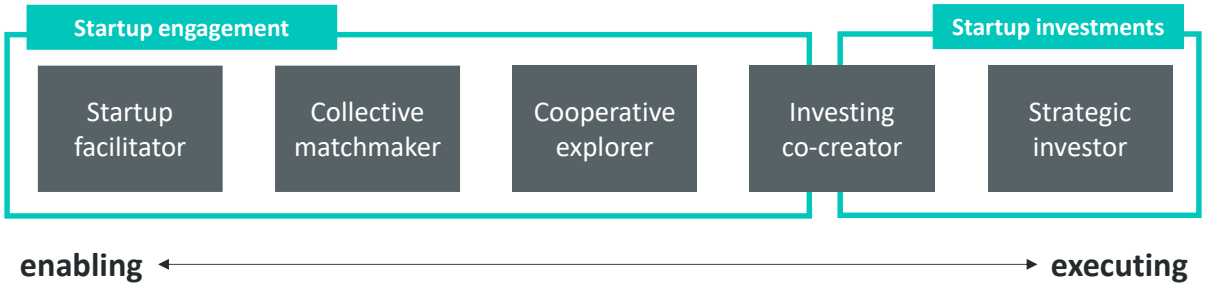

Figure 5.3: Overview of different types of external CE programs

For external CE program types, execution is closely linked to the ownership of the innovation ideas in the program. Ownership is mainly reflected in whether the CE program takes shares (investing) or cooperates with the startup in a particular project (enabling).

Startup engagement and startup investments

Likewise, for the internal CE program types, we have grouped the external CE program types according to the *type of activity* they are mainly pursuing (highlighted with the mint-colored frame in Figure 5.3). This leads to the following two groups.

1) *Startup engagement:* The CE programs in the group of startup engagement focus on the collaboration between startups and the core organization with the aim to insource external innovation. The main activity of these CE program types is to identify startups and to match them with internal needs as a starting point for cooperation.
2) *Startup investing:* The CE programs in the group of startup investment are designed to invest in startups as strategic options or to strengthen strategic partnerships. The investment itself provides financial value which is supplemented by strategic values that occur through the work between the startup and the core business.

Combining focus of support and locus of opportunity

Having shown that external CE programs are distinct regarding their activities, we will add another dimension to the overview. The *locus of opportunity* design element has been used in several studies to cluster CE activities (Gutmann, 2018). It is a binary design element that

describes where the innovation ideas originate (internal or external). By combining the *locus of opportunity* and the *focus of support*, the following overview on both internal and external CE program types is created (see Figure 5.4). The nine CE program types and their definitions presented in Section 5.1 & 5.2 provide the answer to RQ1a.

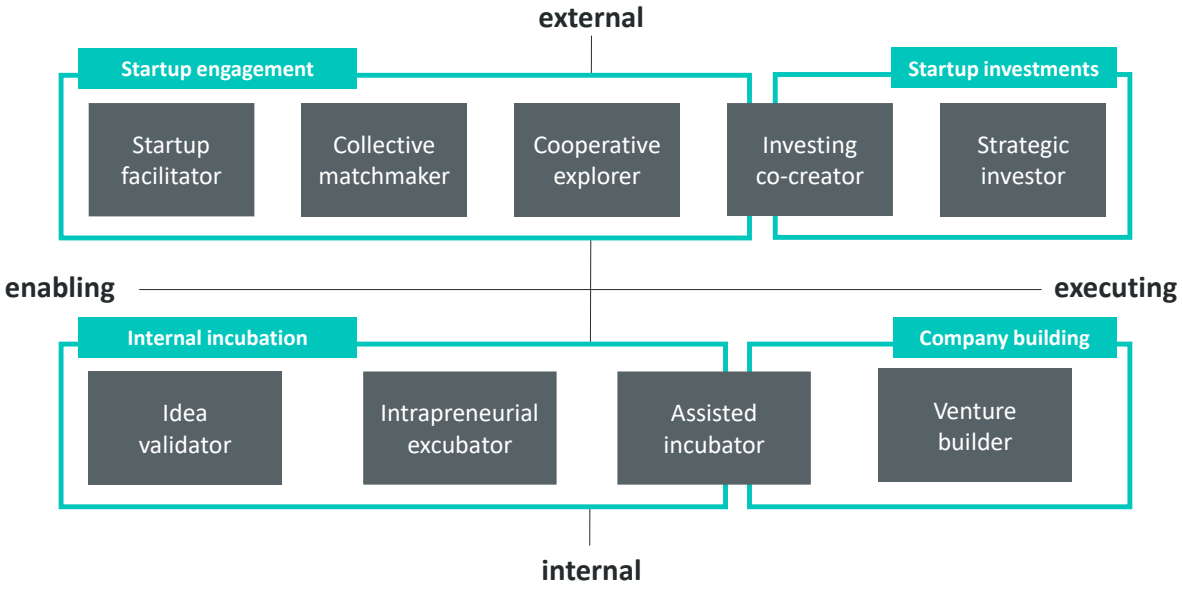

Figure 5.4: Overview of all internal and external CE programs

Generally, the following two aspects are in common for all nine CE program types. First, the focus on entrepreneurial activities, which is performed either by supporting intrapreneurial employees or by working with external startups. This *entrepreneurial focus* is a crucial element of the CE concept and is reflected in the CE program's activities. Second, CE programs are characterized by the fact that *multiple innovation ideas* are supported and that the support has a defined start and end point. This is typical for a program in general, whereas the type of support, as well as the start and end point, differ for the respective CE program types.

5.3 Defining types of radical innovation units

In addition to the nine CE program types presented in Sections 5.1 and 5.2, we have identified three types of organizational designs that are assigned to the category of radical innovation units. Even though they are not answering RQ1 per se, for completeness's sake, we will describe and define them in the same ways as the CE program types in Section 5.3. After their presentation, we will discuss why these radical innovation units are not counted as a CE program in Subsection 5.3.4.

5.3.1 Digital factory

The *digital factory* is the first out of three organizational designs that belong to the category radical innovation units. Table 5.10 and the definition for the digital factory type are based on four cases (n=4).

Design category	Description
Purpose	*Digital factories* have a balanced strategic logic, meaning they focus on exploring new capabilities and on operating the digital solutions being developed by them.
Scope	Digital factories focus on service and product innovations with the aim to improve and complement the core business (inside-in). Demand is driven by the digital factory, as it has responsibility for a specific task area related to digitalization.
Process	The innovation ideas developed by digital factories usually remain in this unit. It distinguishes them from a classic CE program, which aims to transfer the innovation idea. Thus, there is no start and end point, as digital factories are also responsible for operating the digital solutions they are developing.
Governance	Digital factories are usually organized as separate legal entities. They offer more flexible structures and serve the purpose of recruiting digital talent for the company, which is a core task of them.
Operations	The main activities include the development and operation of digital solutions for the core organization. In addition, they focus on developing new capabilities and recruiting digital talents.
Support type	The digital solutions created in digital factories have a strong focus on sales and marketing activities. The units provide an environment and infrastructure that supports the development of digital solutions within an established company.
People	The employees within a digital factory can be grouped into technical experts, user experience experts, project managers, and business developers. They cover all competencies to develop and operate digital solutions.

Table 5.10: Description of the digital factory and its design categories

Based on the design categories described in Table 5.10 above, for the digital factory, Definition 5.10 is formulated.

> **Definition 5.10** *Digital factories* are specialized digital units that are initiated to build new capabilities in a specific area and use them to develop and operate digital solutions that extend and transform the core business with digital components.

5.3.2 Tech labs

The *tech lab* is the second type of radical innovation unit category. This type is well known and used by companies for several decades (Heracleous et al., 2017; Pake, 1985). The definition of a tech lab and the descriptions in Table 5.11 are based on only two cases (n=2).

Design category	Description
Purpose	*Tech labs* exhibit a strong focus on exploring new technologies and understanding technology-related trends that appear relevant to the core organization.
Scope	They have a clear focus on technologies and related product innovations that complement or are adjacent to the core business. Their exploratory orientation leads to innovation being pushed by the tech lab itself.
Process	Tech labs do not follow a program-like process, but they rather explore and experiment with emerging technologies either driven by them or on behalf of the core organization. The aim is to build technological prototypes to understand the potential value for the company.
Governance	Tech labs are characterized by their location in an innovation hotspot, which is expected to support the early identification of emerging, relevant technologies.
Operations	They focus on understanding new technologies, which is done by scouting trends and experimentation and prototyping with new technologies.
Support type	The main contact of tech labs in the core organization is the R&D department which acts as their internal customer. Tech labs have the resources for initial funding and the time to experiment with new technologies.
People	Tech labs mainly employ technology specialists who assess technological trends. Due to the partly external focus, some of them act as innovation scouts. The maturity of the innovation ideas is mostly in the exploration and ideation stage.

Table 5.11: Description of the tech lab and its design categories

Based on the description of the seven design categories in Table 5.11, Definition 5.11 is formulated for tech labs.

> **Definition 5.11** *Tech labs* are specialized units that aim to explore new technologies and to develop relevant know-how about current technological trends. Their results are made accessible to the core organization by proof of concept and prototype projects.

5.3.3 Innovation labs

Innovation labs are the third type that belongs to the radical innovation unit category. This type is currently experiencing a high level of interest in practice and covers a rather broad organizational phenomenon. In contrast to the other types of organizational designs, the innovation lab has a less clear configuration which is rooted in the circumstance that it typically combines different CE and innovation-related activities in one organization unit. The definition of an innovation lab and the description in Table 5.12 are based on five cases (n=5).

Design category	Description
Purpose	*Innovation labs* are units with a strong explorative focus on new topics and digital technologies that are potentially relevant for the core organization.
Scope	The innovation scope is rather broad, including all four innovation types with a focus on product and service innovation. Innovation can have either an inside-in or an outside-in focus. Both are driven by the innovation lab. The relatedness of the innovation ideas to the core business does not follow a clear focus, rather they are a pool for topics that do not fit into the core business.
Process	The process for innovation development is diverse, which is due to the fact that several different activities are often bundled in the labs. The duration of support can range from validation to operation of the innovations. In some cases, the labs were a rather temporary unit initiated to work on different innovation ideas, but not as a formalized program for the continuous development of innovation ideas.
Governance	Due to the broad spectrum of activities and types of innovation, the structure of the labs shows a high degree of heterogeneity, with the most common type of embedding being a central unit.
Operations	A large proportion of the innovation labs combined several activities in parallel, including HR-related activities, an extended workbench for technology or digitization topics, or running multiple CE programs simultaneously.
Support type	The range of support is rather broad and depends on the concrete activities that are bundled in the innovation lab. Mostly, innovation labs have a budget to support the initial funding of innovation ideas that aim at their validation.
People	Innovation labs employ various roles, such as innovation coaches, business developers, tech experts, and innovation scouts. Depending on the nature of the activities, innovation ideas are developed by the lab staff themselves or together with startups and/or colleagues from the core organization.

Table 5.12: Description of the innovation lab and its design categories

Based on the characteristics described in Table 5.12 above, for innovation labs, Definition 5.12 is formulated.

> **Definition 5.12** *Innovation labs* are partly separated exploration units that serve as a pool for innovation ideas that do not fit into the scope of the core business but show a strategic relevance for the company.

The descriptions in the table and the definition show that innovation lab is more a generic term than a clearly describable organizational design. The reason for this seems to lie in the fact that companies are currently confronted with a variety of topics that are new to them, which require different capabilities. It can be observed that partially separate units are created in which these "new topics" are brought together – the innovation lab. This bundling of activities does lead to a wide variety of activities that are potentially carried out by innovation labs. In many cases, they run different innovation, digitalization, or HR-related activities, sometimes combined with CE activities. However, due to the variety of different activities, innovation labs are less structured and standardized, making it difficult to give a clear definition of what an innovation lab is.

5.3.4 Concluding on radical innovation units

As mentioned in Subsection 5.2.6, the three types that belong to the radical innovation unit category are not counted as a CE program as they show clear differences to the nine CE program types. In this subsection, the respective differences will be described to illustrate why they are not considered to be a CE program.

Starting with the *digital factory*, we remark that it differs at least regarding the following three aspects from a CE program. First, the innovation ideas or projects that are developed by digital factories often remain within them and are not transferred, which is different from all CE programs. Second, digital factories are not only developing innovation ideas but also focus on optimizing and operating digital solutions. Third, even though digital factories are organized as partly separated units, their activities are understood as a part of the core organization, which is reflected in the circumstance that they have clear functional responsibilities for their projects and innovation ideas. In the cases of our data set, these responsibilities are mostly in the areas of digital marketing, digital sales, and other customer-oriented functions.

The *tech lab*, as the second type of radical innovation unit, differs from CE programs as follows. Unlike CE programs that focus on entrepreneurship (either intrapreneurship or with external startups), tech labs are primarily focused on understanding new technologies and building know-how that is useful to the core organization. They are not designed to develop a product innovation but only to *identify* and *understand* relevant technologies. This approach differs fundamentally from CE programs that do not focus on technology only but on innovation as new products or new businesses that can be created from them. Therefore, tech labs can be seen more as a type of research and development activity. However, in our study, all tech labs were located in Silicon Valley and had the mission to understand trends and developments early on in order to not miss out on the latest technologies. This aspect is rather related to scouting activities of CE programs, which makes tech labs more than "just" a research facility.

The *innovation lab* as the third type of the radical innovation unit category is different from CE programs due to the following reason. In contrast to all other organizational designs that were investigated in this study, innovation labs are characterized by combining different activities that relate to CE, innovation, and digitalization in one organizational unit. Thereby, the type of combination is varying strongly for each case. This leads to the circumstance that there is not one specific configuration of design elements that is describing "the innovation lab". Innovation labs differ from CE programs which mostly have a clear scope of activities and typically a well-defined process in their program phases. In conclusion, an innovation lab can be seen as an umbrella term for units that combine different innovation-related activities (which may share or do not share elements of CE) rather than a specific type of an organizational design like the other elven types that were identified.

Having described why radical innovation units are not counted as CE programs, we will now use the framework presented in Subsection 5.3.6 to show how these organizational units are complementing the different types of CE programs in Figure 5.5.

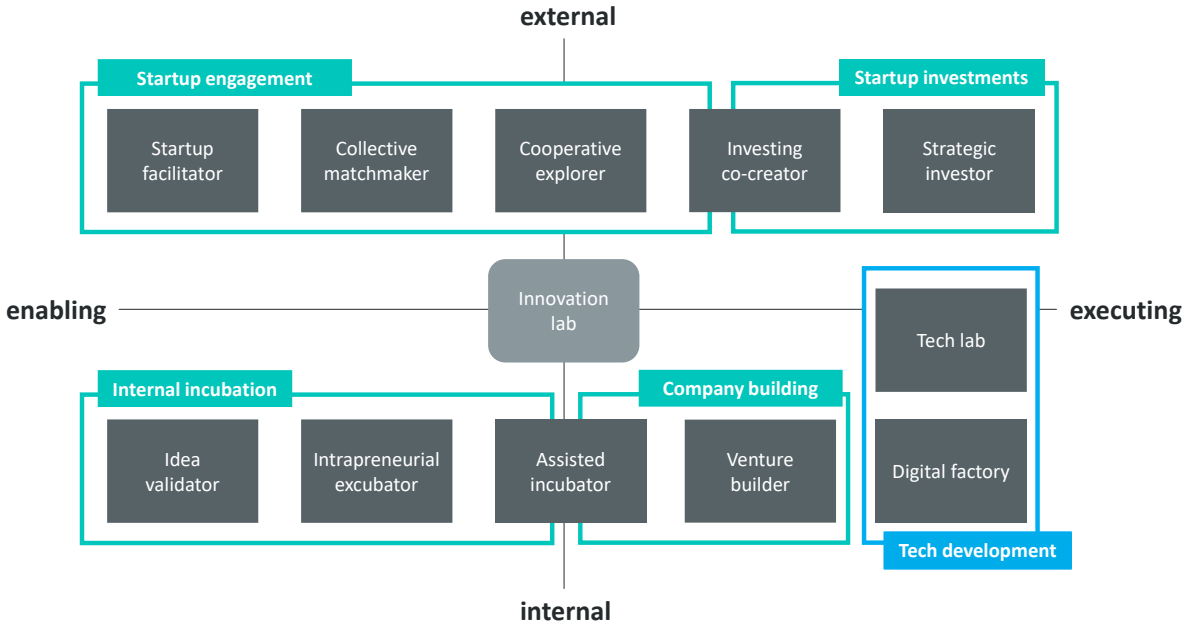

Figure 5.5: Overview of all organizational designs identified in our study

The innovation lab is placed in the middle of Figure 5.5 and is illustrated differently from the other organizational designs. This is done since the innovation lab is the most ambiguous type with various practical manifestations (e.g., combining internal and external activities).

The two remaining types are highlighted by the blue frame and the term *tech development*, which is describing their main activity. Both the *tech lab* and the *digital factory* show a strong focus on exploring and developing new technologies to make them accessible and usable for the core business.

To conclude, our results present nine distinct CE program types and three types of radical innovation units. The latter are related in some way to the concept of CE. These twelve types of organizational designs contribute to a better understanding of the different entrepreneurial and innovation activities of established companies.

5.4 Comparing the different types of CE programs

In Section 5.4, we compare the nine defined CE programs to understand their differences better. Even though radical innovation units are distinct from CE programs, they will be further considered in our analysis to understand *how* they differ from and maybe complement the activities of CE programs.

Our main aim is to answer RQ1b, which reads as follows - w*hich design elements are suited for distinguishing these CE programs?*

For this purpose, the nine types of internal and external CE programs and the three types of radical innovation units are compared by using a subset of design elements from Chapter 4. For each CE program category, we will focus on identifying a specific set of design elements that is suited to distinguish the different CE program types. The distinction will be made in Subsection 5.4.1 for internal CE programs, Subsection 5.4.2 for external CE programs, and Subsection 5.4.3 for radical innovation units.

The identification of design elements suitable to distinguish the different types of CE programs and radical innovation units is based on the morphological boxes created for each type. Two types of design elements are relevant for answering RQ1b.

- First, design elements that are *heterogeneous* across the different types in a CE program category. That is, each CE program type has a different element characteristic for the particular design element.
- Second, design elements that are distinct for a CE program type, such as when four out of five have the same element characteristics for a design element and one is different.

Design elements that are homogeneous across the CE program type are not considered as they do not contribute to the distinction between the different CE program types.

5.4.1 Distinguishing internal CE program types

For distinguishing internal CE programs, nine design elements belonging to five design categories are important to describe the differences between the four internal CE program types. The design elements that are appropriate for distinguishing them are illustrated in Figure 5.6. For each design element, the typical element characteristics are summarized in the field below the respective CE program type. In the case of design elements that show multiple element characteristics, all of them have been summarized in this field. In the case that a design element does not have any element characteristics that are typical, we have used the term "mixed" to represent this in the figure.

The main differences that are illustrated in Figure 5.6 are briefly summarized below for each CE program type of the internal category. Note that we changed the order of the internal CE program types in that we place the venture builder on place four instead of place one.

- *Idea validators* are short-term programs that focus on validating ideas (problem-solution fit) with the aim of transferring promising ideas back to the core business. In order to be able to transfer the ideas back, they have a rather strong relatedness to the core business and a strong focus on improving or complementing it with service and process innovations.
- *Intrapreneurial excubators* aim to support employees in implementing their ideas. The ideas typically focus on product or business model innovations. Their relatedness is rather unclear, which means that some ideas aim to solve current business needs, while others are rather independent businesses. This can be seen in the characteristics of the innovation flow, which are either inside-in (higher relatedness) or inside-out (lower relatedness). Given the focus on supporting individuals, a key activity is the education of entrepreneurial skills and methods, often through specific formats.
- *Assisted incubators* are geared to the needs of the core business, with a focus on market-oriented innovations (not process innovations) that are complementing or adjacent to the core business. As the main difference to the previously described CE program types, the assisted incubators employ their own innovation experts who become team members during the program phase and support the implementation of the innovation ideas with their specific skills (assisting).
- *Venture builders* differ from the three other internal CE program types in that they do not focus on supporting the employees of the core organization, but on creating new businesses themselves (*ideation* and *execution*). They are specialized units that employ the different roles needed (technical experts, business development, etc.) for developing new business, which is mostly adjacent to the core business or even independent of it. The innovation ideas mainly follow an inside-out innovation flow, which results in founding a corporate venture or creating a new business unit.

These brief descriptions, which are based on the elements (see Figure 5.6 for a summary of the differences between the internal CE program types), show that the four internal CE program types can be clearly distinguished using a subset of design elements (nine out of 26).

Design category	Design element	Idea validator	Intrapreneurial excubator	Assisted incubator	Venture builder
Scope	Innovation types	Service, process & product	Product & business model	Service, business model & product	Business model
	Innovation flow	Inside-in	Inside-out & inside-in	Inside-in	Inside-out
	Business relatedness	Complementing & improving	Mixed	Complementing & adjacent	Adjacent & independent
Process	Starting point	Batches	Mixed	Ongoing	Ongoing
	Program end	Validating problem-solution fit	Building product-market fit	Support initial business operations	Operate the business itself
	Preferred exit path	Transfer to core business	Become a spin-off or a business unit	Transfer to core business	Become a spin-off or a business unit
Governance	Governance mode	Program within hierarchy	Central office	Central office	Own legal entity
Operations	Key activities	Incubating	Incubating & educating	Assisting & incubating	Ideating & executing
People	Program participants	Employees from core business	Employees from core business	Employees CE program & core business	Employees CE program

Figure 5.6: Design elements distinguishing internal CE programs

5.4.2 Distinguishing external CE program types

The five external CE program types can be distinguished by twelve design elements that belong to six design categories. The design elements and their element characteristics for each external CE program type are illustrated in Figure 5.7.

Generally, it can be stated that external CE programs differ into types that aim at (a) collaboration with startups, (b) investing in startups, or (c) hybrid types that are combining both (see Section 5.2.6). Based on the design elements and their element characteristics, the differences for the five external CE program types are described briefly. The order of the five external CE program types is the same as given in Section 5.2.

- *Startup facilitators* show a clear focus on improving the core business, mostly with process innovations that are insourced from startups. The focus on optimizing the core business is distinguishing the startup facilitator from the other external CE program types, which focus on rather market-oriented innovations.
- *Collective matchmakers* are different from the other four external CE program types due to the fact that they are operated by multiple companies instead of one. Besides this key difference, they have a rather broad focus on different innovation types covering product, service, and process innovation.
- *Cooperative explorers* aim at developing product or service innovations together with startups to complement and extend the core business. Mostly, these CE programs do support the validation of the innovation potential as well as the development of a first MVP (minimum viable product). Within the development process, they support the teams consisting of internal employees and members of the startup.
- *Investing co-creators* differ from the other types in their hybrid focus on both collaboration with and investing in startups. They usually only invest in startups when they have a clear opportunity to collaborate with them. In this regard, investments are mainly made to strengthen the strategic partnership with the startup. The focus for collaboration is generally rather broad and not limited to a specific area.
- *Strategic investors* are geared towards investing in innovative startups that (a) are a financially promising investment and (b) show a strategic relevance for the core organization. The strong financial component and the primary focus on investments is distinguishing the strategic investor from other external CE program types.

These brief descriptions are based on the design elements and respective element characteristics for each of the five external CE programs. They show that the types can be clearly distinguished. Hence, the twelve design elements summarized in Figure 5.7 represent a subset of design elements that is sufficient to distinguish external CE programs.

Design category	Design element	Startup facilitator	Collective matchmaker	Cooperative explorer	Investing co-creator	Strategic investor
Purpose	Orientation	Strategic	Strategic	Strategic	Strategic	Balanced
Scope	Innovation type	Process	Product, service & process	Product & service	Product	Business model & product
	Relatedness to core business	Improve core business	Complement core business	Complement & extend business	Complement core business	Extend & create new business
	Innovation demand	Moderated pull	Moderated pull	Moderated pull and push	Push by CE program	Push by CE program
Process	Starting point	Mixed	Batches	Ongoing	Ongoing	Ongoing
	Program end	Validating problem-solution fit	Validating problem-solution fit	Creating product-market fit	With established cooperation	Exit of portfolio venture
Governance	Governance mode	Central office	Central office	Own legal entity	Own legal entity	Own legal entity
	Platform openness	Closed	Open for other industry partners	Closed	Closed	Closed
Operations	Key activities	Scouting & facilitating	Scouting, assisting & facilitating	Scouting, assisting & facilitating	Scouting, investing & facilitating	Scouting and investing
	Type of funding	Project funding	Project funding	Project funding or investment	Investment or project funding	Investment
People	Key contact points	All departments	R & D	R & D	Mainly R&D, all departments	CE program mainly

Figure 5.7: Design elements distinguishing external CE programs

5.4.3 Distinguishing radical innovation units

The three types that belong to the category of radical innovation unit have a subset of twelve design elements that come from all seven design categories. Thus, they are suited to distinguish the three types belonging to the radical innovation unit category, as illustrated in Figure 5.8.

Based on these twelve design elements and their element characteristics, a brief summary of the differences of each type is provided.

- *Digital factories*, as the name already implies, have a strong focus on supporting the digital transformation of the core organization. In contrast to the other types, their main focus is set on sales and marketing activities. A second key difference is that they are structured and organized to develop digital solutions as well as to operate them on their own.
- *Tech labs* are organizational units that have a clear focus on identifying and understanding new technologies and developments. They mainly differ from other organizational designs as they rather focus on technology than on the development of innovations. It means that they are not designed to develop market-ready innovations but to provide new technologies and know-how that may lead to developing such an innovation.
- *Innovation labs* can show both an inside-in and inside-out innovation flow which is mostly because they are used to bundle various innovation and digitalization activities, which do not fit into the structure or scope of the core business. The fact that multiple activities or CE programs are bundled can be seen as one characteristic of an innovation lab, which distinguishes it from other CE program types.

Similarly, to the internal and external CE programs in the previous sections, for the digital factories, it can be stated that a clear definition and distinction from other organizational configurations is possible. For the innovation lab, however, a definition, as well as a clear distinction, is more difficult. This is rooted in the circumstance that innovation labs are organizational units that bundle multiple activities or multiple CE programs. As the combination of activities is case-specific, there are no fixed design elements that are clearly distinguishing or defining an innovation lab in our data set.

Design category	Design element	Digital factory	Tech lab	Innovation lab
Purpose	Strategic logic	Exploration & exploitation	Exploration	Exploration
Scope	Innovation flow	Inside-in	Inside-in	Inside-in & outside-in
	Relatedness to core business	Improve & complement core business	Complement core business	Mixed
Process	Application process	Internal ideation & by order	Mainly push	Moderated pull and push
	Starting point	Mixed	Ongoing	Ongoing
	Program end	Develop and operate the digital solutions	Technical prototype or proof of concept	Building product-market fit, support operations
Governance	Governance mode	Own legal entity	Mixed	Mixed
Operations	Key activities	Ideating & idea executing	Technology scouting and execution	Mixed
	Different innovation formats	HR related activities	-	Multiple programs in one unit, HR activities
Idea support	Key contact points	Sales & marketing	R&D	Mixed
People	Key functions	Technical experts & project managers	Mainly tech-experts	Tech-experts, project managers, business developer, coaches
	Participants	Employees CE program	Employees core business	Employees core business, CE program, external startups

Figure 5.8: Design elements distinguishing radical innovation units

5.5 Comparing the background information

In this subsection, we focus on the background information for the different types of CE programs and radical innovation units that have been defined in this chapter. An initial overview of the background information was already provided on the level of the CE program category (see Subsection 3.3.2). However, a more detailed overview was not possible at that point in time since a more detailed understanding of the different organizational designs was not then available.

Now we are ready to read more information. In Table 5.13, the background information of (a) the number of employees, (b) the age of the organizational unit, and (c) the location will be provided for the twelve types described in Sections 5.1 – 5.3.

CE program category	CE program type (# cases)	# of employees			Program age (a)			Outpost rate [14]	# cases closed
		MIN	MAX	AVG	MIN	MAX	AVG		
Internal CE programs	Idea validator (4)	1.5	12.0	4.9	4.7	9.3	6.0	0%	0
	Intrapreneurial excubator (9)	1.0	21.0	7.4	2.8	6.0	4.0	11%	3
	Assisted incubator (7)	2.0	70.0	16.7	2.0	5.8	3.5	14%	1
	Venture builder (3)	10.0	30.0	19.3	2.3	4.9	3.3	0%	0
External CE programs	Startup facilitator (6)	2.0	13.0	6.3	1.8	8.2	4.8	0%	0
	Cooperative explorer (3)	5.0	45.0	19.0	3.0	17.7	8.3	33%	1
	Collective matchmaker (3)	9.0	31.0	16.3	2,1	8,4	4,9	0%	0
	Strategic investor (3)	10.0	28.0	18.0	4.0	9.3	5.8	100%	0
	Investing co-creator (5)	3.0	31.0	9.7	2.3	8.4	4.7	40%	0
Radical innovation units	Digital factory (4)	40.0	300.0	172.5	3.8	18.8	8.6	0%	0
	Innovation lab (5)	5.0	60.0	21.5	1.5	21.3	7.3	20%	3
	Tech lab (2)	8.0	40.0	24.0	20.3	24.8	22.5	100%	0

Table 5.13: Background for CE program types and radical innovation units

The information provided in Table 5.13 shows clear differences exist regarding the background information. In the sequel, the strongest differences will be described, starting with (A) the number of employees, followed by (B) the age of the different organizational designs, (C) the ratio of outposts, and (D) the terminated cases.

[14] Following the understanding presented in Chapter 3, an outpost describes a unit that is located in an innovation hotspot such as the Silicon Valley. They have the mission to be a representative of the company in that area and to understand and to sense trends and developments from early on.

A: Number of employees

For the internal CE programs, it can be seen that the assisted incubator (16.7 employees) and the venture builder (19.3 employees) have on average more than double the size of the idea validator (4.9 employees) and the intrapreneurial excubator (7.4 employees). This goes in line with the structural differences described in Section 5.1 – 5.3. In contrast, the idea validator and the intrapreneurial excubator focus on supporting employees of the core organization, the assisted incubator and the venture builder are either assisting or even executing the implementation of the innovation ideas. However, the capacity to assist or execute concrete innovation ideas requires more employees. This is reflected in the average size of the internal CE program types.

For the external CE program types, it can be stated that the average size of the CE program type is correlating with the scope of work. The startup facilitator and investing co-creator, mainly focus on scouting for relevant startups and on facilitating collaborations. This focused scope of work might explain why they have on average fewer employees than the three other external CE programs of cooperative explorer, collective matchmaker, and strategic investor. These latter three CE program types typically have additional activities, such as supporting pilot projects, organizing investments, and managing partner companies. These additional activities are reflected in the average number of employees, which is double the size of the startup facilitator and investing co-creator.

For the radical innovation units, it can be observed that the digital factories are much larger than the remaining CE program types and radical innovation unit types. On average, they employ 172.5 people. Comparing this number to the second-largest type in Table 5.12, which is the tech lab with 24 employees on average, shows that digital factories are an exception regarding their size. This strong difference can also be explained by the design of the digital factory as described in Subsection 5.3.1. Digital factories not only develop digital innovations but are also responsible for their operation as part of the core organization. This differs from the other CE programs and radical innovation units since they are designed to transfer the innovation ideas either to the core organization or into a new legal entity.

B: Age of the organizational designs

Regarding the age of the CE programs and the radical innovation unit types, the tech lab is showing a much higher age with an average of 22.5 years than all other types. The youngest

average age can be observed for the venture builder with 3.3 years. For both types, this is in line with the current state of knowledge. Whereas tech labs are used by companies for several decades (Wang & Kleiner, 2005), the venture builder is the most recent type that is discussed in the field of CE and a comparably young phenomenon (Rathgeber et al., 2017). Another observation that can be made regarding the age is that the innovation lab shows the highest discrepancy with 1.5 years for the youngest case and with 21.3 years for the oldest one.

C: Location

For the location, we distinguish between CE programs and radical innovation units that are located in the DACH region (Germany, Austria, and Switzerland) or in an innovation hotspot, which in our case is the Silicon Valley. In the last column in Table 5.13, the rate of outposts shows the proportion of the cases from our data set that were located in Silicon Valley.

For the *internal CE program types*, it can be observed that out of 23 cases, only one intrapreneurial excubator and one assisted incubator are located in Silicon Valley. This observation is in line with the understanding of an innovation outpost, which has the mission to sense trends and developments in an innovative region mostly by external activities.

For the *external CE program types*, as it can be expected, a larger ratio of innovation outposts can be observed. In total, six out of the 20 cases were located in Silicon Valley. The six cases show the following distribution across the different external CE program types – three cases of the strategic investor, two cases of the investing co-creator, and one case of the cooperative explorer. This shows that only CE program types that focus on market-oriented innovation (not process innovation) are located in an innovation hotspot, with a focus on investing in startups. For the strategic investors, it must be stated that even though 100% of the cases were located in the Silicon Valley, there are many that operate in the DACH region. Two of the three cases in our data set did also have an office in Germany.

For the *radical innovation units*, there are three cases that are located in Silicon Valley. Two of them are tech labs, and one is an innovation lab. Even though tech labs show a rather internal focus, they are located in an innovation hotspot as their aim is (1) to identify and understand emerging technologies early on and (2) to transfer the know-how back to the core organization. Consequently, it is not surprising that these units are located in an area where many new technologies are being created.

D: Termination of CE programs

There are eight out of 54 cases that were terminated during our study. The eight cases that were terminated are distributed among the CE program categories as follows. Four of them are internal CE programs, one case is an external CE program, and three belong to the radical innovation unit category. As described in Subsection 3.2.2, there are two types of terminated cases. On the one hand, three cases were closed but replaced by successor programs, which were generally perceived as a successful CE program. On the other hand, the remaining five cases were closed because they did not meet the expectations of the core organization and consequently were perceived as being not successful. The distribution of the terminated cases across the different CE program categories and the respective CE program type or type of radical innovation unit is illustrated in the following Table 5.14. The first column of the table shows the CE program category, followed by the specific CE program in column two. The third column includes all terminated cases, and the fourth column lists only those cases that were perceived as unsuccessful.

CE program category	CE program type	All cases that were terminated	Terminated cases perceived unsuccessful
Internal CE programs	Intrapreneurial excubator	2 (reflecting 8.7%)	2 (reflecting 8.7%)[15]
	Assisted incubator	2 (reflecting 8.7%)	1 (reflecting 4.3%)
External CE programs	Cooperative explorer	1 (reflecting 5.0%)	0 (reflecting 0.0%)
Radical innovation units	Innovation lab	3 (reflecting 27.3%)	2 (reflecting 16.7%)

Table 5.14: Overview of cases that were terminated during our study

Table 5.14 shows that in our data set, the cases perceived as unsuccessful belong either to (a) the internal CE program category or (b) to the radical innovation unit category. For internal CE programs, a potential explanation may be rooted in the circumstance that the activities of internal CE programs have an overlap with the activities of the core business, e.g., creating new products or businesses. This may lead to more competitive thinking, in particular when the innovation ideas have a cannibalizing effect or lead to changes in the core organization. In

[15] The two cases of the intrapreneurial excubator are currently paused (for more than one year) due to the economic situation. So far, they have not been re-started which is the reason why they are grouped in the category perceived as unsuccessful.

addition, the innovation ideas that must be transferred back to the core business do often lead to tension as the processes and structures in the core organization are designed for the core business but not for innovation ideas that are more discontinuous.

For the innovation lab, which is the only type of the radical innovation unit category that was terminated, the reason may be found in their organizational design. As shown in Subsection 5.3.3, innovation labs are often used as a pool for innovation ideas and projects that do not fit to the core organization. Consequently, their organizational design is less clear than for the other types that were identified. This also comes in hand with a higher level of ambiguity regarding what they can be used, which may lead to misunderstanding and explains why three out of five innovation labs were terminated.

5.6 Discussion of the results

The results of this chapter show that there are in total nine different types of CE programs and three types that belong to the category radical innovation unit. Furthermore, we have seen that the design elements that were derived in Chapter 4 are suited for defining and distinguishing the different CE program types.

In the following three Subsections (5.6.1 – 5.6.3), we will be discussed how the results of our study can be embedded into existing literature about the organizational designs of CE programs and how we are contributing to a better understanding of CE.

5.6.1 Embedding internal CE programs within the existing literature

As shown in Section 4.1, there is only one internal CE program that is well-established in the literature – the internal corporate incubator. The concept of *incubation* is generally not limited to the field of CE but also used in similar fields such as entrepreneurship and innovation (Zedtwitz, 2003). Incubation is used to describe the support of nascent innovation ideas by providing them (1) an environment that is beneficial and (2) access to resources such as financing, coaching, etc. (Becker & Gassmann, 2006b). In the context of CE, the understanding of what is an internal corporate incubator is historically grown and has experienced a certain development over time (Selig et al., 2018). As it is the only well theoretically embedded concept for internal CE program types, it is used for a variety of different organizational designs (Becker & Gassmann, 2006a). Consequently, the internal corporate incubator can be

seen rather as an umbrella term for the described types of activities than one specific configuration of a CE program.

This understanding fits to our results described in Subsection 5.1.5, showing that we identified three CE program types that are either fully or partly related to the concept of incubation. These are (1) the idea validator, (2) the intrapreneurial excubator, and (3) the assisted incubator (hybrid of internal incubation and company building). By providing a clear definition and description of these three internal CE program types (see Subsections 5.1.2 – 5.1.4) and linking them to the concept of incubation, we are providing a more nuanced understanding of the different types of organizational designs that are referred to as internal incubation. The three internal CE program types show clear differences, for example, regarding the duration, the scope of innovation, or the type of support through the CE programs. Hence, our findings do not contradict the existing understanding of internal CE activities but provide a more detailed view by providing more precise definitions covering the different organizational designs to support intrapreneurial employees that have emerged.

The fourth internal CE program type that has been identified and defined is the venture builder (see Subsection 5.1.1). The venture builder shows clear differences to the general concept of internal incubation as these programs focus on developing new business by themselves instead of supporting employees from the core business. The venture builder has been the topic of a few publications that are describing this recent phenomenon. Thereby, different names like company builder, corporate company builder, or venture builder are used (Gutmann, 2018; Peter et al., 2018; Rathgeber et al., 2017). We have selected the name venture builder to distinguish the CE program type from the phenomenon of independent companies that are designed to frequently found new ventures, which is often referred to as company building (Köhler & Baumann, 2015). By providing an empirically derived definition of the venture builder and a clear distinction to other internal CE programs, we are enhancing the current body of research and offer a more nuanced perspective on internal CE activities.

To conclude on the internal CE program types, it can be stated that the four types we have identified in our study are enhancing the current body of literature in at least two ways. First, they are providing a more nuanced understanding of the internal incubation concept. Second, they are clarifying how the venture builder differs from internal incubation and showing what is characteristic of the concept of company building.

5.6.2 Embedding external CE programs within the existing literature

In contrast to internal CE programs, there is a larger number of external CE program types that are well-embedded into literature, namely (a) the external corporate incubator, (b) the external corporate accelerator, and (c) corporate venture capital (see Subsection 4.1.2). The results of our studies are contributing to a better understanding of external CE program types by providing definitions of five distinct external CE program types. Thereby, the definitions build on the well-known CE programs but also cover novel organizational designs (see Subsection 4.1.2).

Starting with the two CE program types that focus on startup investments. The results of our study have revealed that two distinct types of CE programs that are investing in startups can be defined and distinguished, namely (1) the *strategic investor* and (2) the *investing co-creator*. Both of them are linked to the concept of corporate venture capital, which describes that companies are investing in startups for financial or strategic reasons (Maula, 2007). The *strategic investor* type can be clearly linked to prior studies on corporate venture capital which are describing institutionalized units for startup investing (Ma, 2020; Benson & Ziedonis, 2009; Dushnitsky & Lenox, 2006; Chesbrough, 2002). The *investing co-creator* as the second CE program type that invests in startups enhances the current discussion on corporate venture capital activities as follows. It shows a hybrid type CE program that combines investing and collaborating that is distinct from “traditional” corporate venture capital activities as it uses the investment as a vehicle to strengthen partnerships that show a direct relationship to the core business. The provided definition of the investing co-creator shows similarities with the external explorer described by Hill & Birkinshaw, 2008 in their publication on different configurations of corporate venturing units.

The three remaining types of CE programs which are (1) the startup facilitator, (2) the collective matchmaker, and (3) the cooperative explorer, can be counted as CE program that is focusing on engaging with startups. The collaboration with startups is also frequently discussed in the literature on external corporate incubators and external corporate accelerators. Consequently, we will discuss how these two types (or better concepts) are related to the three external CE program types we have identified in our study.

Similar to the internal corporate incubator, we understand the two types of *external corporate incubator* and *external corporate accelerator* rather as an umbrella term or general concept

than a specific CE program type. The external corporate incubator appears to be a concept that has been replaced in recent years and is almost non-existent in practice. In our data set, there is only one case that declares itself as an external corporate incubator. This is in line with Becker & Gassmann, 2006b), who showed in their study that already then a large proportion of the incubators were terminated. A second publication did stress the circumstance that a new model of the incubator is emerging (Pauwels et al., 2016). In practice, it seems (based on our data set) that it has replaced the external corporate incubator. To conclude, our results suggest that the external corporate incubator in its traditional understanding (as a distinct CE program type) is not existent anymore.

A more recent concept frequently discussed in the context of startup engagement programs is the *external corporate accelerator* (Shankar & Shepherd, 2019; Moschner et al., 2019; Selig et al., 2018; Kanbach & Stubner, 2016). For external corporate accelerators, it can be stated that a different understanding exists (Moschner et al., 2019; Kupp et al., 2017), which is potentially rooted in the circumstance that the term is recently used by many different types of startup engagement. In its traditional understanding, it is an organizational entity that supports cohorts of external startups (in a batch-logic[16]) for a rather short period of time with access to resources, network, and in some cases, initial funding (Kohler, 2016). Over the past years, however, the term was used more broadly, which is a reason why we understand corporate acceleration rather as a concept than as a concrete CE program type. In order to avoid confusion stemming from the name of the CE program types, we decided not to use the term acceleration based on the reason described above.

Nevertheless, we build on the rich theoretical foundation provided by the literature on external corporate accelerators when defining the three CE program types that focus on startup engagement.

- The first CE program type, the *startup facilitator* is describing a rather novel phenomenon that focuses on the standardized collaboration with startups aiming at listing them as a supplier and thereby insourcing different types of external innovation. The startup facilitator provides a clear definition for a CE program type that is also discussed under the names of venture client model (Gimmy et al., 2017), startup

[16] Batch-logic is used in practice of CE for describing a program has fixed start and end dates.

supplier program (Kurpjuweit & Wagner, 2020), or corporate accelerator (Shankar & Shepherd, 2019).

- The second CE program type, the *collective matchmaker* is related to the startup facilitator but differs as it is organized as an open platform where multiple corporate join their forces to attract promising startups with the aim of insourcing external innovations. In a recent publication of Moschner et al. (2019), this CE program type is described as a consortium accelerator, whereby Daimler's Startup Autobahn is mentioned as a prominent example of it.
- The third CE program type, the *cooperative explorer* is a rather established type of startup collaboration with a clear focus on technology and product innovation, which makes this type different from the startup facilitator. This CE program type has a clear link to the R&D activities of the core organization and has been the topic of different studies, e.g., by Weiblen & Chesbrough (2015) with their description of the startup program (outside-in).

To conclude on the external CE programs, the results presented in this chapter are contributing to the existing literature in at least the following four ways. First, the results are enhancing the understanding of the different organizational designs that can be used to drive startup engagement by providing a definition and description for three distinct CE program types. Second, a more nuanced understanding of corporate venture capital is provided by showing that two different types exist that can be used to pursue strategic startup investments. Third, we have shown that the concept of external corporate incubation is not used in practice anymore in the DACH region. Fourth, external corporate acceleration can be understood as a general concept rather than a concrete CE program type since it is used to describe different organizational designs that are used in practice.

5.6.3 Embedding radical innovation units within the existing literature

The three types that were identified for the radical innovation unit category are distinct from the nine CE program types, as shown in Subsection 5.3.4. Even though they are not covered in our RQs, analyzing them has provided a better understanding of their organizational design.

Digital factories can be understood as a distinct form of structural ambidexterity that explicitly focuses on digital technologies and capabilities. Many digital factories focus on sales and market-related topics in combination with the development of digital capabilities required for

the implementation and operation of digital solutions. For developing the digital capabilities, the recruitment of digital talent that would not be addressed by the core organization is an important aspect of their work. Describing and defining digital factories contributes to research on structural ambidexterity and digital transformation.

Tech labs are an organizational design that has been described in many previous studies, which were focusing on research activities of established companies. A prominent example that has been the subject of investigation in several studies is the XEROX Parc research facility (Heracleous et al., 2017; Weiser et al., 1999; Pake, 1985). With our results, we are contributing to the existing literature by providing a clear definition of tech labs and by distinguishing them from CE programs. Generally, they are rather understood as a tool of a company's research and development activities. Due to their location in an innovation hotspot, they also pursue trend scouting activities with a strong focus on technological developments.

Innovation labs are the most ambiguous organization design in the category of the radical innovation units. Innovation labs (sometimes also named digital labs) are currently experiencing a high level of attention in practice, as many companies are separating their digital transformation and digital innovation activities from the core business (Schmidt et al., 2014; Peter et al., 2018). Our results indicate that the term innovation lab is more of an umbrella term than a specific type of organizational design. Often, companies used the term innovation lab to describe one of the nine CE program types or organizational units that combine multiple CE program types (see van der Meer et al., 2021).

To *conclude* on the three types of organizational design from the radical innovation unit category, it can be stated that all three types show a certain relationship to CE, while at the same time they are different from CE program in various ways (see Subsection 5.3.4).

5.6.4 Limitation of the findings

Below we discuss two limitations that apply in our study.

A first limitation is that for some CE programs, it was difficult or even impossible to trace the history of their development, as they were launched several years or even decades ago and the person responsible for the respective CE program was often no longer involved at that time. Accordingly, information about the background of older CE programs is sometimes unclear or missing. However, since this information does not directly affect the current

organizational design and strategy of the CE program, the influence on the quality and completeness of the data is relatively small.

A second aspect limiting the findings is the fact that rather young CE programs (< 3 years) were often still in the process of finding their "steady state", meaning that the organizational design was undergoing still some changes to adapt to the characteristics and needs of the core organization best possible. For most cases counting to this category, it was possible to conduct follow-up interviews with the same person or additional interviews with persons that were also involved in the respective CE program. However, for a few cases, this was not possible, which leads to a certain level of uncertainty regarding the organizational design elements that were identified and described. As mitigation of this uncertainty, an additional search for secondary data was conducted at a later time since most rather mature CE programs have a good web presence with extensive information, e.g., about their processes or examples of former participants. This information can be used to check the validity of the interview and, if necessary, also to add missing aspects.

5.6.5 Future avenues for research

Based on the results presented in this section, there are three avenues for future research that will be briefly described.

- First, the systematic approach to define and distinguish CE programs has revealed nine distinct types. This approach could also be applied for related organizational designs such as digital labs and digital hubs or to emerging CE programs in order to provide more clarity about the different organizational designs used by companies to develop innovation and to support their transformation.
- Second, for some CE program types, e.g., the venture builder or the strategic investor, we have only a limited number of cases. In order to strengthen the understanding of the organizational design, it is recommended to study a larger number of cases to understand the configuration of each of them.
- Third, future researchers may opt for a quantitative study based on the design elements and element characteristics. Previously, quantitative studies were accompanied by a certain degree of uncertainty since the various CE program types were not clearly defined, and different names and organizational designs were used

interchangeably, which makes it difficult to determine the subject of investigation with quantitative methods.

The results of our study are highly valuable for understanding the heterogeneity of CE programs from the organization design perspective and opens up new ways for researchers to further deepen this knowledge.

5.7 Concluding on the organizational designs of CE programs

The aim of Chapter 5 is to answer RQ1: *What are the different types of CE programs?*

For this purpose, a systematic approach to define and distinguish CE programs has been developed and applied to our data set that covers 54 cases. The study resulted in twelve organizational designs that were identified in the context of CE. Nine out of them are understood as CE programs, whereas the remaining three are classified as radical innovation units. By providing these definitions, the first sub-question, RQ1a (w*hat types of CE programs can be defined?*) was answered in full (see Sections 5.1 – 5.3).

The systematic approach to analyze and define the organizational designs did also serve as a basis for identifying design elements relevant for answering RQ1b (w*hich design elements are suited for distinguishing these CE programs?*). Comparing the morphological box for each organizational design revealed, for each CE category, a subset of design elements that is suited for distinguishing the different CE programs and radical innovation units (see Section 5.4).

By providing definitions for the different CE programs and a subset of design elements to distinguish them, the first RQ is answered with the results presented in this chapter.