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DOI
10.1109/ICE/ITMC-IAMOT55089.2022.10033142

Publication date
2022

Document Version
Final published version

Published in
2022 IEEE 28th International Conference on Engineering, Technology and Innovation, ICE/ITMC 2022 and 31st International Association for Management of Technology, IAMOT 2022 Joint Conference - Proceedings

2022 IEEE 28th International Conference on Engineering, Technology and Innovation (ICE/ITMC) & 31st International Association For Management of Technology (IAMOT) Joint Conference | 978-1-6654-8817-4/22/$31.00 ©2022 IEEE | DOI: 1

Why Companies Have Multiple Corporate Entrepreneurship Units

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***Abstract*—Nowadays established companies use Corporate Entrepreneurship (CE) as a means to create discontinuous innovations. Many companies thereby even implement multiple CE units that typically involve several entrepreneurial activities. This explorative study aimed to identify the reasons why established companies implement multiple CE units concurrently. In conducting a comparative case study with eight companies from different industries, valuable insights for science and practice were gained. We provide an overview of different 11 reasons for implementing multiple CE units. This shows that the combination of CE units used by companies differs depending on the reason. It further allowed to derive general approaches of established companies to the implementation of CE units. Last, we identify the concept of co-specialization to be a central driver explaining the creation of the need to set up multiple units. We conclude by indicating implications and subjects for future research.**

Keywords—corporate entrepreneurship, multiple units, strategic approaches, co-specialization

I. INTRODUCTION

The present time is one of turbulent changes that come with the emergence of discontinuous innovations in all kinds of industries at an increasing pace. In contrast to gradual change, such discontinuous developments involve a higher level of uncertainty and novelty, due to shifts in central values and beliefs [1] as well as significant leaps in terms of new technologies [2]. Thus, discontinuous innovations open up completely new business opportunities [3], while steadily stripping away the incrementally evolving status quo. This sets the stage for startups that are just waiting to seize the emerging opportunities. Established companies, however, struggle with discontinuous change, whether caused by external developments or required for the development, production, and marketing of discontinuous innovations. In theory, this is traced back to established organizations' efficiency-driven structures, processes, and ways of working [4, 5].

In order to cope with such issues and, hence, to gain the capability to create discontinuous innovations, more and more established companies set up special units to foster entrepreneurial activities [6, 7]. With these units, further referred to as Corporate Entrepreneurship (CE) units, they aim to bring together the benefits of the entrepreneurial approaches (in terms of working methods and mindset) while leveraging the companies' core competencies and resources [8]. Over the years, many different kinds of CE units have been developed that may generally be differentiated into two categories [9]: (1) corporate ventures, which are singular entrepreneurial teams tasked to pursue a specific idea; (2) CE programs, which may be considered companies' special contact points or competence centers tasked with the creation and/or support of several entrepreneurial teams. In practice, these programs are found under the names such as corporate accelerators and incubators [10, 11], startup supplier or venture client programs [12], company builders [13], or corporate venture capital units [14].

Today's business environment shows that more and more established companies across different industries concurrently implement multiple CE units. This seems surprising, considering the combination of high resource intensity involved with such entrepreneurial activities [15] and the low level of knowledge about the overarching management of multiple CE units [16, 17]. Research in recent years yielded insights about the effective management of single CE units [18]. Yet, there is still a significant gap in the literature about the management of multiple CE units [17], meaning that scientific work does not describe and explain the phenomenon of multiple units. Consequently, to fully understand this, we take a step back and pose the question why companies implement multiple CE units.

In this article, possible reasons why companies implement multiple CE units will be explored. Different reasons are possible, for example: Companies may decide to implement multiple CE units, if each unit can only foster entrepreneurial activities in a certain region. In this case, the reason for multiple units is the limited geographic area that can be covered by one CE unit. In this case, it can be expected that internationally operating companies will consider implementing additional (similar) CE units in each region. In contrast, companies may also decide to start multiple CE units, if each of these units needs to be specialized towards the achievement of a certain output. As the dynamic environments bring changes in all business dimensions (e.g., products, services, business models), different kinds of innovations must be developed in parallel. Thus, it may be beneficial to also have specific units, specialized to explore and pursue respective potential innovation opportunities. In this case, it can be expected that companies will consider implementing additional (dissimilar) CE units within one region.

We assume that a more comprehensive analysis of theoretical and empirical data should yield even more reasons to concurrently implement multiple CE units. Therefore, we ask the following research question: Why do established companies concurrently implement multiple CE units? The previous examples do describe different reasons for implementing multiple CE units, each of which refers to a different theory. The first reason (similar units are

implemented in each region because a CE unit can only cover a particular area) can be explained by an economic spatial or geographic theoretical perspective, for example. The second reason (different units are implemented to foster different types of entrepreneurial activities) can be explained by an economic specialization theoretical perspective. This raises further questions such as what different theoretical perspectives are underlying other reasons to implement multiple CE units and if the different perspectives could be combined in an overarching theory.

To answer the research question, we will have a closer look, in section 2, at different theoretical perspectives that may provide insights into reasons for having multiple CE units. In section 3, we explain the methodological approach and the data, before presenting the findings in section 4. In section 5 we discuss the reasons and their underlying perspectives and further suggest a differentiation of companies' approaches to CE implementation. Finally, in section 6 we conclude this study by putting the results into perspective, providing managerial implications, discussing the study's limitations, and pointing out future research avenues.

II. THEORY

Based on upfront discussions with domain experts we identified a preliminary set of reasons and accompanying theoretical perspectives to explain why some companies implement multiple CE units in parallel (see Table 1).

TABLE 1: THEORETICAL EXPLANATIONS FOR THE IMPLEMENTATION OF MULTIPLE CE UNITS

	Theoretical perspectives	Potential reasons	Ref.
1)	**Theories of spatial economics and economies of optimal scale**	Multiple CE units are implemented because each unit can (only) serve a specific region/area.	[19, 20]
2)	**Cultural and institutional theories and spatial economics**	Multiple CE units are implemented when each culture or region requires adapted innovations or requires adapted ways of working.	[19–22]
3)	**Theories advocating specialization towards certain innovations**	Multiple CE units are implemented each specialized depending on the innovation output the unit wants to achieve.	[23]
4)	**Theories exploring different conditions in industries affecting the innovation development**	Multiple CE units are implemented each specialized to optimally stimulate entrepreneurial initiatives in different industries.	[24, 25]
5)	**Theories addressing the different life cycle stages of innovations**	Multiple CE units are implemented each specialized depending on the maturity of the business ideas or startup initiatives that are supported.	[26]
…	…	…	…

First, through their internationally widespread business activities and relationships, many established companies know that there is often considerable potential for innovation in other regions and countries. However, due to regional distance and the limited geographic area that can be covered with a CE unit, established companies set up (an) additional CE unit(s) in the respective region(s). Such organizational behavior can be described by theoretical perspectives that explore the optimal geographic or spatial scale of entrepreneurial initiatives that can be covered by a CE unit. Plummer and Pe'er [20] and Anderson [19] describe that entrepreneurship is seen sometimes as an inherently local activity and hence a CE unit of a company can only cover entrepreneurial activities in a region.

Second, regionally different markets can also have different requirements in terms of products and services, either culturally or legally. This can provide opportunities for innovative solutions when using an entrepreneurial, customer-centric development approach alongside the competencies and technologies of the established company. Further, these regions may also be home to people and companies with highly innovative ideas, technologies, or even existing products or services that may be of (strategic and/or financial) relevance to the company as a whole. Such organizational behavior can be described by theoretical perspectives such as cultural anthropology or institutional economics [21, 22]. Surprisingly there is also a branch of spatial economics, different from the spatial perspective described before, that explains local entrepreneurial activities because of varying conditions locally [19, 20].

Third, today's dynamic environment particularly challenges established companies to produce different kinds of innovations—in time. So, established companies must develop as promptly as possible different kinds of disruptive products and services as well as new business models and processes. To do so, it may be advisable to divide this complex task among different CE units. As a consequence, there are multiple CE units simultaneously, each of which specializes to achieve specific innovation outputs [27]. Such specialization toward the development of different kinds of innovations is also presented in the consideration of economic specialization [23].

Fourth, established companies often have several kinds of business units or divisions targeted to create products and/or services for different kinds of industries. Even though the companies' core competencies may be alike across all business units, the technologies or business models, for example, needed to address the specific requirements of the respective industry may vary significantly. Thus, to achieve the development of industry-specific innovations companies may set up specialized CE units, each organizationally assigned to the respective business unit. This kind of industry-specific specialization of organizational activities is further discussed in economic theoretical perspectives describing industry-specific entrepreneurial activities [24, 25].

Fifth, the development of innovations from idea generation to market scaling is an extensive process. In this process, innovations go through different stages of a life cycle, such as discovery, incubation, and acceleration [28]. To provide the most suitable support for each of these life cycle stages of an innovation, various specialized forms of CE units have been developed (e.g., incubators, accelerators). This allows companies to cover the life cycles through the targeted use of multiple specialized CE units. Such an approach is also described by the literature on life cycle theory in entrepreneurship [26]. The variety of reasons given presents that there are very different reasons to explain the implementation of multiple CE units within the same company. Having identified those reasons and the underlying perspective by a pure discussion with other scholars of the field, we assume this list is far from complete. However, we

found no research providing a more comprehensive examination of such kinds of reasons. Hence, we propose that qualitative empirical research is needed to further explore potential reasons for multiple CE units within one company.

III. Method

A. Research approach

Given the limited knowledge about potential reasons for implementing multiple CE units concurrently, an explorative approach is suggested. Thus, we chose a multiple case study approach following the principles of Eisenhardt [29], which allows us to gain a richer understanding in terms of depth but also contextual factors. Further, such an approach is suitable for the investigation of rather contemporary phenomena [30].

Analyzing several established companies, on the one hand, may yield a more comprehensive list of potential reasons for the implementation of multiple CE units. On the other hand, it may allow the validation of the reasons found. Several cases of companies with multiple CE units allow for a comparison of cases in order to identify similarities or differences in their respective reasons to implement multiple CE units.

B. Case selection

Cases for this study were selected based on the observable phenomenon of multiple implemented CE units. Even though CE has become a very popular means to pursue the creation of discontinuous innovation throughout all kinds of industries, CE is quite resource-intensive in terms of human and financial resources. Consequently, it is mostly large companies (i.e., usually in companies above 5.000 employees) that implement CE units, which is even more apparent with the use of multiple CE units.

Thus, we consulted different sources (e.g., articles and rankings about CE activities, company websites, fellow CE researchers) to identify those established companies in Germany that use at least two distinctive CE units. Then, we contacted the companies to which the authors (or their colleagues) already had some kind of access. Finally, we were able to talk to eight different companies with, in total, 42 CE units (see Table 2).

TABLE 2: CASE OVERVIEW OF ESTABLISHED COMPANIES WITH MULTIPLE CE UNITS (ANONYMIZED)

Cases	Industry	# Employees	# CE units
1	Pharmaceuticals, Biotechnology, & Life Sciences	110.300	9
2	Health Care Equipment & Services	64.300	5
3	Pharmaceuticals, Biotechnology, & Life Sciences	60.300	7
4	Insurance	39.600	4
5	Automobiles & Components	35.400	8
6	Capital Goods / Consumer Durables	18.200	5
7	Capital Goods	14.800	3
8	Capital Goods / Consumer Durables	14.400	3

C. Data collection

We opted for semi-structured interviews to gather data on possible reasons for multiple CE units. We expected that such reasons were only partly known by us and hence an exploratory approach was required to uncover new reasons. In some rare cases, we enhanced the initial interview data with informal follow-up e-mails and short calls in order to clarify questions that came up during the data analysis and interpretation. Finally, we triangulated the interview data with secondary data that was gathered from other sources such as company websites and reports as well as press articles published about some of the CE units or their respective overarching or hierarchically superior 'umbrella' units.

The 28 interviews were conducted in the years from 2019 to 2022 with relevant managers, such as the executive management that implemented the CE units, the heads of the CE units or the respective umbrella unit, as well as some managers leading certain long-term projects within a CE unit. Thereby, we ensured the interviewees had a sufficient overview of the respective company's CE units and were with the company for a significant time to have the background knowledge about the CE units' initial (and maybe altered) purpose. The interviews were semi-structured following a guideline comprising the topics of (a) the origination of the multiple CE units, (b) their respective tasks and design, and (c) the interplay between them. All of the interviews took between 47 and 100 minutes, were recorded, and finally transcribed.

D. Data analysis

Following a rather iterative approach to data collection and its analysis [31, 32], both processes were intertwined. The analysis of the data followed the principles suggested by Corbin and Strauss [33], having multiple researchers independently working out codes that then again are discussed to create a common working scheme. To adjust the coding, the empirical data was frequently contrasted with the respective theory [34].

A closer analysis of each case [29, 30] did not only result in first insights (about the different reasons) but created a more comprehensive and homogeneous picture of the individual cases. Next, a cross-case analysis was conducted [35] to compare the cases and identify similarities and/or differences. Finally, this allowed us to structure the various reasons by deriving a differentiation of companies' approaches to the implementation of CE units.

IV. Findings

A. Reasons for multiple CE units

The analysis resulted in eleven reasons why established companies implement multiple CE units within their organization (see Table 3). Those reasons will be explained in the following.

TABLE 3: OVERVIEW OF REASONS FOR THE IMPLEMENTATION OF MULTIPLE CE UNITS WITHIN ONE COMPANY

	Reasons	Description	Cases
a)	**Extending capacity**	Growing CE units raise the need to extend their capacity to additional similar units.	5
b)	**Extending reach**	To make use of distant regions' innovation potential additional similar units are set up to effectively cover those.	2, 4, 5, 8
c)	**Specializing for innovation outputs**	To concurrently pursue different kinds of innovation outputs, multiple and accordingly specialized CE units may be used.	1, 2, 3, 4, 5, 6, 7, 8

d)	**Specializing for industry**	To adequately address industry-specific requirements, multiple and accordingly specialized CE units are used in parallel.	1, 5
e)	**Specializing for opportunity access**	Depending on the locus of opportunity (external or internal to the company) multiple and accordingly specialized CE units are required.	2, 3, 6, 7, 8
f)	**Specializing for idea life cycle**	To support innovations in different life cycle stages as appropriately as possible, multiple accordingly specialized units are needed.	3, 5, 6
g)	**Use different legal CE structures**	Different legal structures for CE units have different advantages that can be used with the help of different units.	1, 3, 5, 6
h)	**Following call for more innovation**	When top management calls for innovation, it will lead to the creation of multiple CE units across the organization.	1, 4
i)	**Taking initiative**	To drive some kind of change, executive managers are taking the initiative to set up another CE unit in their area of responsibility.	1, 2, 4, 8
j)	**Sponsoring potential 'innovators'**	People perceived as 'innovators' by certain sponsors (executive managers) are authorized to set up another CE unit.	1, 2
k)	**Tussling for power**	To get more attention than others in the scramble for power, executive managers set up their own 'shiny' CE units.	5, 8

a) Extending capacity

Organizational structures should follow the underlying purpose. Accordingly, organizational theorists have described that for agile working in dynamic environments, the corresponding units should have a relatively small size (e.g., Mintzberg [36]). This is to ensure, among other things, good clarity, communication and coordination of activities. Thus, it may even be proposed that there is an optimal size for entrepreneurially working units. To still increase the capacities of a CE unit and to pursue more and/or larger entrepreneurial activities concurrently, it thus may be necessary to implement further similar CE units. These replicate the structures and methodological approach of the first unit and, again, create a manageable as well as theoretically well-functioning environment.

b) Extending reach

There are opportunities for potential innovations all over the world. As a result, new startups continuously emerge in different regions around the world, and innovative ideas also develop in the minds of employees at companies with multiple transregional or even transnational locations. Yet, the reach of single CE units (e.g., corporate venture capital units, startup supplier programs, internal accelerators) that are located in a certain region may not cover the respective region with the opportunities relevant to the specific company. Hence, to overcome this limitation and exploit the innovation potential more appropriately, a company may set up additional and rather similar CE units in those regions.

c) Specializing for innovation outputs

The innovation outputs that companies try to develop are manifold. So, they try to create different types of innovations such as new technologies, products, and services, business models, but also innovative processes. Additionally, they must create different kinds of each innovation type (e.g., different products, services, and business models) for different kinds of market requirements. In order to effectively develop these different innovation outputs, adequately adapted approaches are helpful. Besides, due to the high market pressure, the various innovation outputs must be tackled as simultaneously as possible. For these reasons, companies set up multiple CE units each specializing in the development of certain innovation outputs (e.g., company builders, digital labs).

d) Specializing for industry

Established companies often address different kinds of industries. Therefore, they also have certain research and development (R&D) units specialized to develop products and services as well as the underlying technologies specifically targeting the respective industries' requirements. In doing so, they try to exploit more of the industries' innovation potential. Following the same principle, these established companies also set up CE units to develop industry-specific innovations—but in this case, rather disruptive ones.

e) Specializing for opportunity access

For established companies there are various options to find opportunities for potential innovations. Here, one can roughly distinguish between two types of innovation sources: On the one hand, innovations can be developed internally, i.e. from ideas of the companies' employees; and on the other hand, externally by external idea providers such as startups, other established companies, or even universities. However, ideas coming from within the company need to be addressed and supported differently than ideas created outside. To access those different sources of potentially innovative ideas most effectively, a specialized approach can be developed for each of them.

f) Specializing for life cycle

The development of disruptive innovations is a rather long and intensive process, whereby the underlying idea matures over a series of life cycle stages (e.g., discovery, incubation, acceleration). Each life cycle has a different focus in terms of the created value and thus holds its specific challenges that are not easy to overcome. Hence, ideas require adequate consideration through each of these stages to become innovations and maybe even disruptive innovations that the companies hope for. In order to provide a favorable environment according to the ideas' respective life cycle stage, companies developed specialized forms of CE units (e.g., scouting units, incubators, accelerators). By implementing multiple interdependent specialized CE units and sequencing them accordingly, established companies may be able to provide suitable support for the different life cycle stages of disruptive innovations.

g) Using different legal structures

Being part of the core organization brings various advantages for a CE unit, such as good access to people, information, and resources. However, this also means that all units are obliged to follow the rules and legal structures of the company. This applies to all processes of the company, which often makes them very inflexible. Such conditions can be quite obstructive to certain entrepreneurial activities. For this reason, some CE units (e.g., company builders) may be separated in their legal structure of the core organization, where they find the flexibility required for their entrepreneurial activities.

Another yet rather subordinate aspect is that the legal separation also allows for the delimitation of the risk. Since the entrepreneurial activities are associated with considerable uncertainty concerning possible claims by third parties, this excludes the liability of the core organization, which in most cases would be significantly more expensive for the company.

h) Following call for more innovation

Radical times require radical measures. If the top management of an established company has identified the need for significantly more innovation, it makes direct calls to the whole organization to foster respective activities and thereby increase the probability to create such innovations. At the same time, it provides the corresponding resources and incentives for these efforts. The result is that multiple CE units may emerge simultaneously in different areas of the organization.

i) Taking initiative

There are times when executive managers have the feeling that the organization (or at least their part of it) needs some kind of change in order to create innovations. This is when such managers with a high degree of autonomy over their area of responsibility decide to take initiative by setting up another CE unit (even if there is no company-wide call for such activities). The fact that (top management tolerates that) this decision can be made quite independently is often linked to the circumstance that it is not the first CE unit for the company, so it has already had experience with it and the implementation is seen as some sort of a 'standard' strategic tool available to different business units within a company.

j) Sponsoring potential 'innovators'

Established companies have a large number of employees, of which there may be some who are considered particularly innovative due to certain experiences (e.g., innovative ideas and projects, past startup experience). If they get enough attention from executive managers (which is often enabled by a good personal network), there is a chance that they can win them over as sponsors. So, it comes that these executive managers quite independently make the decision to support this 'innovator' and thus authorize the implementation of a respective CE unit.

k) Tussling for power

In established companies with distinctive hierarchy differences, there is often significant competition among executive managers. In this regard, innovation activities are often used as a political tool. In order to attract more attention to themselves and gain a possible advantage over their peers in terms of reputation, some of these managers set up their own 'shiny' CE unit. Again, the fact that (top management tolerates that) this decision can be made quite independently is often linked to the circumstance that it is not the first CE unit for the company, so it has already had experience with it and the implementation is seen as some sort of a 'standard' strategic tool.

While the list of reasons does not claim to be exhaustive, some valuable insights can already be derived from the elements identified, which will be discussed in the following chapters. Further, one could argue that the term 'reasons' may be reconsidered, as the list may rather present different kinds of purposes, aims or causes for the implementation of multiple CE units. However, in our opinion, these terms describe more upstream/pre-existing or external triggers, that are the basis for the reasons for implementation. Thus, we use the term 'reasons' because it gives us a direct and measurable explanation for the implementation of the multiple CE units.

B. Manifestations of reasons

An analysis of the various reasons found in the data yields further information about how the reasons manifest in established companies.

First, when looking at the reasons found per case company, it is evident that companies usually have several reasons with which they justify the multiplicity of CE units within their respective organization. The number of reasons per case varies between two (case 8) to seven reasons (case 5). The number of reasons seems to be linked to the number of CE units. Hence, the cases with more CE units also have more reasons for implementing them. The data offer different indications for this, such as that there are multiple reasons at the same time for implementing additional CE units, or that different reasons are used over time to justify multiple units.

Second, the different reasons, when abstracting their consequence, sometimes seem to be affecting the form of the CE unit chosen. Some reasons seem to lead to the implementation of multiple CE units with the same form (a, b), while other reasons tend to lead to the implementation of different forms (c, d, e, f, g).

Third, a more in-depth within-case analysis has shown that the reasons for implementing multiple CE units also change over time. Thus, companies studied explain that the need for multiple CE units was justified differently at the beginning of their implementation than a few years later. So, over the years the companies have found different reasons to have multiple CE units (which may also be a cause for the range of reasons found per case company).

C. Different groups and categories of reasons

A comparative analysis of the eleven reasons yielded that they can be grouped into seven groups, which again may be further aggregated into three major categories. The groups and categories will be explained in the following.

TABLE 4: GROUPS AND CATEGORIES OF REASONS FOR THE IMPLEMENTATION OF MULTIPLE CE UNITS

Reasons	*Groups*	*Categories*
a) Extending capacity	**Replication**	**Deliberate**
b) Extending reach		
c) Specializing for innovation outputs	**Specialization by output**	
d) Specializing for industry		
e) Specializing for opportunity access	**Specialization by process**	
f) Specializing for idea life cycle		
g) Using different legal structures	**Legal separation**	
h) Following call for more innovation	**Call for innovation**	**Hybrid**
i) Taking initiative	**Personal initiative**	**Emergent**
j) Sponsoring potential 'innovators'		
k) Tussling for power	**Showmanship**	

The first group of reasons (a, b) we call *replication*. Here, an examination of the multiple CE units that followed one of those reasons shows that the CE units have been replicated

from one initial unit. Thus, they present very similar designs and approaches. Second, some reasons center on creating certain outputs (c, d), hence the group *specialization by output*. Third, there is the related group of *specialization by process*, which includes reasons (e, f) that focus on creating a new process or approach. Fourth, the aspect of legal structure (g) necessitates another group, even if, according to our evaluation, this one holds only one reason. Fifth, the *call for innovation* is another group with only one reason (h) that has a special status, as it can be the trigger for other reasons. Sixth, the group of *personal initiative* encompasses reasons centering around the decision of individual persons (i, j), which can be reasoned in terms of the company's interests. Last, there are also reasons that represent individual decisions and rather serve self-promotion (k), hence *showmanship*.

Considering the variety of reasons significant differences in the general orientation can be observed, which give the basis for two different categories of reasons. Several reasons (a-g) represent, from an organizational perspective, a deliberate and aligned decision that reflects an overarching intent. In contrast, there are other reasons (i-k), which seem to reflect decisions of individuals and thus emerge without having aligned them extensively at the organizational level.

The fact that there are two distinctively different categories of reasons for implementing multiple CE units is an interesting finding. Despite the general assumption that strategically relevant activities such as a company's innovation development are aligned with the rest of the organization and there is thus an understandable reason for implementing an innovation unit from an organizational perspective, there is also a more emergent part that is driven by the personal agenda of individual managers or by the need to experiment.

Further, this distinction is in line with the concept of Mintzberg and Water [37]. They describe the two main strategic movements (deliberate and emergent strategies) that come together in the realized strategy that represents the phenomenon observed by us in the cases. In addition to that, we have identified a third category, which represents a hybrid between these two. On the one hand, top management (deliberately) promotes the creation of innovation activities. On the other hand, there are no precise instructions (as to who should do this, in which fields, and what approach should be taken), resulting in the emergence of multiple innovation units across the company.

V. Discussion

A. Contribution of the overview of reasons

Our analysis of the question of why established companies have multiple CE units yielded a list of eleven reasons that can provide an answer to the question. The variety of the reasons combined with the number of case companies from different industries considered allows us to assume that this is also a fairly complete list of reasons, without claiming it to be fully exhaustive. A more detailed differentiation of individual aspects of the reasons given could lead to further reasons (as shown with legal separation), which would mainly make the list more precise and less complete. The level of definition of the reasons is chosen by us in such a way that it meets a balance between precision and comprehensibility. Up to now, there has been no such overview of reasons.

The overview of reasons is based on a consideration of both theoretical and empirical data. The comparison of the data shows that the theoretical perspectives taken as a starting point are almost completely reflected in the list of reasons. Thus, the perspectives of economic geography / spatial economics (reason a), types of innovation (reason c), industrial specialization (reason d), or life cycle theory (reason f) can be found again just like that. The perspective of cultural and institutional differences has merely been concretized in that its aspects can be described in the form of several reasons (b, d, e, g). In addition, the empirical investigation has also produced other reasons (h-k) with correspondingly more underlying perspectives.

Interestingly, this comparison shows that only deliberate reasons were covered by the theoretical perspectives we identified, while all emergent reasons were added by the empirical analysis. The investigation of the 'real world' has therefore shown that some less strategically intended reasons for the realization of certain activities can also be found. The human component with its personal and sometimes also rather irrational decisions is therefore also relevant in this context. Hence, distinguishing the second (and even third hybrid) category of reasons is another important insight of this study.

B. Approaches to CE unit implementation

Taking a more detailed look at the different reasons found in each case company, additional patterns can be identified. It can be observed that some companies tend to have a focus on either deliberate or emergent reasons.

On the one hand, there are companies (cases 3, 6, 7) that state that they pursue a rather strategic approach. Here, CE activities are planned, aligned, and co-specialized on an organization-wide basis in order to achieve the overall innovation goals in a purposeful and synergetic way. In literature, this follows the understanding of a CE strategy as suggested by Kreiser et al. [38] to be companies' "coordinated efforts towards entrepreneurship and is an over-arching strategic approach". The field of CE strategy has gained more and more attention over the last years, however, the understanding of such an overall management approach of CE is still rather fragmented.

On the other hand, there are companies (cases 1, 2, 8) that take more of an emergent approach. Here, there is little overarching planning and alignment of CE activities, resulting in the implementation of several independent CE units. Without explicitly stating that it is research on single and independently implemented CE units, the majority of studies deal with the investigation of specific aspects of single CE units and their respective designs. This literature hence may be useful for the implementation of such emergent units.

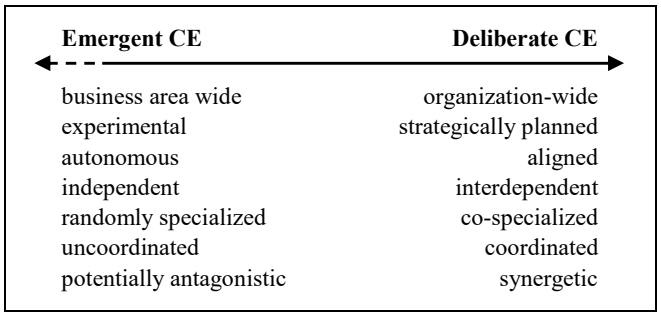

Figure 1: Approaches to the implementation of CE units

To summarize, the emergent and deliberate implementation of multiple CE units may be considered two opposing approaches to CE in general (see Figure 1).

Within-case analyses further indicate that the category of reasons stated seems to depend on each company's experience and capability regarding the use of CE units. Accordingly, the data show that companies that are just starting to use CE units tend to set up their first CE units with a less strategic approach. But after some time of experimenting and learning, companies develop an improved capability of purposeful use of the CE units, which in the meantime have also become (partially) co-specialized. As a result, companies with increasing CE unit experience (cases 2, 5, 6) take on a more mature approach to CE using all available knowledge about CE to make a more informed decision in terms of e.g. selection/combination, implementation, and coordination. Thereby, their approach to CE is more comprehensive and strategic.

The span between the two approaches to CE implementation can therefore be considered a continuum, on which companies, as they become more capable in managing their CE units, mostly evolve from a more emergent to a deliberate approach.

C. *(Co-)Specialization as a major driver*

While our analysis yielded a variety of reasons, it became clear that a major reason is the specialization of CE units. Accordingly, there are several reasons having a focus on the specialization of certain aspects at its center (c-f), and all cases mentioned those reasons. Enough in itself to examine this in more detail.

Here, specialization describes a process of CE units' differentiation towards an optimization of certain design elements. Thus, specialization is time-dependent, which means that it can also be considered a kind of evolution. This evolutionary aspect becomes clear when considering the implementation of multiple CE units due to specialization reasons. For example, most established companies have started using CE by setting up their first and single CE units, due to general reasons for CE (e.g., creating innovative methods, products, or services). Over the process of implementing and conducting the CE units' activities, the managers of the respective CE units have identified, (a) which approaches worked well and (b) which outputs they can best achieve—as well as what does not work and cannot be achieved. Consequently, these CE units have become increasingly specialized in their approach and/or the outputs to be achieved. This, in turn, has resulted in companies realizing that by continuing to use these individual units, they (a) lack certain capabilities in innovation development or (b) cannot achieve certain outputs. As a result, companies implemented additional CE units that were adequately specialized to address these gaps.

This shows that established companies often lack capability in the adequate implementation of entrepreneurial activities. As a result, large companies often set up multiple CE units with different specializations and learn about what kinds of specializations are most valuable for achieving their innovation goals. This explains why the practice showed a very heterogeneous use of CE units and how this led over the years to a better understanding of the purposeful use of different types of CE units [27].

Further, with specialization explaining the change of CE units over time, it can also be an explanation for the different reasons of the same company to have multiple CE units. As established companies learn what CE units are good at and specialize accordingly, it changes the way they justify why they need multiple CE units. Therefore, a post-hoc examination of the reasons for implementing the multiple CE units may also yield several reasons.

Finally, we would like to stress the fact that the specialization of CE units within a company takes place in a certain dependence on the other units. Thus, new additional CE units will aim to specialize in a way that differentiates their activities from those of other units. By achieving some sort of complementarity, they can justify representing added value for the company. So, we propose to extend the concept of specialization by that of interdependence and therefore speak here of a co-specialization of CE units. We consider this co-specialization to be a central driver for the emergence of the need for the implementation of multiple CE units.

VI. Conclusion

A. *Final remarks*

With its exploratory approach, this empirical study aimed to identify the reasons why established companies implement multiple CE units concurrently. In doing so, several valuable insights for science and practice were gained. First, we present a first overview of eleven different reasons for implementing multiple CE units including an aggregation of corresponding groups as well as three overarching categories. Second, we identify the concept of co-specialization to be a central driver that explains the creation of the need to set up additional CE units. Third, we derive a differentiation to describe general approaches (deliberate/emergent) of established companies to the implementation of CE units and how they evolve with increasing experience.

B. *Managerial implications*

The study further holds a series of valuable insights for the managers involved in the decision to implement CE units (e.g., top management, CE unit heads).

First, the overview of reasons for implementing multiple CE units allows managers to discover the reasons why other companies are setting up multiple CE units. Based on that, they can identify possible potentials in their 'portfolios' of CE units and address them accordingly.

Second, the analysis of the different reasons has further shown that they result in the implementation of different forms of CE units. Managers can thus get a better picture of the required or potentially resulting portfolio of CE units already during the planning phase.

Third, the overview of the categories as well as the differentiation of CE approaches derived from them can also be used to assess one's own CE activities and to find out how experienced and mature the respective company is in managing multiple CE units.

Fourth, by highlighting the central function of the concept of co-specialization, we create a kind of vision for a portfolio of interdependently specialized but at the same time adequately aligned and coordinated CE units. This can serve as an orientation for managers when deciding on new CE units in order to avoid unnecessary overlaps already during the planning phase.

Fifth, co-specialization introduces the rather advanced possibility of division of labor between CE units. While there is also a division of labor between replicated units (reasons a, b), which however is quite straightforward to organize, performing the same with co-specialized CE units is new for established companies. The different reasons indicate how labor may be divided different with them (e.g. division of different outputs vs. sequencing of specialized processes), but also what potentials for the common use of specific resources there can be (e.g. multiple in terms of output specialized CE units using the same methodological approaches).

Finally, a better understanding of the reasons why CE units are set up in parallel and why therefore certain forms of CE units exist in combination with the idea of division of labor enables managers to make further considerations on a comprehensive and strategic management of a portfolio of CE units. Following the literature of CE strategy, a certain kind of orchestration or coordination is needed to increase and leverage the potential of such a portfolio. Thereby, different CE portfolios are likely to require different kinds of coordination approaches to adequately organize the aligned co-specialization of multiple CE units. Thus, our findings could enable managers to choose an appropriate approach to such coordination.

C. *Limitations and future research*

Although we have made every effort to avoid it, the study certainly has some limitations.

First, it could be argued that there are certainly some more reasons for implementing multiple CE units that our list does not include. This could be addressed by further surveys within the case companies under consideration or even an expansion of the sample of cases, if possible with companies from additional industries.

Second, a more serious limitation could be the validity of the statements on reasons. Since some of our interviewees were senior management but not top management, the risk here is that they did not sufficiently know the 'real' reasons and the general strategic intent for implementing a company's CE units. Therefore, the statements could be validated again by further interviews with top management.

Third, the post-hoc investigation of reasons could introduce further potential for bias. Some of the CE units had already been implemented for some time, which could mean that knowledge of the initial reasons might in some cases already no longer be present. Thus, there is a risk that a post-hoc explanation is more likely to correspond to a subjective interpretation. We attempted to take account of this bias by interviewing several views per case so that the statements could be compared with each other. However, a survey of further views, especially from people who were involved in the decision to implement, could make the results even more precise.

Fourth, acknowledging co-specialization as a relevant driver for CE unit implementation, it should be considered in more detail. Accordingly, it could be examined when a co-specialization is most suitable or how it is realized. Further, it may be interesting to see if some sort of internal competition (or 'coopetition') is accelerating this process. This raises the thought of whether today's CE portfolios, which have been implemented by established companies under relatively high uncertainty for the effective use of different CE units, could be the result of a "Darwinian" selection process.

Fifth, since co-specialization of CE units is always accompanied by some interdependence between them, it should be further investigated what types of interdependence there are (e.g., common resources, reporting lines) and how they affect specialization as well as the resulting interaction of the respective units.

Last, increasingly deliberate as well as organization-wide approaches to the implementation of interdependent specialized CE units also ask for a suitable overarching management of these. Despite literature suggesting that such management should be valuable, it has not been the subject of any closer investigation. Thus, future research should examine what orchestration or coordination of multiple CE units may look like, what kinds of instruments and mechanisms there are, and which outputs they generate.

As a final note, this study has shown how much potential there most likely is in a comprehensive management of multiple and differently (co-)specialized CE units. Yet, respective research is still missing. Therefore, we call on more researchers to look at CE from a holistic perspective in their future studies to generate more insights on the overarching strategic management of CE.

VII. ACKNOWLEDGEMENTS

This study benefited from valuable comments from other people who reviewed earlier versions of it. In addition to the three anonymous reviewers of the ICE-IAMOT conference, we want to thank in particular Prof. Orestis Terzidis, who drew our attention to the more nuanced consideration of the terminology of 'reasons'.

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