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Design dimensions of corporate venture capital programs—a systematic literature review

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Abstract
There is a plethora of research on organisational design elements of corporate venture capital (CVC) programs. However, the fragmented nature of this vein of corporate venturing research has led to an inconsistent picture regarding the organisational design of CVC programs. The goal of this study is to provide a holistic picture for both scholars and practitioners by integrating empirical research on the design of CVC programs. Therefore, the study employs a systematic literature review approach including a sample of 41 studies published from 1987 to 2023. For a systematic assessment of design elements of CVC programs, an inductive concept development approach is used to illustrate four main design dimensions–personnel, corporate relationship management, investment operating model and portfolio relationship management–which reflect 69 descriptive design elements. While previous studies have mainly looked at individual design dimensions of CVC programs from a strategic perspective, this paper presents comprehensive view on organisational structures of CVC programs by identifying building blocks of CVC design according to chosen objectives and available typologies. By specifying and allocating design dimensions to structural types and objectives of CVC programs, this study may also serve as a foundation for further research on the concepts which prevent high rates of early abandonment of CVCs.

Keywords Corporate venture capital · CVC · Organisational structure · Organisational design · Literature review

JEL Classification O03 · M1

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1 Introduction

Corporate venture capital (CVC) represents an elementary component of corporate entrepreneurial strategy used by incumbent firms to explore business opportunities outside their organisational boundaries via minority equity investments in privately held entrepreneurial ventures (Dushnitsky and Lenox 2005a; Gompers and Lerner 1998). This approach allows corporations to amplify their own innovation capabilities by accessing and learning about potentially disruptive knowledge and trends (Gaba and Bhattacharya 2012; Pinkow and Iversen 2020; Schildt et al. 2005).

Conversely, for start-up ventures, CVC is a common source of funding. The number of CVCs which participated in funding start-up ventures globally has grown steadily between 2011 and 2022 at an average annual growth rate of 16% (Andonov 2022; CB Insights 2022). While CVCs participated in 4,935 funding rounds globally in 2022, this figure is only slightly below the record high of 4,964 funding round participations of CVCs in 2021 (CB Insights 2023a). In comparison, the participation of independent venture capitalists (IVC) in start-up funding rounds fell by about 25% during the spike of the COVID-19 pandemic between 2021 and 2022 (Andonov 2022). The steady growth of CVC, even during the COVID-19 pandemic, underscores its robustness and importance for the start-up ecosystem.

However, high rates of early abandonment of CVC programs worldwide give cause for concern about the continuation of this trend. The median lifetime of CVCs recently fell to four years, and a significant share (46%) only actively invest for three years or fewer (Ma 2020), while the investment horizon of the vast majority of IVC funds (98%) is approximately 7–10 years (Barrot 2017; Gompers and Lerner 1998). Research has identified several internal reasons for the early abandonment of CVC programs, such as a lack of autonomy (Siegel et al. 1988; Gompers and Lerner 1998; Yang 2012; Lee et al. 2015), the staffing composition (Souitaris and Zerbinati 2014; Cabral et al. 2021), incentive schemes (Block and Ornati 1987; Dushnitsky and Shapira 2010; Hill et al. 2009), program implementation choices (Gaba and Dokko 2016), and internal political agendas (Sykes 1990). It appears that the reasons for early abandonment are manifold but can be traced back to organisational structures of CVCs, i.e. how such programs are set up in relation to the structures of parent corporations (McNally 1997). Therefore, this study aims at promoting insights about CVC design to counteract the trend of early abandonment.

Previous research has missed the opportunity to integrate insights about individual organisational elements into a holistic view of CVC structures. This has led to a scattered landscape of knowledge about design elements of CVC, as already noted by Röhm (2018). By reviewing the past four decades of research, Jeon and Maula (2022) confirmed that the main tensions in a CVC can be linked to its organisational design. In addition, Fels et al. (2021) picked up the topic, as they found that the primary elements which play a crucial role in CVC performance can be traced back to organisational structures towards the portfolio, the association of the portfolio to the investing company and to the relationship between the parties. However, a comprehensive view on the design elements of CVC programs with potential influence on performance is lacking.

Therefore, this review will try to extend knowledge by holistically categorising organisational design elements of CVC programs in literature which contribute to success, leading to two research questions. First: *What are the important organisational design dimensions for successful corporate venture capital programs in existing literature?*

In the light of high rates of early abandonment of CVCs, we define success as the contribution of the design element towards longevity of the CVC. Yet, since success is a function of the goal, which is pursued with CVC operations, we therefore assign results from our first research question to chosen objectives and available typologies. This will allow for a coherent allocation of our research with recent reviews in the field (Pinkow and Iversen 2020; Bugl and Kanbach 2022). It will also provide avenues for further research and practical implications. This leads to our second research question: *Which typologies and objectives do these design dimensions apply to?*

Based on an iterative and inductive coding approach, this literature review goes beyond a summary of relevant scientific evidence to contribute to theory and practice by extending existing knowledge about CVC design through the synthesis and interpretation of the empirical findings of the review. Our research thereby adds to previous reviews by detailing the elements of the organisational relationship with the corporate parent for successful operations (Röhm 2018; Weiss and Kanbach 2021; Jeon and Maula 2022). Thus, this review provides a starting point for the subsequent integration of relevant empirical studies on CVC design to extend existing theory in this space.

The remainder of this review is organised as follows: Sect. 2 will introduce the status of literature in terms of recognised organisational structures of CVC programs and their objectives, which will guide the classification of the reviewed literature. Section 3 introduces the methodology and the literature sample. Section 4 reveals the findings of the literature review and presents them along four dimensions. Section 5 draws on the findings to identify avenues for further research, closing with a conclusion about the results.

2 Typologies and objectives of CVC programs

Renowned typologies and objectives of CVC programs are introduced in this section. To provide a comprehensive review, the results of this research are categorised with respect to known and recognised findings of CVC concepts. This approach will allow researchers and practitioners to draw clear conclusions by assessing and integrating results into the existing state of CVC knowledge.

CVC is a form of entrepreneurial equity investment for start-up ventures which differs by organisational structure, stage of investment focus, strategic objectives and nature of involvement beyond the provision of capital from other forms of equity finance. In contrast to IVC, angel investors and crowdfunders, CVC denotes the systematic practice of established corporations of making equity investments in early and mid-stage start-up ventures as an extension of their primary focus (Drover 2017). The focus of corporates is typically on long value creation for their portfolio

companies by providing complementary assets, shared industry knowledge, and access to customers rather than solely providing returns on investments as with other forms of equity financing (Drover 2017; Gompers and Lerner 1998). Although global CVC-backed funding dropped by 43%, from $173.8 bn in 2021 to $98.9 bn in 2022 (CB Insights 2023a), it provided almost one-quarter of the global venture capital invested, $415.1 bn (CB Insights 2023b). This increasing success of CVC is also reflected in the overall deal participation of CVCs, which grew by an annual average rate of 10% between 2018 and 2022 (CB Insights 2022).

The literature has identified several typologies of CVC programs (Bleicher and Paul 1987; Hill and Birkinshaw 2008; Siegel et al. 1988; Winters and Murfin 1988). The latest and most prominent typology is proposed by Dushnitsky (2012), who identifies four relevant structural types of CVC programs. These types represent forms of direct CVC modes in which investments are coordinated by the corporate. Another known type is an indirect mode in which CVC investments are made through investment in funds of IVCs as limited partners. As this mode does not demand a dedicated organisational structure, it is not discussed further in this paper.

The first type of CVC program, direct investment, entails the management of CVC activities by corporate business units. Direct investment may take the form of single, multiple, or portfolio investments with a long-term capital commitment (Schroeder 2021). However, this type of CVC program is usually strongly tied to the corporate parent through formal and informal dependencies. In contrast, the second type of program pertains to wholly owned subsidiaries of the corporate parent which handles CVC investments. These are separate but legally fully owned organisational structures set up for the sole purpose of pursuing CVCs. The third type, the dedicated fund, is the least common program and involves the corporate and an IVC managing a fund together. A past example is Sequoia Seed Capital, a joint venture between Sequoia Capital and Cisco, and a present example is Redstone's 'Corporate-Venture-Capital-as-a-Service' Model (Schroeder 2021).

By creating different organisational structures, corporates pursue a variety of CVC objectives. Their objectives are an expression of an organisational ambidexterity which is defined as a combination of exploitation and exploration—the capacity to capitalise on an existing set of resources while at the same time developing new combinations of resources to meet future market needs (Gibson and Birkinshaw 2004). CVC programs suit this approach very well, as they invest in and develop new business opportunities for their corporate parent (Block and MacMillan 1993). While financial investors primarily pursue objectives such as return on investment, strategic investors focus on objectives beyond strategic renewal, such as entering new businesses by expanding operations into existing or new markets (Narayanan et al. 2009). More specifically, the strategic motives of established corporates for CVC vary from a window on technology to the creation of new business units to extending the knowledge and abilities of the corporate parent and promoting entrepreneurship (Bassen et al. 2006; Chesbrough 2002; Futterer et al. 2018; Keil 2004; Keil et al. 2008a, b). Empirical research points towards a prevalence of hybrid CVCs which do not simply follow either financial or strategic goals (Rossi et al. 2017).

By clustering our results with regard to the typologies and objectives of CVC programs, this research defines and differentiates applicable design dimensions for

different CVC modes. In contrast to the examined CVC literature, this research seeks to provide a complete picture of the CVC landscape with clear guidance for individual focal points in theory and practice.

3 Methodology

In order to answer the formulated research questions, a systematic literature review (SLR) was chosen as an appropriate method. This approach enables a clear view of patterns and connections among various empirical findings in a broader scope, thus helping researchers to synthesise the literature under review to identify linking constructs and themes (Frank and Hatak 2014; Kraus et al. 2020, 2022). From among the many SLR techniques available, a method-based review was selected for use in this study. This approach synthesises and extends a body of literature using an underlying methodology (Paul and Criado 2020). By using a particular methodology, the process of searching, selecting, and synthesising relevant literature is conducted in a transparent and replicable manner. This approach ensures that the review is conducted rigorously and systematically to minimise bias and subjectivity (Kraus et al. 2022).

The methodology employed for the following review is based on a two-step approach following Tranfield et al. (2003). The two consecutive steps–namely (1) a systematic data collection process (via thoroughly planning and conducting the review) and (2) a data analysis (via reporting and synthesising the findings)–ensure replicability by being explicit, scientifically rigorous, and transparent.

3.1 Data collection

The first step of this review was its planning by both authors. This step included the identification of the need for a review, as well as the formulation of the central research question and its expected contribution to theory and practice. Second, the review was undertaken by author A. In this context, a systematic data collection was conducted in the EBSCOhost Global Search database with access to 17 databases, including the *EBSCO Business Source Complete*, *Elsevier Science Direct*, *Emerald Insight, Academic OneFile*, and *JSTOR*. In an a priori overview of the topic, keywords for a database search were carefully selected from literature reviews and seminal articles in the field of CVC, which also ensured consistency with the research question (Frank and Hatak 2014). As different terms are often used synonymously in entrepreneurship research, educational literature helped to uncover interdependencies between keywords (Kraus et al. 2020). Using this approach, a specific search string was designed which primarily targeted the research area in question. The string following the keyword ‘Corporate Venture Capital’ (in abstract OR title of an academic journal) employed the Boolean AND with the retrieved keywords (corporate venture capital AND design; corporate venture capital AND structure; corporate venture capital AND organisation*). The keywords were discussed with experts in both theory (other researchers who regularly publish on the topic of CVC

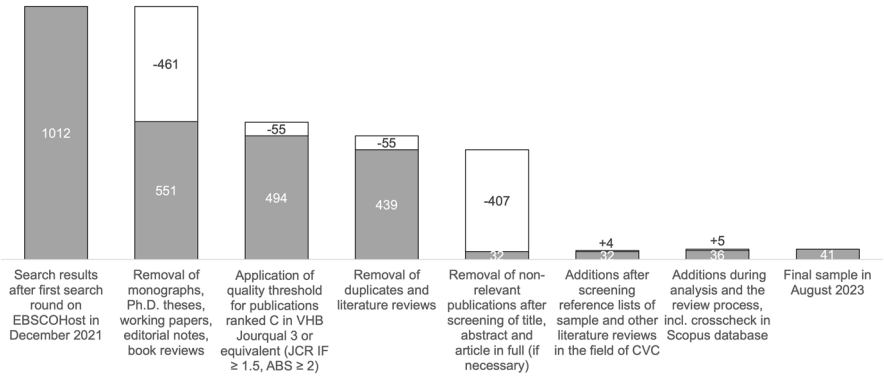

Fig. 1 Data sampling process

in peer-reviewed journals) and practice (senior members of CVCs) to ensure accuracy and consistency (Kraus et al. 2020). This helped to find the right depth and breadth in the search. Decisions on inclusion/exclusion criteria during the sampling process were taken uniformly between the authors by weighing arguments.

The initial search was conducted in December 2021, and new articles were added until August 2023. This led to a preliminary sample of 1012 articles published between 1987 and 2023. We did not limit the time frame of the sample, because we wanted to cover both earlier and more current discussions on the topic. The result laid the foundation for the following data sampling process (see Fig. 1).

For further specificity and quality assurance, the subsequent search in the EBSCOhost database focused on English peer-reviewed journals, which led to the exclusion of monographs, PhD theses, working papers, editorial notes, book reviews, etc., and led to a more relevant sample of 551 articles. This approach helps to reduce risks of including incomplete or preliminary research, as the excluded sources have not undergone a review process which helps to identify and rectify any flaws or biases in the research. This is consistent with previous literature reviews in the field of CVC (Fels et al. 2021; Röhm 2018). Next, the list of articles was shortened manually by applying a quality threshold which only allowed for the inclusion of contributions which ranked C in VHB Jourqual 3[1] or the equivalent international rankings of JCR Impact Factors[2] (≥ 1.5) or Academic Journal Guide/ABS[3] (≥ 2), as recommended by Kraus et al. (2020) which yielded a sample of 494 articles. The sample was reduced by eliminating duplicates and literature reviews, which left a total of 439 articles. This number was still considered too broad by both authors, as it contained many articles which did not contribute any value to the issue of the organisational design of CVC programs. Therefore, irrelevant articles for the presented research question were eliminated by reading the title, abstract, and article in

[1] Based on VHB JQ3 by VHB e.V. 2022, released in 2015.
[2] Based on JCR 2022 by Clarivate Analytics, released on 30 June 2022.
[3] Based on AJG 2021 by CABS, released on 24 June 2021.

full, if felt necessary (Kraus et al. 2020). Only articles which covered organisational, structural and design elements of CVC programs in their content were included in the sample, i.e. excluding articles examining other aspects, such as reasons and antecedents for pursuing CVC (e.g. Schildt et al. 2005). By eliminating a further 407 articles, we ensured relevance and precision in our sample, arriving at an intermediate sample size of 32. Lastly, a snowball method was applied, as recommended by Briner and Denyer (2012). The reference lists from the identified articles in the sample and literature reviews in the field of CVC were manually scanned with the goal of adding further relevant articles to the sample. This approach added four relevant publications to the sample to yield a total of 36 articles. We did another crosscheck with our defined search string in the Scopus database before the publication of this article because the EBSCO and Scopus databases are widely acknowledged as leading sources for comprehensive literature reviews (Burnham 2006). We thus maximised the likelihood of identifying all relevant publications (Linder et al. 2015). This approach showed a strong overlap in the sample and added three additional articles to the sample. Finally, the sample was updated with two more recent articles. Hence, the final sample comprised 41 papers.

The papers under review were published in 21 different journals. Table 1 provides an overview, including rankings and sample sizes. The publishing period of the included studies ranges from 1987 to 2023. As our aim is to provide a comprehensive overview of the entire body of knowledge on the topic of design elements of CVCs, we did not include a time limit in our sample. Three studies were published before 2000, 15 between 2001 and 2010, and 22 since 2011. The constant publication of top-ranked journals, such as the *Strategic Management Journal* (6), *Strategic Entrepreneurship Journal* (5), and *Journal of Business Venturing* (4), in the last two decades underscores the research interest in the organisational design of CVC programs.

3.2 Data analysis

To conduct a detailed content analysis of the data sample, an inductive concept development method was employed by which text segments from all articles in the sample were clustered into meaningful *concepts, themes, and aggregate dimensions*. A pattern-inducing technique was followed by making sense of these categories (Gioia et al. 2013). Articles were analysed thoroughly to support the discovery of theory from data through meaningful interpretation, and emerging categories were continuously challenged by going back and forth between theory and data (Glaser and Strauss 1967).

First, all elements related to the organisational design of CVC programs were collected from the identified articles. This allowed us to synthesise the articles' content in an abstract manner. By engaging in an open coding approach, concepts that are salient in the literature under review were labeled. Hereby, recurring themes, patterns, or ideas which emerged across multiple articles were identified into descriptive elements. By going back and forth between the data and the emerging elements, first-order concepts were derived by challenging and refining the emerging elements

Table 1 Overview of data sample

#	Author(s), year	References	Journal Ranking (VHB)	Journal Ranking (JCR IF)	Journal Ranking (CABS)	Research Methodology	Surveys	Interviews	Secondary data analyis	Others	Countries covered	Industries covered
1	Ahlfänger et al. (2020)	International Journal of Innovation Management	B	N/A	2	Qualitative; Comparative Case Study	–	20	–	–	Europe, US, Saudi Arabia	Chemical, Pharmaceutical, FMCG, Energy,
2	Basu et al. (2016)	Strategic Entrepreneurship Journal	A	5.761	4	Qualitative; Multiple case design	–	17	–	–	US	Multiple
3	Bleicher and Paul (1987)	Long Range Planning	B	7.825		Qualitative	–	–	61	–	US	Multiple
4	Cabral et al. (2021)	Strategic Entrepreneurship Journal	A	5.761	4	Quantitative; Causality	–	–	261	–	US	Multiple
5	Wadhwa and Kotha (2006)	Academy of Management Journal	A+	10,979	4	Quantitative; Causality	–	–	36	–	Global	Telecom Equipment Manufacturing Industry
6	Dushnitsky and Lennox (2005a; b)	Strategic Management Journal	A	7,815	4	Quantitative; Causality	–	–	115	–	US	Multiple
7	Dushnitsky and Shapira (2010)	Strategic Management Journal	A	7,815	4	Quantitative; Causality	–	–	2,830	–	US	IT

Table 1 (continued)

#	Author(s), year	References	Journal Ranking (VHB)	Journal Ranking (JCR IF)	Journal Ranking (CABS)	Research Methodology	Surveys	Interviews	Secondary data analyis	Others	Countries covered	Industries covered
8	Keil (2004)	Journal of Management Studies	A	9.72	4	Qualitative	–	49	-	–	Global	IT
9	Ernst et al. (2005)	RandD Management	B	N/A	3	Qualitative	–	–	21	–	Germany	Unspecified
10	Gaba and Dokko (2016)	Strategic Management Journal	A	7.815	4	Quantitative	–	–	70	–	US	IT
11	Gutman et al. (2019)	Research-Technology Management	C	2.855	2	Qualitative; Multiple case study	–	32	26	–	Global	Multiple
12	Schäfer and Schilder (2009)	Venture Capital: An International Journal of Entrepreneurial Finance	C	3.531	N/A	Quantitative	85	–	–	–	Germany	Corporate Financing
13	Dushnitsky and Lennox (2006)	Journal of Business Venturing	A	13.139	4	Quantitative	–	–	1173	–	US	Private Equity

Table 1 (continued)

#	Author(s), year	References	Journal Ranking (VHB)	Journal Ranking (JCR IF)	Journal Ranking (CABS)	Research Methodology	Surveys	Interviews	Secondary data analyis	Others	Countries covered	Industries covered
14	Hill et al. (2009)	Strategic Entrepreneurship Journal	A	5.761	4	Quantitative	95	41	73	–	Europe, US	Multiple
15	Keil et al (2008a, b)	Strategic Management Journal	A	7.815	4	Quantitative	–	–	110	–	US	Multiple
16	Keil et al (2008a, b)	Journal of Management Studies	A	9.72	4	Qualitative; Longitudinal case study	–	85	–	–	–	Telecom
17	Lee et al. (2015)	Management Decision	C	5.589	2	Quantitative	–	29	29	–	US	IT
18	Dushnitsky and Lennox (2005b)	Research Policy	A	9.473	4	Quantitative	–	–	29	–	US	Multiple
19	Lee et al. (2018)	Journal of Business Research	B	10.969	3	Quantitative	–	–	77	–	US	Multiple
20	Siegel et al. (1988)	Journal of Business Venturing	A	13.139	4	Mixed methods	52	7	–	–	US	Multiple
21	Yang et al (2016)	Journal of Strategy and Management	C	N/A	1	Quantitative	–	–	152	–	Asia, Australia, US	Multiple

Table 1 (continued)

#	Author(s), year	References	Journal Ranking (VHB)	Journal Ranking (JCR IF)	Journal Ranking (CABS)	Research Methodology	Surveys	Interviews	Secondary data analyis	Others	Countries covered	Industries covered
22	Ahuja et al. (2001)	Strategic Management Journal	A	7.815	4	Quantitative	–	–	107	–	Global	Chemicals
23	Napp and Minshall 2011	Research-Technology Management	C	2.855	2	Qualitative; Case study	–	30 +	–	–	Global	Telecom
24	Souitaris et al. 2012	Academy of Management Journal	A	10.979	4	Qualitative	6	6	–	–	London, Paris, US, Netherlands	Multiple
25	Sykes (1990)	Journal of Business Venturing	A	13.139	4	Quantitative	31	31	–	–	US	Unspecified
26	Weber and Weber (2005)	Venture Capital: An International Journal of Entrepreneurial Finance	C	3.531	N/A	Mixed methods	20	19	–	–	Germany	Unspecified
27	Yang (2012)	Management Research Review	C	N/A	1	Quantitative	18	18	–	–	US	Unspecified

Table 1 (continued)

#	Author(s), year	References	Journal Ranking (VHB)	Journal Ranking (JCR IF)	Journal Ranking (CABS)	Research Methodology	Surveys	Interviews	Secondary data analyis	Others	Countries covered	Industries covered
28	Souitaris and Zerbinati (2014)	Strategic Entrepreneurship Journal	A	5.761	4	Qualitative	–	13	–	–	Global	Multiple
29	Tong and Li (2011)	Organization Science	A +	5.152	4	Quantitative	–	–	–	2,775	US	Multiple
30	Hill and Birkinshaw (2014)	Journal of Management Studies	A	9.72	4	Mixed Methods	95	50	–	–	Europe, US, Asia	Multiple
31	Maula et al. (2005)	Venture Capital: An International Journal of Entrepreneurial Finance	C	13.139	N/A	Quantitative	91	–	810	–	US	IT
32	Dushnitsky and Shaver (2009)	Strategic Management Journal	A	7.815	4	Quantitative	–	–	126	–	US	Semiconductors, Telecom
33	Lin (2020)	European Management Journal	B	6.11	2	Quantitative	–	–	855	–	US	Private Equity

Table 1 (continued)

#	Author(s), year	References	Journal Ranking (VHB)	Journal Ranking (JCR IF)	Journal Ranking (CABS)	Research Methodology	Surveys	Interviews	Secondary data analyis	Others	Countries covered	Industries covered
34	Rossi et al. (2021)	IEEE Transactions on Engineering Management	B	8.702	N/A	Quantitative	–	–	5	–	US	Multiple
35	Kohut et al. (2021)	International Journal of Innovation Management	B	N/A	2	Qualitative	–	20	–	–		Multiple
36	Sears et al. (2022)	Strategic Organization	B	3.506	2	Quantitative	–	–	13,218	–		
37	Anokhin et al. (2016a, b)	Journal of Business Venturing	A	13.139	4	Quantitative	–	–	350	–	US	Multiple
38	Anokhin et al. (2016a, b)	Journal of Business Venturing Insights	–	6.287	2	Quantitative	–	–	163	–	US	Unspecified
39	Balz et al. (2023)	Journal of Business Venturing Insights	–	6.287	2	Quantitative	–	–	383	–	Europe	Multiple

Table 1 (continued)

#	Author(s), year	References	Journal Ranking (VHB)	Journal Ranking (JCR IF)	Journal Ranking (CABS)	Research Methodology	Surveys	Interviews	Secondary data analyis	Others	Countries covered	Industries covered
40	Danneels and Miller	Strategic Entrepreneurship Journal	A	5.761	4	Qualitative	–	36	–	–	US	Pharma
41	Gutmann et al. (2023)	California Management Review	B	11.678	3	Mixed methods	–	77	–	16	Europe, China	Multiple

through comparison to new articles and identifying inconsistencies or gaps. A total of 69 descriptive elements from the literature sample were derived, including duplicates, and consolidated into 39 *first-order concepts*. These were aggregated into 11 *s-order themes* based on their links and interactions to allow for a less granular categorisation. For example, articles referring to the industry experience of CVC employees (i.e. from VC or corporate environments; see Gaba and Doko 2012) and staffing composition (i.e. staffing of CVC units uniformly with employees from either the corporate parent or the VC-industry or diverse with a mixture of both; see Ahlfänger et al. 2020), were combined to form the *second-order theme* of 'effective teams'. Lastly, the information about CVC design contained in several *second-order themes* was further abstracted to derive the *aggregate dimension*, referred to hereinafter as the *design dimension*. Figure 2 summarises the results of the process.

4 Results of the review

The resulting *design dimensions* of our review demonstrate clear patterns of the organisational structures of CVC programs with regard to different objectives and typologies. The *first-order design concepts* which emerged from the reviewed literature were assigned to objectives and typologies by analysing the information about the research sample of each article in case articles provided information about this. Since each *design dimension* contains a certain number of *first-order concepts*, it was also possible to assign objectives and typologies to the respective *design dimensions*. Most articles empirically analysed *design concepts* from CVCs with either strategic (29) or hybrid (33) objectives, as shown in Fig. 3. Although six articles in total analysed *design concepts* with regard to sole financial objectives, it stands out that the entire articles in the sample put a clear emphasis on CVC objectives. However, such clear guidance is not met with regard to the typology of researched CVC programs in the sample, as several articles did not specify a typology.

4.1 Corporate relationship management

The first design dimension derived from the literature sample is corporate relationship management. This dimension sets out the relationship between the CVC program and its corporate parent. It includes the most prominently discussed concepts in the CVC literature, which deal with strategic objectives of wholly owned subsidiaries and direct investments but also unspecified typologies. It also includes financial objectives for wholly owned subsidiaries and dedicated funds (see Fig. 4).

Creating a favourable climate within a corporate setting can be critical for spawning and nurturing CVC activity, as described by Block and MacMillan (1993). Establishing effective structures aims at safeguarding CVC programs from the 'not invented here' syndrome, i.e. resistance and hostility of corporate units that might perceive external venturing as a threat to their activities (Bleicher and Paul 1987; Chesbrough 2002). In case CVC activity meets hostile perceptions by corporate units, program managers will find it difficult to get access to required resources or

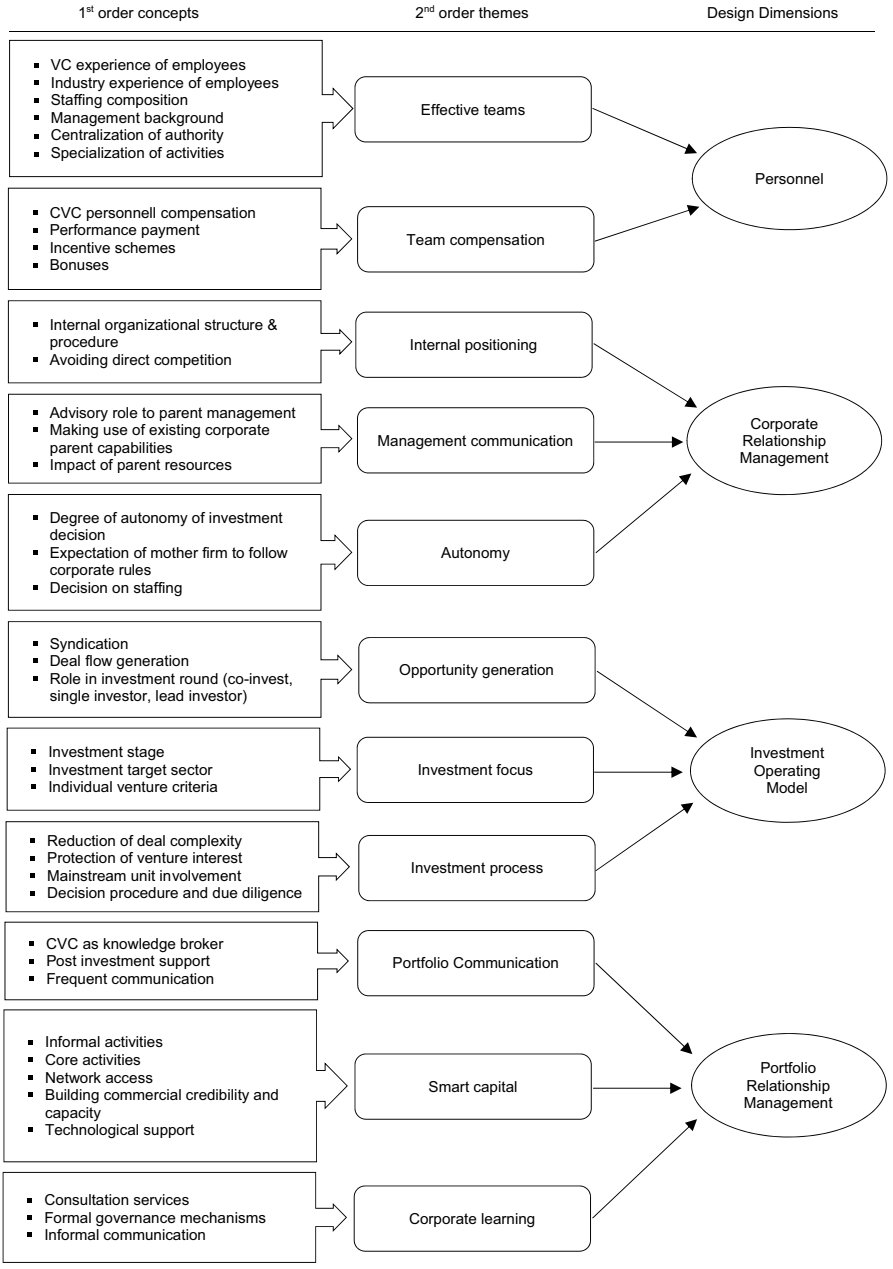

Fig. 2 Results of sampling process

even to fulfil their respective objectives (e.g. knowledge exchange from ventures to business units). However, with regard to the contextual ambidexterity of CVC units, program managers need to nurture a supportive relational context in order to meet

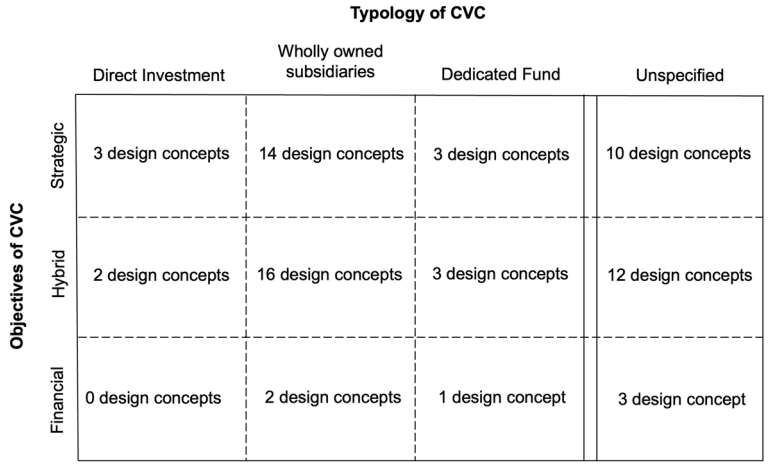

Fig. 3 Objectives and typologies of CVCs from data sample

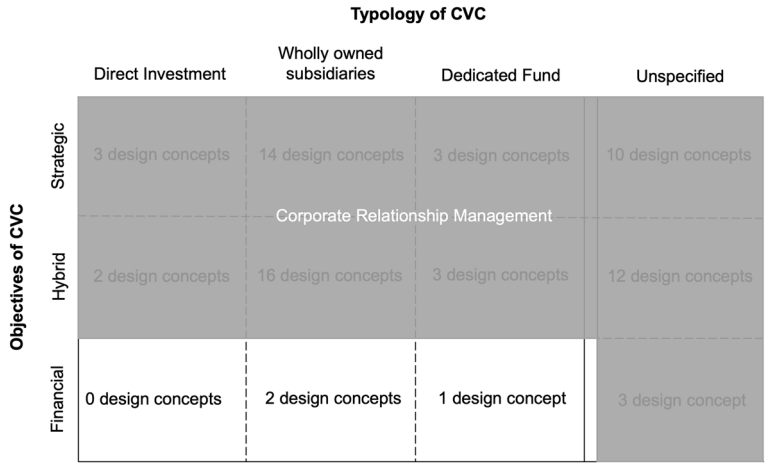

Fig. 4 Design dimensions corporate relationship management

their objectives and increase their chances of survival (Hill and Birkinshaw 2014). The three guiding themes of this design element are therefore separated into autonomous governance structures, the task of the CVC to avoid direct competition through beneficial internal positioning and to nurture top management communication.

4.1.1 Autonomy

One of the most prominent and long-standing research streams in CVC literature has focused on the role of autonomous governance structures of CVC programs.

Autonomy in the context of CVC refers to the structural independence of CVC units from the corporate parent in terms of access to key resources (e.g. funding sources), staffing decisions, investment objectives and being subject to decision-making authority (Keil et al. 2004; Siegel et al. 1988; Yang 2012; Gutmann et al. 2023). The literature on agency theory associates autonomy with managerial discretion, low task programmability, and ambiguous cause-effect relationships, all of which give rise to information asymmetries (Eisenhardt 1989). Although research has advocated high levels of autonomy for CVC operations, it may potentially stimulate agency problems between the corporate parent and the CVC unit (Gompers and Lerner 1998). This issue is especially relevant for strategic and hybrid objectives of CVC programs, namely the ability of a corporate to learn from portfolio companies. Research has shown that tight control of the CVC program by the corporate parent with limited decision-making authority and close entanglement with the parent's strategic and political agenda will hamper an innovation strategy of the corporate as it prevents access to broad investment opportunities (Bleicher and Paul 1987; Chesbrough 2002; Lerner and Gompers 2001; Simon et al. 1999). Yet, a closely-knit alignment with the overarching corporate strategy in case the CVC follows strategic objectives, contributes to longevity of the CVC (Anokhin et al. 2016a). Reasons for this can be attributed to the inter-organisational level relationship between the CVC unit and corporate parent. Here, the number of corporate parent board members also holding positions in the investment committee of the CVC might negatively influence strategic decisions for the CVC (Anokhin et al. 2016b). Ahlfänger et al. (2020) found that the enforcement of expectations of the corporate parent results in a more bureaucratic and hierarchical orientation of CVC units because of obligations to follow corporate policies. This indicates that the close link between the corporate parent and the CVC unit causes disadvantages in a fast-paced investment process (see below, Sect. 4.3.3). High levels of structural autonomy allow CVC unit managers to be dedicated to CVC investments and enable them to perform autonomous investments by freeing them from the strategic attention of their parent firm (Yang et al. 2016). This leads to a diverse knowledge portfolio within the target sector of the corporate parent, which can be helpful for exploring new technology areas (Anokhin 2016a; b; Lee et al. 2018). Also, CVCs with a sole financial objective report more successful operations when being independent in their investment decisions (Weber and Weber 2005).

Research by Hill et al. (2009) has tried to reconcile the opposing positions between high and low levels of CVC autonomy. They found evidence that vertical autonomy (lack of top management involvement) is not significantly associated with the strategic performance but rather the financial performance of a CVC unit. Conversely, horizontal autonomy (lack of business unit involvement) is positively associated with strategic performance but not significantly with financial performance. The autonomous governance structures of a CVC unit can therefore be concluded to depend on its objectives and the structures facilitating the corporate learning process (see below Sect. 4.4.2). The corporate investor is called upon to balance levels of autonomy: on the one hand, tight levels of autonomy may trigger CVC managers' agency behaviour to put less effort into transferring knowledge back to the parent. On the other hand, high levels of autonomy with regard to decision-making

processes may allow them to explore a broader range of new technologies and markets, which in turn will increase the parent's innovativeness (Yang 2012).

4.1.2 Internal positioning

To prevent corporate business units' resistance and hostility towards CVC activity, CVC units have to be cautious about their internal positioning in relation to mainstream units (Bleicher and Paul 1987). Basu et al. (2016) suggest that corporate frame the role of a CVC unit as complementary to mainstream business units in order to reduce internal political resistance to CVC activities. Taking the role of a consultant and proponent prior to the role of a stakeholder manifests an incremental engagement with the corporate parent (Gutmann et al. 2023). Furthermore, frequent contact with stakeholder employees of the corporate parent positively influences CVC performance (Kohut et al. 2021). Concrete mechanisms may be business unit assistance in target venture evaluation (for further details, see Sect. 4.3.3). CVC units can also actively emphasise a collaborative relationship with mainstream business units. Souitaris et al. (2012) found that CVC units gain acceptance within the corporate environment not by imitating the practices of IVCs (isomorphism) but rather by imitating the practices of business units. This requires CVC managers to be aware of their intermediary position between competing institutional logics and balance two opposing cultures. The right choice in staffing may help to individually create a collaborative environment (see also, Sect. 4.2.1.).

4.1.3 Management communication

In order to prevent top management resistance against venturing activities, an influential study by Hill and Birkinshaw (2014) recommends high levels of corporate interaction between CVC unit managers on one side and senior executives on the other side. The study proves a positive relationship between CVC performance and recurring communication of CVC unit managers with top management. In terms of concrete measures, empirical research recommends that the CVC adopt an advisory role to the corporate parent's top management to highlight their value to the mainstream organisations (Basu et al. 2016; Napp and Minshall 2011). This includes regular large circle touchpoints (e.g. monthly or quarterly) to inform about technological developments and industry trends (Ernst et al. 2005). Furthermore, CVC unit managers need to highlight the value-add by just "being in the CVC-game". By actively communicating insights and learnings which are gathered through dealflow, going to conferences, talking to IVCs, and other means, an indirect ambient way of learning that contributes to strategic renewal can be fostered (Danneels and Miller 2023).

In addition, frequent low-level communication from the CVC unit to the corporate should also include all relevant corporate personnel. A means for this purpose is newsletters with news from portfolio industries and market trends (Napp and Minshall 2011).

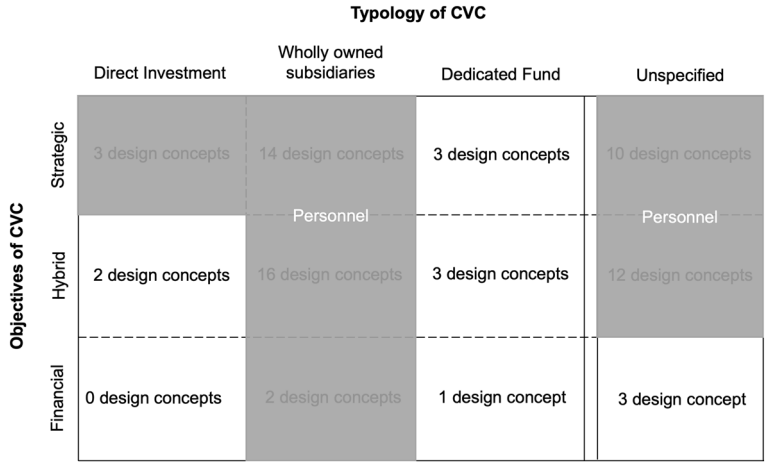

Fig. 5 Design dimensions personnel

4.2 Personnel

The next design dimension derived from the literature sample is personnel. This research stream contains all concepts related to personnel staffing for CVC programs.

Concepts in the literature about CVC personnel deal mostly with strategic and hybrid objectives for unspecified typologies or wholly owned subsidiaries. One concept deals with wholly owned subsidiaries with financial objectives, and another concept deals with direct investments with strategic objectives (see Fig. 5).

As mentioned previously, CVC units face competing institutional logics originating from their intermediary position between two culturally opposed environments—their mother firm and the VC industry. Therefore, staffing is an incremental key to balancing efficient operations on both sides (Ahlfänger et al. 2020; Hill et al. 2009; Souitaris et al. 2012). Although research has not reached a consensus on the right composition for CVC personnel, the most prominent components in research are about building effective teams and their compensation.

4.2.1 Effective teams

Building effective teams for CVC units has been considered by research in terms of staffing strategies and team structures.

Staffing is considered specifically relevant for the design of CVC by researchers as the background of CVC personnel shapes their views and practices (Ahlfänger et al. 2020). When comparing research on the staffing of CVCs, various empirical results can be found. Some CVCs may be designed as business units which are tightly aligned with the strategic agenda of top management (Anokhin et al. 2016a). They are typically staffed with long-term corporate employees (Souitaris et al.

2012). This approach lets CVC units leverage existing relationships with mainstream units to obtain support (Keil 2004). In terms of industrial experience, Ahju et al. (2001) provide evidence that because of their expertise in certain knowledge areas, CVC unit managers tend to invest in more familiar technological areas and industrial segments to generate immediate returns and may ignore technological or industrial territories that they are unfamiliar with. Therefore, this longitudinal study supplies an argument to be at least cautious about the number of hires from the corporate parent. In addition, Simon et al. (1999) point out that investment managers who have made their own entrepreneurial experiences outside the tight boundaries of a corporate parent are better able to judge the problems and prospects of potential portfolio companies.

These empirical results provide arguments for CVCs to hire employees from outside the corporate parent, e.g. former managers of IVCs, as their profiles seem beneficial for CVC operations. For once, they seek legitimacy with external stakeholders (i.e. independent venture capitalists), and empirical studies provide evidence that portfolio companies managed by former IVC employees are more likely to achieve financial returns (Souitaris and Zerbinati 2014). Hiring former venture capitalists is also supported by Gaba and Dokko (2016) for the sake of a CVC's survival. According to their longitudinal study of CVC practices in the US IT sector, hiring managers internally makes abandonment of a CVC unit more likely in comparison to hiring former employees of IVCs. Ahlfänger (2020) provides a synoptic view, reporting that employees with diverse backgrounds help CVCs to establish specialised roles, accumulating different types of expertise such as performing investments similar to IVCs or evaluating start-ups according to their technological fit with the mother firm. Moreover, workforce efficacy is ensured by delineating explicit roles and accountabilities, e.g. in terms of internal communications with sponsors from business units (Gutmann et al. 2023).

4.2.2 Compensation

Beyond attracting personnel, CVCs have to retain top employees and incentivise them to act in their corporate parent's best interest.

Retaining personnel with the skills and aptitude for undertaking private equity investments is difficult for CVCs because of the relative autonomy and higher compensation offered by IVCs and other equity investors (Block and Ornati 1987; Dushnitsky and Shapira 2010). Therefore, the incentivisation of CVC personnel must unite corporate objectives and adequate compensation (Dushnitsky and Shapira 2010). This combination has long been discussed in the literature of agency theory, which assumes that when a contract between a principal, e.g. the corporate parent, and an agent, e.g. the CVC represented by its employees, is outcome-based, the agent acts in the best interest of the principal (Eisenhardt 1989). Similar to IVC compensation, an incentive scheme based on the 'carried interest' from exit proceedings of CVC investments presents an excellent example of an outcome-based compensation which effectively mitigates the principal–agent conflicts. Dushnitsky and Shapira (2010) find that linking the remuneration of CVC managers to such performance systems causes the outperformance of CVC

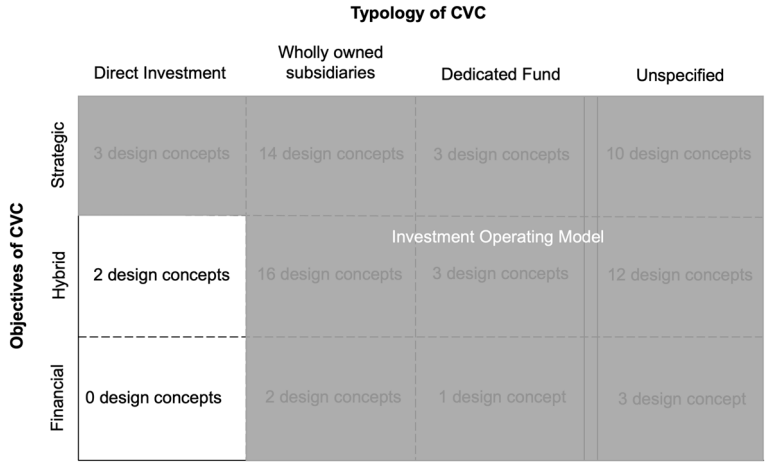

Fig. 6 Design dimension investment operating model

units in terms of financial return, as the compensation-performance association induces managers to invest in early-stage ventures through syndicates that are relatively small, which in turn enables CVC units to deliver relatively superior performance. However, this view fails to reflect the fact that strategic objectives may be measured differently than 'carried interest'. If CVC managers are mainly incentivised by the financial metrics of a fund, they will devote themselves less to transferring knowledge to the corporate parent (Hill et al. 2009). Therefore, it rather seems that behaviour-based salary–bonus–option incentive schemes motivate CVC managers to better serve the strategic objectives of the corporate parent (Yang 2012). This is because bonuses and options connect CVC managers' income with the parent's performance and motivate them to consider the long-term strategic benefits, such as innovativeness. This view is confirmed by Block and Ornati (1987), who found that in addition to bonuses based on return-on-investment from ventures, fixed bonuses for milestone achievements, (options in) parent company equity or venture equity and generally higher salaries incentivise CVC managers best.

4.3 Investment operating model

To achieve their objectives, CVCs need to manage their investment activity. This research stream contains all activities aimed at achieving individual CVC objectives. To achieve these objectives, CVCs must generate investment opportunities according to their investment focus and provide an attractive investment process for potential targets. The literature covers these concepts broadly, as they can be found for any typology and all objectives apart from hybrid and financial objectives for direct investments (see Fig. 6).

4.3.1 Opportunity generation

The formal role of any CVC unit is the generation of investment opportunities (Dushnitsky and Lenox 2005a). Several studies highlight the benefits of 'syndication' or co-investing with IVCs to achieve high-quality 'deal flow' (Hill et al. 2009; Hill and Birkinshaw 2008; Narayanan et al. 2009; Sykes 1990). By establishing an investment approach of collaboration with their independent counterparts, CVCs gain legitimacy within the VC community (Souitaris et al. 2012). In turn, legitimate CVC units attract more invitations to co-invest and permit learning of investment practices (Souitaris and Zerbinati 2014). More invitations to co-invest result in a prominent network position, which then facilitates a greater information flow regarding venture opportunities (Maula et al. 2013). Souitaris et al. (2012) find that one important way of gaining legitimacy within the VC community is to mimic IVC's decision-making and compensation practices. Furthermore, active communication with the VC community and the adoption of its practices contributes positively to the strategic performance of CVCs (Hill et al. 2009; Kohut et al. 2021).

However, gaining legitimacy through syndication is not the single source for CVCs looking for deal flow. By acting as a lead investor in investments (by being the only investor or inviting others to join and determining deal terms), CVCs may not only enhance the chances of the corporate parent to appropriate value from their investment but also gain greater visibility among ventures which are looking for CVC investment (Basu et al. 2016; Hill et al. 2009). Furthermore, ensuring the protection of invested venture interests, such that units' own or their parents' activities do not negatively impact a portfolio venture's prospectus, increases 'deal flow' quantitatively as it earns the CVC the reputation of being easy to work with (Basu et al. 2011). In addition, the quantity and continuity of prior investments add to the reputation of the CVC and increase the likelihood of an investment relationship with ventures (Sears et al. 2022). Another source of 'deal flow' are business units (BUs) of the corporate parent and their extended ecosystem, as they act as informed agents in their field of business and sometimes are aware of the emergence of promising new ventures in their industry (Basu et al. 2016; Gutmann et al. 2023) (Fig. 7).

4.3.2 Investment focus

A broad research stream deals with the investment foci of CVC units. Empirical work in this field suggests that the selection of specific target sectors, company stages and regions will create the most value for corporate investors. Furthermore, the literature on this concept varies with the origin of the CVC investor (US, EU, International).

Some scholars highlight the importance of selecting investment targets from the same or adjacent knowledge sector of the corporate parent, proposing that relatedness to their own expertise has a significant positive correlation with increases in the explorative innovation performance of the investor (Keil et al. 2008a, b; Lee et al. 2018). This makes sense, as overlapping knowledge between ventures and corporate parents may potentially add to the existing knowledge of the corporate parent, fostering corporate learning by looking at new technologies from different angles.

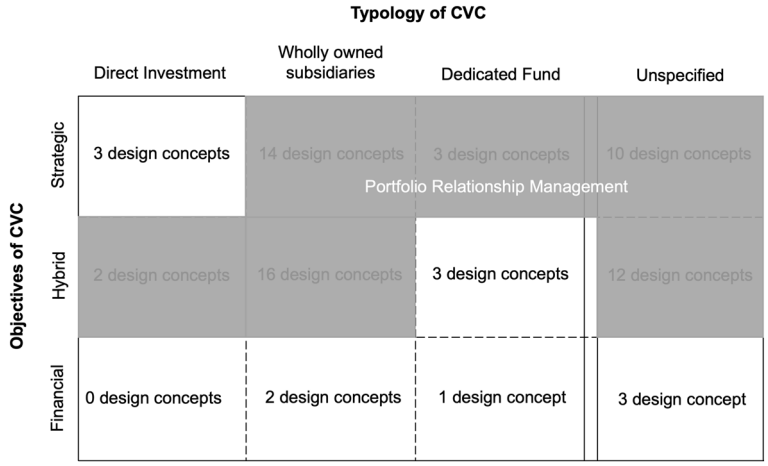

Fig. 7 Design dimensions portfolio relationship management

Anokhin et al. (2016a) found that only a small portion of CVC investments are beneficial in terms of access to innovative opportunities or strategic benefits for the corporate parent. Recent studies also observed that in addition to CVC investments in incrementally new technology leads to more realistic implementation and utilisation of technology within the corporate parent when following the strategic logic of an outside-in innovation flow (Kohut et al. 2021).

However, an investment relationship is unlikely to form in case the entrepreneur is forced to disclose his IP and has to fear that the corporate may imitate his innovation (Sears et al. 2022). Thus, Dushnitsky and Shaver (2009) find empirical evidence that a venture–CVC relationship is more likely to form when a venture's invention complements a potential investor's products, especially when the IP protection of the venture is weak. A longitudinal study in support of this argument is provided by Dushnitsky and Lenox (2005b), who argue that CVC primarily complements corporate R&D efforts and therefore provides greater marginal returns for investments in sectors characterised by technological opportunities, weaker intellectual property regimes, and a greater need for complementary assets. Sectors of focus for corporates are usually very broad and are identified via long-term strategic plans with the corporate parent (Basu et al. 2016). Hence, the choice of target sectors may be guided by the desire for the development of certain capabilities inside the corporate in case of strategic or hybrid objectives. Research by Keil et al. (2008a, b) points out that such CVC investments may be understood as a learning mechanism that allows firms to identify internal capability voids of the corporation by engaging in a social learning process through 'disembodied experimentation'. Such a process is being conducted via multiple trials with new technologies and business models outside the established trajectories of the corporate parent. The role of CVC investments, therefore, consists of targeting capability voids in the corporate structure (p. 1501). Hence, an internal analysis of capability voids should precede the determination of specific investment sectors.

Some CVCs also target specific stages of ventures. Basu et al. (2016) found evidence in a longitudinal study of international CVCs that investments in the early stages contribute to differentiation from independent investors. However, such early investments typically include commitments for later stages (Rossi et al. 2021). These commitments prevent dilution of ownership which may complicate a collaborative relationship once the commercial success of the venture's solution unfolds.

Dushnitsky and Shapira (2010) note that US CVCs statistically target syndicate investments in later stages, as maturity and round size positively correlate with the perceived risk for corporate investors. This sentiment stems from the fact that ventures' products, business models, or even their business definitions may change dramatically in their first years of existence (Bhide 1999). Therefore, exploitative learning for corporate parents is less likely to occur with early-stage investments as these will entail uncertainty about the value of transferred knowledge (e.g. technological maturity of a product, willingness-to-buy of potential customers).

4.3.3 Investment process

Research on the investment process of CVCs points out that a high degree of formalisation and standardisation will benefit CVCs in the competition for attractive investments (Ahlfänger et al. 2020). Therefore, a first step towards a lean investment process is the establishment of dedicated investment criteria (Basu et al. 2016). Such criteria vary and may be very individualised. Empirical research by Weber and Weber (2005) identifies the most frequently used criteria in their study of 20 German CVCs. The most prominent is the 'product's uniqueness and degree of innovation' of the target company. 'Management's ability to attract highly qualified employees' was ranked second by the CVCs, followed by 'industry experience' and 'quality of leadership' of the founding team and 'expected return' (p. 62). Another part of a standardised and formalised investment process involves dedicated personnel in the due diligence process. For instance, in order to judge the degree of innovation of a potential target, some CVC units seek assistance from BUs in the investment process (Basu et al. 2016; Napp and Minshall 2011). This can be achieved by involving special members of BUs, previously designated by top management, at specific stages of the investment process (Napp and Minshall 2011). Furthermore, integrating BUs in this process increases the chances of corporate learning after an investment (see Sect. 4.4.2.). Furthermore, most CVCs include lawyers, accountants, and tax consultants in the process (Ernst et al. 2005).

Reduced deal complexities by simplifying and minimising terms and conditions of investment contracts also contribute towards a competitive edge by being more quickly, more transparently, and less restrictive (Basu et al. 2016). Such deal contracts also have to address entrepreneurs' concerns regarding opportunistic investor behaviour (e.g. misappropriation of IP). By doing this, the CVC signals commitment to a long-term relationship with its future partner (Sears et al. 2022). This may result in a trustful relationship between investor and venture, which in turn may substitute safeguarding contractual agreements (Sears et al. 2022; Weber and Weber 2005). It has also been proven that CVC units which do investments more frequently are less likely to be abandoned (Gaba and Dokko 2016). This, in turn, increases the

likelihood of ventures partnering with CVCs (Sears et al. 2022). This points to a need for lean and structured processes for CVC investment.

4.4 Portfolio relationship management

The last design dimension derived from the literature sample is portfolio relationship management. This dimension defines the role of the CVCs as a facilitator between a corporate parent and an invested venture. As corporate investors need to build collaborative relationships with their ventures to access valuable knowledge which contributes to their strategic or hybrid objectives (Basu et al. 2011), concepts from this stream of research do not cover financial objectives. With regard to the typologies of CVCs, they are also mostly undefined, yet some concepts refer to wholly owned subsidiaries, if not other single typologies.

It is a central task for CVC units to orchestrate the relationship between invested venture and corporate parent as a knowledge broker to capture the full value of CVC activities (Napp and Minshall 2011). These two-sided relationships are built and maintained by the employment of formal and informal mechanisms. Although the naming of such mechanisms varies greatly in the CVC literature, the three main components for successful portfolio relationship management are the provision of smart capital, the establishment of an effective corporate learning process and frequent communication.

4.4.1 Smart capital

Beyond financial investment, many corporate investors offer their portfolio companies services which are designed to help them to flourish. CVCs are regarded as superior by ventures when it comes to helping the young firm build commercial credibility and capacity and in providing technological support, whereas independent investors add value in helping raise additional finance, recruiting key employees and professionalising the organisation (Maula et al. 2005). Hence, CVC units have to configure their advertised services as complementary to those of other investors in order to gain a competitive edge in syndicate investment rounds. Such services provided by CVCs are often referred to as ‘smart capital’ and contain a ‘two-way flow of information where the information flows from the company to the financier’ and vice versa via reports given about the current state of business (Schäfer and Schilder 2009, p. 164). Research shows that the provision of smart capital has positive effects on the long-term success of a venture’s business activities (Lin 2020; Anokhin et al. 2016b; Balz et al. 2023). This effect is particularly evident when the corporate is focused on attaining a window on technology and the portfolio company is in an early stage (Dushnitsky and Lenox 2006). The effect multiplies when the investment intensity of the corporate is high and corporate has experience in alliances with young ventures (Lin 2020).

According to Gutmann et al. (2019), the provision of smart capital services from corporates to their portfolio companies is especially relevant for core activities which focus on value creation and informal activities in the sense of value capture.

Core activities refer to helping 'a venture developing an operating business and a marketable product or service' through business operation and technology activities (p. 30). This includes the commitment of corporate resources which enable CVC units to fulfil their role as knowledge brokers between corporate BUs and portfolio ventures (Basu et al. 2016; Keil et al. 2008a, b; Napp and Minshall 2011). Other activities for value creation include support for legal services and infrastructure development and helping the venture to build a strong brand and reputation in the industry (Ernst et al. 2005; Gutmann et al. 2019). 'Informal activities', according to Gutmann et al. (2019, p. 31), 'help the venture establish important relationships, within both internal and external networks, that can lead to new revenue streams'. Internal network opportunities offer chances for ventures to connect with corporate employees in business development activities to generate and capture exploitational benefits, such as project-level collaborations (Napp and Minshall 2011). External network opportunities allow portfolio companies to engage in business development activities in the corporate parent's industry by accessing their customers, potential customers, and partners (Gutmann et al. 2019). For these network opportunities, the CVC serves as a facilitator. Other activities for value capture include those of a 'formal' nature, such as helping ventures grow their customer base and identifying and accessing relevant suppliers (Gutman et al. 2019; Bal et al. 2023).

4.4.2 Corporate learning

In extension to the concept of smart capital, corporate learning describes external knowledge inflow and an absorption process from the portfolio venture to fill internal corporate capability voids (Keil et al. 2008a, b). This includes, but usually goes beyond, the consultation services of a portfolio company to its corporate investor. Establishing corresponding processes often configures the strategic objectives of the investment. Some researchers have found a positive correlation between corporate business development activities (e.g. patent stock) and the acquisition of external knowledge in exchange for funding of a venture (Dushnitsky and Lenox 2005a, b; Lee et al. 2015). However, establishing effective learning processes seem problematic. Corporate investors tend to have issues with knowledge absorption and integration of technology innovation that is typically new to everyone within corporate boundaries and structures (Yang 2012). Therefore, corporate learning must be undertaken via multiple trials with new technologies and business models outside the established trajectories of the corporate parent (Keil et al. 2008a, b). This process is best facilitated by CVC units which target capability voids inside the corporate structure (p. 1501). This can be done by leveraging the three available channels (Dushnitsky and Lenox 2005a). First, the process of due diligence provides the firm with a unique opportunity to learn about innovative ideas and technologies prior to committing capital. Second, after investment, CVCs may contribute to corporate learning by observing and monitoring the venture. Lastly, the failure (of invested) ventures may also support corporate learning as they give insights, e.g. about market unattractiveness.

Prior to an investment, CVC units conduct a thorough due diligence investigation of a venture's products, technologies, potential sales market, and business plan

(Dushnitsky and Lenox 2005a, p. 618). This process may give corporate investors a first glimpse into novel developments in their target sectors. Basu et al. (2016) point out that the early integration of BUs through CVCs in such processes increases the responsiveness to portfolio companies' activities and knowledge transfer between venture and BU after the investment.

Once the investment round has taken place, corporations employ various observation mechanisms to secure innovative outcomes from their investments (Dushnitsky and Lenox 2005a), the most prominent being seats on the board of the portfolio company (Lee et al. 2015). Research associates the popularity of board seats, or at least the right of board observation, with the opportunity for corporate investors to identify potential future strategic overlaps and learn about new technologies (Napp and Minshall 2011). Information gathered through board memberships also help corporates to establish an effective relationship for knowledge transfer about industry trends and technology (Ernst et al. 2005; Wadhwa and Kotha 2006). This process is best facilitated by CVCs which develop explicit collaborative blueprints between venture partners and mainstream businesses and thereby create social contracts between the parties (Basu et al. 2016). Part of such a blueprint may be key business unit personnel to work closely with a venture (p. 145). Furthermore, board memberships ensure the alignment of the portfolio company's actions with the corporate's objectives (Wadhwa and Kotha 2006).

Lastly, failed portfolio ventures provide information about the viability of technologies, products and pitfalls in businesses to the corporate parent (Dushnitsky and Lenox 2005a).

4.4.3 Portfolio communication

Along with formal mechanisms, Sykes (1990) emphasises the importance of informal communication in building a two-way, strategically beneficial relationship. He provides evidence that modes of communication that involve direct and frequent contact between the corporation and the venture regarding areas of special interest or mutual interest (e.g. formation of business relationships such as research contracts or marketing arrangements) have a positive influence on the strategic value of an investment. Such direct and frequent contact may come about planned regular meetings between the CVC unit and the management of the venture (Napp and Minshall 2011).

5 Conclusion

Through conceptual integration of empirical research on design elements of CVC programs, this literature review provides new insights for the setup of CVC activities according to chosen objectives and available typologies. Moreover, this study presents a useful foundation for future research to broaden the academic discussion on the early abandonment of CVCs by emphasising the importance of organisational structures for certain CVC modes.

The analysis provides a holistic view of four *design dimensions* which play a crucial role for sustainable CVC operations. We find that these four dimensions – corporate relationship management, personnel, the investment operating model, and portfolio relationship management—contribute to the success of CVC units by defining concepts and processes which have been proven by empirical research. Furthermore, as the success of individual CVC programs is a function of their objective and available typology, the four *design dimensions* presented in this analysis allow assignments to the respective mode of CVC, as one dimension might apply for a certain mode of CVC but not to another. For example, building up elements of effective portfolio relationship management, such as a corporate learning mechanism to capture the full value of CVC activities between an invested venture and the corporate parent, does not apply to CVCs with only one financial objective but to strategic and hybrid programs.

Our results contribute to the discussion on early abandonment of CVC programs (Röhm 2018; Fels et al. 2021; Pinkow and Iverson 2020; Brinkmann and Kanbach 2022; Bugl and Kanbach 2022; Jeon and Maula 2022). On the one hand, the simultaneous emergence of this academic debate on heterogeneous factors influencing the failure of CVCs, which, according to unanimous academic opinion, is related to the organisational structures of the units, underscores the increasing importance of the topic. On the other hand, an integrated view of design elements which prevent failure and contribute to the success of CVC operations was missing. Identifying building blocks of CVC design by linking separate research streams in the literature to four aggregated design dimensions broadens the field of CVC research on organisational structures. We believe that the *design dimensions* presented in this study can serve as a foundation to further elaborate on organisational structures for successful CVC operations, especially in terms of empirical research which assesses the differences in CVC activities by typologies and objectives. This will help to provide pragmatic and implementable results from research. In summary, the theoretical contributions confirm the view that SLRs go beyond the provision of a broad overview of a topic but result in novel theoretical constructs that lead to new or enhanced existing directions in research (Kraus et al. 2020). Beyond that, our review provides more clarity on the common practices of CVCs. Because of the rising number of CVC funds worldwide, even in times of crises, guidance on operating such programs effectively is greatly needed.

6 Practical implications

This study provides practical implications for CVC programs but also for founders and executives of start-ups who consider investments from CVCs.

The practical contributions of the design dimensions presented for CVC programs are manifold. Besides providing guidance on how to set up CVC operations according to chosen objectives and available typologies, this study serves as basis in discussions about program implementation choices. Research has extensively documented the failure of CVC activities because of disputes between the corporate parent and CVC operators with regards to autonomous decision-making (Siegel et al.

1988; Gompers and Lerner 1998; Yang 2012; Lee et al. 2015), staffing composition (Souitaris and Zerbinati 2014; Cabral et al. 2021) or incentive schemes (Block and Ornati 1987; Dushnitsky and Shapira 2010; Hill et al. 2009). Here, the literature examined provides empirical evidence which can serve as a basis for decision-making through the conceptual integration of this study.

Start-up founders and executives who are considering investments from corporate investors can also draw several conclusions from this study. First, it can help to assess CVC programs according to their design choices. Research presented in this review strengthens the argument that mutual value gain in a relationship between corporate investor and investee is achieved by CVCs which focus on the same or adjacent sector of the corporate parent and are thereby able to complement the business of start-up. Low deal complexity and respecting IP of the venture also appear to distinguish successful CVCs. Second, start-up founders and executives can assess added value and responsibilities in their relationship with CVCs. Successful corporate investors seem to bring means of adding value to this relationship, from help with recruiting, to professionalizing the organization, extending business and refining products. However, most CVCs seem to aim at maintaining a two-way relationship in which their expectation goes beyond financial return but to add value to their own business. To ensure mutual value creation, start-up founders and executives should maintain a collaborative working atmosphere with CVCs for which time has to be allocated.

7 Further research and limitations

As a basis for future research, this study details applicable concepts to various typologies and objectives of CVCs. This contrasts with recent empirical research in the field of CVC which mainly focusses on strategic objectives and wholly owned subsidiaries. However, this does not reflect practices in CVC (Ernst et al. 2005). To provide insights for practitioners, future research in the CVC field needs to balance various objectives and typologies of CVC. We would therefore strongly recommend updating the general CVC literature with case-based documentation on the objectives of CVCs and their organisational structures.

CVC operations are not static; they may shift in objectives and typologies over time. The results in the literature reviewed suggest that because of organisational change phenomena in the corporate parent, such as digital transformation, these underlying goals of pursuing CVC activities might change. Therefore, future research might expand the view on the abandonment of existing CVC structures while changing to new CVC *design dimensions.*

In relation thereto, our research proposes design concepts of CVC in order to tackle high rates of early abandonment. In accordance with our research questions, we thus define successful CVC operations as those that contribute towards the longevity of CVC operations. However, this equation might not always prove true in practice. We detected significant research gaps in the literature concerning performance impact and relating to *design dimensions*. We therefore join the call of Brinkmann and Kanbach (2022) to further elaborate on factors influencing

performance in CVC research to provide quantifiable impact of the proposed *design dimensions*. We partly challenge Fels et al. (2021), who stated that performance-influencing factors have been widely discussed in the literature.

Future research may also expand the concepts represented by the *design dimensions* of this study with the specific goal of preventing continued high rates of early abandonment of CVC programs due to external shocks (see also Röhm 2018). By connecting research streams on the impact of exogenous shocks on the CVC landscape (e.g. Bellavitis et al. 2022, on the influences of the COVID-19 pandemic) and CVC organisational design, the failure of programs due to factors that cannot be influenced by the setup of the programs could be prevented. In times of increasing global crises, a resilient design for CVC operations becomes increasingly indispensable for CVCs with strategic objectives.

The literature reviewed points out that decision-making by managers of the corporate parent increases the potential for abandonment of CVC operations due to internal politics which lie outside the influence of the CVC. Therefore, future research may expand the *design dimension* of corporate relationship management with regard to building resilience against internal shocks while maintaining access to the resources and knowledge of the corporate parent.

Future research should also detail the applicability of design elements to certain contexts. A clear allocation of the concepts included in the *design dimensions* towards boundary conditions and contextual environments could be beneficial for the adoption of the concepts in different environments. These may include different industries, cultural environments, and developing and developed countries. This point will be particularly relevant for the concept of investment foci of a CVC, as we found indications in the reviewed articles that processes and structures will vary with the origin of the CVC investor (US, EU, International).

Theoretical and practical contributions in literature reviews are subject to limitations of the chosen methodology and constraints of the research project (Tranfield et al. 2003). Although SLRs are seen as strong evidence, selection bias in the sample cannot be eliminated completely. In order to minimise selection bias, we considered articles from two different databases which are widely acknowledged as leading sources for comprehensive literature reviews (Burnham 2006). Furthermore, SLRs strongly rely on the chosen search strings in these databases. Given that our initial sample consisted of more than 1,000 articles, we are confident in providing strong evidence with our results.

In addition, our equation of success and longevity in the featured research question prevents a clear determination of the impact of each design dimension in terms of performance improvement through implementation of each design element. This shortcoming may be eradicated by future research in the field.

Furthermore, our findings lack a clear allocation of the concepts included in the design dimensions to boundary conditions and contextual environments. More than half of the research sample under review in this study focused on the U.S. In order to provide practical insights for different cultural environments and regions with different levels of industrialization, future research needs to broaden the horizon when researching concepts relating to design dimensions.

We hope to encourage researchers to shed further light on the issue of early abandonment of CVCs by promoting the importance of organisational *design dimensions* for setting up CVC operations.

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Declarations

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