Corporate engagement with start-ups (CEWS): a systematic review of literature and future research agenda

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Abstract

Purpose – The purpose of this paper is to provide a systematic review of literature on corporate engagement with start-ups (CEWS) by identifying the modes, contexts, antecedents, barriers and outcomes. As an emerging field, CEWS presently has no such review available which will help in building consensus within the field and shape future research directions.

Design/methodology/approach – The study followed a two-phased systematic review of literature. Three research databases (i.e. Web of Science, ScienceDirect and SCOPUS) were accessed to gather and conduct the review. Of the total 379 papers retrieved, 63 total relevant papers were studied and analysed. The exhaustive review of literature helped to uncover the contexts, perspectives, antecedents, outcomes and barriers reported across the different modes of CEWS.

Findings – The study highlighted the five prominent modes of CEWS favoured by large corporations and start-ups. It found that the large corporations and start-ups associate with one another on the basis of complementarities of activities, resources and motives to pursue their strategic orientations. The engagements also face barriers on the ground, such as incompatibility of goals, power imbalances, cultural differences and weak engagement plans. Most important contexts seen were the high-technology industries in the developed economies like the USA and Europe. It also found that ecosystem creation, accessing innovation and corporate strategy have been preferred as the most productive modes of CEWS in the literature.

Practical implications – This review provides practitioners with a detailed list of the modes and drivers of CEWS. Subsequently, the barriers that need to be managed to successfully execute a specific mode of engagement. This shall enable the practitioners in developing and adopting the best practices while engaging with the start-ups to better facilitate the outcomes of CEWS.

Originality/value – To the best of the authors’ knowledge, there is no systematic literature review available in the domain of CEWS – thus, this study makes an important methodological contribution to the field. By consolidating the fragmented yet growing knowledge on CEWS, the study presents a detailed understanding of what drives and obstructs the engagement between large corporations and start-ups.

Keywords Strategy, Innovation, Start-ups, CEWS, Corporate start-up engagement

Paper type Literature review

1. Introduction

The term “Corporate engagement with start-ups” (CEWS) first emerged in the open innovation literature followed by the corporate entrepreneurship literature, emphasising that promoting...
innovation was the main goal of corporate start-up engagement (Weiblen and Chesbrough, 2015; Thieme, 2017; Kallmuenzer et al., 2023). This form of collaboration is primarily centred around shared technology and market access (Weiblen and Chesbrough, 2015). CEWS has generated a diverse body of knowledge from the vantage of how start-ups have sought corporate funding, resources and customer access from large corporations, and how the latter have leveraged the innovation capabilities/new technology of the start-ups to stay ahead of competition (Thieme, 2017; Bagno et al., 2020). Various studies (Weiblen and Chesbrough, 2015; Buckley and Prashantham, 2016; Kohler, 2016) suggest an increase in the number of corporations engaging and working with start-ups. CEWS has been observed to take place in various formats and for a variety of purposes (Bagno et al., 2020), and owing to the rapid and widespread development of digital technologies, the need for consistent understanding of CEWS is gaining momentum to keep up with the rapid pace of technological change and experimentation with disruptive ideas (Ching and Caetano, 2021). Thus, CEWS has stepped in to understand newly emerging corporate and start-up engagement paradigms, as traditional typologies on corporate and start-up partnerships may not be suitable to address new business realities resulting from new technologies and market trends (Piazza et al., 2023).

Open innovation has been defined in terms of two models, i.e. outside-in and inside-out by Weiblen and Chesbrough (2015). Open innovation enables knowledge inflows through sourcing and acquisition of knowledge to strengthen and enhance the internal innovation capacity of firms, which, in turn, also allows firms to monetise internal knowledge by offering it outside its boundaries (Chesbrough, 2003; Chesbrough and Crowther, 2006). CEWS encompasses the diverse ways corporations can set up interactions with start-ups. In place of traditional equity-based models, collaborations are now being complemented by flexible programmes that enable corporations to engage with large numbers of start-ups (through formal and informal ways), to have impactful interactions that are mutually beneficial to both entities (Weiblen and Chesbrough, 2015).

Despite being a relatively new area of study, CEWS has attracted the interest of researchers and practitioners who aim to understand how large organisations engage with start-ups in cooperative and co-evolutionary ways, moving away from traditional target-acquirer dynamics (Buckley and Prashantham, 2016). Engaging with start-ups provides large corporations a worldview of the emerging technologies and also opens up for them niche and untapped market opportunities as they pursue to develop a robust ecosystem of competent partners (Cannone and Ughetto, 2015). The traditional and equity-focused collaborations between corporates and start-ups, such as venture financing and acquisitions, are now being complemented by more flexible and non-equity focused modes that enable corporates to engage with a variety of start-ups (Kohler, 2016; Bonamigo et al., 2022). Because start-ups are not risk averse, they can operate on low margins and focus on niche areas (Rigtering and Behrens, 2021) which makes them promising engagement partners for large firms for their agility, inventiveness and novelty of offerings (Bilal et al., 2022). Also, to gain competitive advantage, large corporations find engaging with start-ups to be more efficient and cost-effective (Benkraiem et al., 2023). The literature on CEWS shows how some corporations have begun to focus their engagement efforts on emerging business areas, and a new range of objectives and motivations on corporate and start-up engagement have emerged in research as well as practice (Grama-Vigouroux et al., 2020; Albats et al., 2021; Gutmann et al., 2023).

The research methods applied to study open innovation have made extensive use of both induction and deduction (Vanhaverbeke and Victor, 2023). Much of the qualitative work so far in this domain has been informed by case studies, ethnographies and other close observations of actual practices and activities of the firms (Albats et al., 2021). These have provided a deeper and richer understanding of the processes of innovation. Much of the
quantitative work has been built upon using deduction to predict the actions of innovators and then measuring those actions to validate that deduction (Vanhaverbeke and Victor, 2023). Despite these attempts, over the past two decades of open innovation many new and emerging facets have remained scattered. CEWS is one such area.

Firms increasingly rely on open innovation to boost the performance of their innovation activities (Wouters et al., 2018). For a long time, the literature has been focusing on the strategic benefits of open innovation, but with the emergence of CEWS in the open innovation context it becomes imperative to study and build an intellectual structure of what drives and impedes the CEWS outcomes for corporates and start-ups. It is a new area of application and allows applying open innovation dynamics in a wider variety of contexts aligning with the strategy, entrepreneurship and innovation ecosystem literature.

Although diverse studies have captured different aspects of CEWS, there is no systematic review available to understand the intellectual structure that is emerging from this body of knowledge (Fisch and Block, 2018). It is also important to identify and list the specific drivers that contribute to successful collaboration between a start-up and a large corporation, and the specific barriers that may impede the process. SLRs have been widely accepted in the domain of management research, as a review is a “knowledge map”, which analyses and synthesises prior literature (Williams et al., 2021). Systematic literature reviews (SLR) can discern whether previous findings are consistent, are generalizable and whether the effects are significant (Webster and Watson, 2002). Additionally, SLRs allow researchers to efficiently absorb the volume of research that is emerging in a domain (Tranfield et al., 2003), as it aids in synthesising prior research in a comprehensive, transparent and reproducible manner (Williams et al., 2021). SLRs have a predefined focus, involving an assessment of articles extracted through an extensive search and predetermined criteria for inclusion and exclusion of articles for review (Leetaru, 2012). Systematic literature reviews synthesise a body of knowledge by providing details on existing research and the knowledge gaps emerging from the body of literature (Williams et al., 2021).

In the CEWS context, it is relevant to note that a large percentage of businesses agree that business collaboration is critical to fostering innovation (McKinsey, 2022). Literature shows that the institutional environment, firm internationalisation trajectories and business models drive the start-ups’ innovation pursuits (Ahlstrom et al., 2018). Interactions or exchange of information and resources between large corporations and start-ups through CEWS activities or processes have seen a steady appeal and rise (Weiblen and Chesbrough, 2015; Buckley and Prashantham, 2016).

Against this backdrop, this study aims to address the following research questions:

- **RQ1.** What are the predominant modes of corporate engagement with start-ups (CEWS)?
- **RQ2.** What are the contexts and prominent theory perspectives used to look at CEWS modes?
- **RQ3.** What are the perspectives held by corporates and start-ups while pursuing distinctive CEWS mode?
- **RQ4.** What are the drivers, outcomes and barriers noted across CEWS modes?

To answer **RQ1**, we have conducted a primary select review to identify the predominant modes of CEWS. To answer **RQ2**, we have conducted a systematic literature review of the studies on the basis of their contexts and theory perspectives. To answer **RQ3**, we have reviewed the studies to capture the perspectives of corporates and start-ups. To answer
RQ4, through an exhaustive review, we captured the drivers, engagement outcomes and barriers – how the various engagement modes have been empirically tested. This led to the proposing an integrative research framework. Additionally, the secondary review also highlighted the limitations and the research gaps that were evident from the literature to provide the future research directions.

The paper is divided into the following sections. Section 2 outlines the systematic review process and methodology used. Section 3 provides the findings of the two-phase literature review of CEWS. Section 4 provides a detailed discussion of the findings of the review and the research framework. Section 5 provides the implications of the present study. Finally, Section 6 provides the future research agenda, and Section 7 concludes the study with the limitations.

2. Research method

2.1 Review process

Following Felizardo (2012) and Pérez et al. (2020), a two-phased review of the literature on CEWS was conducted. In the first phase, a primary (select) review was conducted of the theoretical papers. The select review captured the context of the studies and the key findings (such as triggers, motivators, facilitators and barriers of CEWS modes) which enabled to unearth the most recurring modes of CEWS. Subsequently, an exhaustive review of empirical and exploratory research papers was conducted on the most recurring modes identified by the primary study, and the studies were mapped on the basis of their contexts, perspectives, drivers, outcomes and barriers (Wang and Chugh, 2014; Bagno et al., 2020).

The systematic literature review method is sometimes referred to as an evidence-based review method conducted by analysing empirical aspects (Webster and Watson, 2002; Snyder, 2019; Williams et al., 2021). According to Tranfield et al. (2003), the review phases are constructed to make certain that the criteria for inclusion of studies are relevant within the search scope, and ensure that the search protocol strategy can be replicated and has concept-centricity and theoretical grounding for systematic review. Methodologically, a systematic literature review allows aggregating theoretical contexts of a topic with empirical evidence that may have been obtained using various techniques, and in (potentially) widely differing contexts (Kitchenham et al., 2009). Establishing a protocol for the study (during the design phase) is a crucial step in carrying out a secondary investigation, such as a systematic literature review (Felizardo et al., 2012; Pérez et al., 2020). The protocol, which is also a document that needs to be evaluated (Webster and Watson, 2002; Snyder, 2019), is created to minimise bias in the study by outlining in advance how the systematic review will be carried out, such as the boundary requirements, quality measures and so on.

Particularly, a systematic literature review is a thorough research method that examines all available evidence on a specific research question (Fisch and Block, 2018; Snyder, 2019). It involves defining the research question, creating a systematic search strategy to find relevant studies, screening and selecting studies based on predefined criteria, assessing the quality and potential bias of selected studies, extracting and organising data, analysing findings to identify patterns and trends and presenting results transparently (Fisch and Block, 2018; Williams et al., 2021). This method ensures an unbiased and comprehensive overview of existing knowledge on the chosen topic.

An eight-year time frame (2015 until January 2023) was chosen for the current study to select the relevant research articles. This is because, CEWS as a concept first came to the limeligh through the work of Weiblen and Chesbrough (2015) in the context of large corporation and start-ups collaborations for managing open innovation. Further, the eight-year time frame is relevant, as in recent years, the technological collaboration between the
large firms and start-ups has intensified (Monteiro and Birkinshaw, 2017). Subsequently, a body of research is now available on CEWS (Weiblen and Chesbrough, 2015; Bliemel et al., 2019; Enkel and Sagmeister, 2020; Horne and Fichter, 2022). A comprehensive database search was conducted by the authors by engaging three research engines: Web of Science, Science Direct and SCOPUS (Levine-Clark and Gil, 2008; Lasda Bergman, 2012) that provide articles of internationally recognised management journals from Australian Business Deans Council (ABDC) and Chartered Association of Business Schools (ABS) listings (Ehls et al., 2020; Christofi et al., 2021).

ABDC and ABS rankings are considered reliable and appropriate as they use a combination of expert panels and impartial data measurements from various metrics to assess the quality of research output, i.e. journal indexing and research article quality (Christofi et al., 2021). Thus, article quality, based on the journal ranking, i.e. ABDC and ABS, was adopted to ensure that high-quality work has been used for the review (Ehls et al., 2020; Christofi et al., 2021). The inclusion criteria based on the journal rankings for systematic literature review are widely accepted and used within social science and management research (Leetaru, 2012).

Figure 1 provides the Boolean search query used to retrieve the relevant articles from the three research engines.

2.2 Selection protocol for secondary review
For the secondary or exhaustive review, the studies were mapped across multiple groupings such as the contexts, theory perspectives, perspectives of corporates and start-ups, drivers, outcomes and barriers (Webster and Watson, 2002). While scoping the literature search across the three databases using the Boolean query (refer Figure 2), we checked for business and non-business articles. This helped us to remove the articles which were non-business in scope to ensure efficiency and accuracy of the literature search.

Figure 2 provides the selection process of the articles for review. Initially, 379 research articles were sourced from the three research databases (refer Figure 1), out of which 67 articles were removed to avoid duplication in the sample (Leetaru, 2012). In the pool of remaining 312 articles, the TITLE-ABSTRACT-KEYWORDS were scanned from the ABDC and ABS listings of journals (Ehls et al., 2020; Christofi et al., 2021) to check for the relevance with the research objectives. Another 147 articles were excluded as they did not focus on CEWS. From the remaining 165 articles, the empirical papers on the five CEWS modes (identified through the primary review) were considered. This helped to narrow down the selection to 63 research articles for the exhaustive review. Table 1 depicts the search protocol.

The five steps prescribed by Kraus et al. (2020) were followed in setting the protocol for the search process, which included: framing the review topics and strategy through an initial search on Google Scholar using the suitable keywords, identifying keywords and

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**Source:** Figure by authors

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**Figure 1.**

### Boolean search query

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TITLE-ABS-KEY "corporate engage**" OR "corporate collaboration" OR "corporate alliances" OR "corporate partnerships" AND "corporate accelerator" OR "corporate venture capital" OR "open innovate" OR "corporate strategy" AND "ecosystem" AND PUB YEAR > 2015 AND PUB YEAR < 2023 SUBJECT AREA: business management and accounting DOCUMENT TYPE: Article LANGUAGE: English
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search conditions and using a search string (refer Figure 2), retrieving articles and eliminating the duplicates (Figure 1), analysing the literature and tabulating and interpreting the findings (details of this are given in the Phase 2 exhaustive review). The literature was mapped by using groupings like contexts, theoretical lens, perspectives, drivers, outcomes and barriers (Wang and Chugh, 2014; Bagno et al., 2020). All the authors read through each manuscript on their own, assessed the data and then entered it into a separate spreadsheet for analysis. All spreadsheets were then further collated into a master spreadsheet.

2.3 Research profile
All papers considered in the sample were scholarly research papers/articles from peer-reviewed journals listed in ABDC and ABS journal rankings, published in English (as categorising scientific journals based on their academic quality has become the most influential quality estimate for business journals) between the years 2015 and January 2023 (Figure 1) available electronically or by other reasonable means for the exhaustive review. Other publication forms (e.g. books, chapters, conference proceedings, unpublished papers and newspaper articles) were not included in the sample. For primary review, 22 conceptual papers were scanned and 63 empirical papers were examined for the exhaustive review. Important details such as productive publications, yearly article trends and the geolocations of the first authors of the chosen articles were captured to get clarity on the progress of the CEWs domain. Web of Science emerged as the most significant database for articles on
CEWS, as close to 44% of the publications used in the present study were gathered from this search engine.

As evident from Figure 3, in terms of author’s publication productivity (Van Eck and Waltman, 2010; Tandon et al., 2021), Henry Chesbrough and Shameen Prashantham have the largest number of publications and co-citations in this field. We considered the normalised citations of an article to be calculated as the number of total citations received by the article divided by the average number of citations of all articles published in the same year in the data set (Van Eck and Waltman, 2010). This normalisation allows researchers to determine that the previous documents have had consistent time to receive citations like the recent documents (Rashid et al., 2019; Hausberg and Korreck, 2020). Citation analysis is a “quantitative oriented bibliographic approach” (Gundolf and Filser, 2013, p. 178), which is used to determine the most influential articles on the subject and the intellectual connections between publications, empirically established by the strength of co-citations (Garfield, 1979).

Table 1. Search protocol for the literature review

| Research questions | RQ1: What are the predominant modes of corporate engagement with start-ups (CEWS)?
| RQ2: What are the contexts and prominent theory perspectives used to look at CEWS modes?
| RQ3: What are the perspectives held by corporates and start-ups while pursuing distinctive CEWS mode?
| RQ4: What are the drivers, outcomes and barriers noted across CEWS modes? |
| Constructing a search parameter | Databases accessed: Web of Science, ScienceDirect and SCOPUS
| Time frame: 2015 – January 2023 (eight-year time frame)
| Location scope: nothing specific
| Topic scope: business, management, organisation, CVC, corporate collaborations, innovation, technology and start-up (non-business articles were not considered) |
| Search strategy | Primary search: initial search on Google Scholar to find keywords for the main search on CEWS for the database search
| Strategy for document selection | Inclusion criteria:
| Language: English
| Paper type: research paper, literature review and theoretical and empirical papers
| Sample of paper: start-ups, innovation, large corporates, corporate engagement with start-ups
| Document type: Business, management, entrepreneurship
| Exclusion criteria:
| Studies were excluded if they were found to be repeated across the databases, were not relevant to the research questions of the present study, checking for the journal rankings |
| Criteria for study assessment | Focused issue
| Study design
| Rigourous analysis
| Transferability of research findings
| Value of research |
| Journal quality assessment | Followed the ABDC and the ABS list of journals ranking |
| Strategy for data strategy | Exploration of the concept through a primary select review (theory-building papers) and secondary exhaustive review (empirical papers) |
| Data synthesis | Extracting statements from documents by each reviewer and categorising of mechanisms
| Continue the process until reaching a consensus on the concepts (dimensions of main actors, main interactional necessities and key mechanisms)
| Applying the protocol for the final tabulation in the spreadsheet |

Source: Authors
which is, in turn, used as a measure of similarity of concepts and ideas between a set of publications. We conducted an author publication trend and co-citation analysis where we observed three main clusters of the cited author networks which we visualised through three clusters. These are:

Cluster 1 (Figure 4) – illustrates how the previous body of work of the cited authors in the review has remained consistent in this domain and well inter-connected as well.

Cluster 2 (Figure 5) – confirms the effectiveness of the search string aimed at investigating a coherent body of knowledge on CEWS, as shown by the forward citation analysis of the cited authors in the review.

Cluster 3 (Figure 6) – shows how various authors are working across disciplines related to the scope of the investigation specified in the review.

Finally, all the clusters are interconnected, showing good reliability of the analysis.

Subsequently, Figure 7 highlights the yearly publication trend of theoretical and empirical papers, with most of the article concentration occurring from 2019 to 2022, and the highest number of publications occurring in 2021. Most of the first author affiliations are from countries like the USA and Europe, which also explains why the concentration of studies was from developed countries. Empirical studies have remained consistently high while the theoretical studies have shown steady growth. Figure 8 given below captures the rising number of empirical and theoretical studies on the various CEWS modes.

From the exhaustive review of literature, the most-used methodologies were captured. The most preferred methodology was multiple case study (53%), followed by conceptual studies (14%) and review studies (12%). The review findings show that the methodology preferred by most studies is the multiple case research method and industry-specific interview-based data analysis. Figure 9 given below depicts the distribution of the methodologies used by the studies.

We also found that the majority of the studies were conducted in the developed economies such as the USA, UK and Europe, while few studies were available from the emerging economies such as India and China (refer Table 2). Figures 10 and 11 depict the distribution and percentage of studies available from various geographical contexts.

The technology-based industries such as Nanotechnology, Pharmaceuticals Biotechnology were the most considered in the studies, particularly in the USA, UK and other European contexts. Tech-based industries such as FinTech and information technology – enabled services figured prominently in the studies from the emerging economy contexts.

In studies from contexts such as the USA, the focus has been on achieving synergistic benefits for both partners (Wouters et al., 2018). It was evident that large corporations
aspired to collaborate with start-ups to jointly develop new products and services, investigate untapped market potential or manage innovation (Monteiro and Birkinshaw, 2017). An incumbent and a start-up entered into an engagement to assess product-market fit, leverage efforts to scale up operations, boost product distribution, raise money or even gain greater credibility in case of the start-up associating with a well-known brand.

In the UK, large corporations sought to accelerate their process of innovation by avoiding huge Research & Development (R&D) costs (Riepe and Uhl, 2020). The corporate venture capital model was seen to be a prominent mode for the start-ups to raise funds, and for the incumbents to get the benefit of the innovations accomplished by the start-ups (Weiblen and Chesbrough, 2015). Start-ups backed by corporate venture capitalists were seen to be positively associated with the generation of patents as the engagement got cemented (Alvarez-Garrido and Dushnitsky, 2016). This was also found to lead to bigger brand development for corporations (Agarwal and Braguinsky, 2015).

In the European context, a driving force behind the engagements was the ecosystem and network building mode. By collaborating with start-ups, corporations sought to access and learn about cutting-edge technologies (Bergman and McMullen, 2022; Egan, 2021).

Source: Figure by authors
Co-creation between large companies and technology start-ups was found to be gaining momentum (Liguori et al., 2019).

In the emerging economy contexts, innovation access-driven business models were found to enable organisations to be more effective in creating and capturing value in the market/industry (Kollmann et al., 2021). The right combination of partnerships and the nature of business results in MNCs engaging with start-ups in emerging markets was found to lead to network broadening and network widening (Prashantham, 2021). For example, it was found that MNCs have a preference for partners that are geographically clustered as opposed to non-clustered partners (Prashantham, 2021). The risk-taking ability and proactiveness of start-ups were found to lead to product/service innovation (Zhang et al., 2020). Coordination among the actors in an innovation ecosystem was found to lead to shared culture, mutual understanding, cooperative norms and routines that are well-defined and adjusted for the actors (Decreton et al., 2021).

Table 3 depicts the contexts studied across the geographies capturing the large corporations and start-ups’ perspectives.

3. Findings from review of literature

Weiblen and Chesbrough (2015), while explaining open innovation, described how traditional equity-based models have been complemented by flexible engagement models that enable corporations to form alliances with large numbers of start-ups. Kohler (2016) and Mocker et al. (2015) viewed corporate-start-up engagement as an umbrella term that
Cluster 3 – various domains of the authors similar to the scope of the review

Corporate engagement with start-ups

Figure 6.

Figure 7.
Yearly publication trend

Source: Figure by authors
The term CEWS has been used to describe the day-to-day interactions between corporations and start-ups (Bannerjee et al., 2016), whereas the term collaboration tends to point towards more formalised interactions (Weiblen and Chesbrough, 2015; Kohler, 2016). The term CEWS thereby reflects both the breadth and strategic importance of engagement-related activities by emphasising the need for meaningful and impactful interactions that are mutually beneficial (Marvel et al., 2016; Belezas and Daniel, 2022).
<table>
<thead>
<tr>
<th>Country</th>
<th>Study count</th>
<th>%</th>
</tr>
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<tbody>
<tr>
<td>USA</td>
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<td>22.22</td>
</tr>
<tr>
<td>UK</td>
<td>12</td>
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</tbody>
</table>

Source: Authors

**Table 2.**
Distribution of studies as per the geographical contexts as reported from the review

**Figure 10.**
Distribution of the geographical contexts

**Figure 11.**
Country-wise distribution of the geographical contexts

Source: Figure by authors
### USA
Exchanging the influence of venture capitalists (VCs) as a strategic move for engagement, terms of negotiations, assessment of risks and opportunities, increase in collaborative value creation and creation of a co-partnering dynamic

**Corporate**
Corporations having a strong footprint in a market make promising investors for start-ups; VCs with more experience are twice as likely to form an alliance with entrepreneurial firms to improve their value proposition and offer favourable terms of negotiation for both entities; resource sharing leads to new and unique value offerings; properties of VCs with respect to prominence, industry and geographic diversification have no effect on forming alliances

**Start-ups**
Start-ups seek access to customer base, technologies, production scope and scale incumbents can offer; start-ups offer an environment to test new business ideas; start-ups can catch on to new trends and respond accordingly

### UK
Investigating the mechanism for co-specialisation strategy of bringing the start-up within the large corporation’s ecosystem to generate synergistic value; nature and evolution of pre-acquisition interactions between start-ups and their eventual investors; CVC as a way of driving innovation engagement with start-ups in high-tech industries; and examining the influence of complementary asset profile on the nature and the business of the investor on innovative outcomes

**Corporate**
CVC backing depends on both patents and publication portfolios of firms engaged in R&D and innovation; VC funding is propelled by firm age, investment syndicate and length of investment for the creation of an innovation ecosystem; value proposition may take several forms, such as products, services or improvements of internal processes as incumbents begin engagement with start-ups and integrate within their ecosystem/network

**Start-ups**
Start-ups consider complementarities in the asset profiles of the investors; geographical proximity of CVC and start-up leads to better opportunities to pilot test; ease in obtaining regulatory approvals (particularly in biotechnology industries); patents and publications are positively correlated (48%) with venture funding; when business modules become complementary or unique, the partners become irrevocable

### European context
The implementation of an open, flexible and co-creational business model driven by innovation to actively collaborate with start-ups

**Corporate**
Collaborations are central to the broad field of innovation and open-innovation; collaboration, using the business models lens, is manifested through the introduction of open and co-creational business model led by the large organisations’ ecosystems; open business models enable an organisation to be more effective in creating and capturing

(continued)

<table>
<thead>
<tr>
<th>Geography</th>
<th>Context</th>
<th>Key findings</th>
</tr>
</thead>
</table>
| USA       | Examining the influence of venture capitalists (VCs) as a strategic move for engagement, terms of negotiations, assessment of risks and opportunities, increase in collaborative value creation and creation of a co-partnering dynamic | **Corporate** Corporations having a strong footprint in a market make promising investors for start-ups; VCs with more experience are twice as likely to form an alliance with entrepreneurial firms to improve their value proposition and offer favourable terms of negotiation for both entities; resource sharing leads to new and unique value offerings; properties of VCs with respect to prominence, industry and geographic diversification have no effect on forming alliances  
**Start-ups** Start-ups seek access to customer base, technologies, production scope and scale incumbents can offer; start-ups offer an environment to test new business ideas; start-ups can catch on to new trends and respond accordingly |
| UK        | Investigating the mechanism for co-specialisation strategy of bringing the start-up within the large corporation’s ecosystem to generate synergistic value; nature and evolution of pre-acquisition interactions between start-ups and their eventual investors; CVC as a way of driving innovation engagement with start-ups in high-tech industries; and examining the influence of complementary asset profile on the nature and the business of the investor on innovative outcomes | **Corporate** CVC backing depends on both patents and publication portfolios of firms engaged in R&D and innovation; VC funding is propelled by firm age, investment syndicate and length of investment for the creation of an innovation ecosystem; value proposition may take several forms, such as products, services or improvements of internal processes as incumbents begin engagement with start-ups and integrate within their ecosystem/network  
**Start-ups** Start-ups consider complementarities in the asset profiles of the investors; geographical proximity of CVC and start-up leads to better opportunities to pilot test; ease in obtaining regulatory approvals (particularly in biotechnology industries); patents and publications are positively correlated (48%) with venture funding; when business modules become complementary or unique, the partners become irrevocable |
| European context | The implementation of an open, flexible and co-creational business model driven by innovation to actively collaborate with start-ups | **Corporate** Collaborations are central to the broad field of innovation and open-innovation; collaboration, using the business models lens, is manifested through the introduction of open and co-creational business model led by the large organisations’ ecosystems; open business models enable an organisation to be more effective in creating and capturing |

Table 3. Perspectives of corporates and start-ups across geographies
3.1 Findings of Phase 1 (primary select review of literature on corporate engagement with start-ups)

The primary review revealed the predominant modes of CEWS which answered our first research question, i.e. “what are the predominant modes of corporate engagement with start-ups (CEWS)?” (refer Table 4). *First* is the corporate strategy mode which is driven by the underlying motivation of the large corporation pursuing the start-up to fuel growth and to sustain the industry advantage (Marvel *et al.*, 2016; Belezas and Daniel, 2022). The *second* mode is the corporate venture capital, encompassing both equity-based as well as non-equity-based alliances to create a co-partnership dynamic (Fels *et al.*, 2021). *Third* is the corporate accelerator mode, about how corporate accelerators facilitate the close interaction and sharing of resources between large and small firms for idea generation, testing and value proposition development (Kohler, 2016). *Fourth*

<table>
<thead>
<tr>
<th>Geography</th>
<th>Context</th>
<th>Key findings</th>
</tr>
</thead>
</table>
| Emerging  | To test the scope of network creation and its breadth and depth; complementary assets and liabilities of an incumbent with young/new start-ups; probability of building a network during expansion of a start-up by way of internationalisation (from the incumbent’s side); innovation outposts and the connectivity struggles outposts face; the initiatives some companies pursued with regard to purpose, architecture, processes and culture to make their outposts successful | value in the market/industry through engagements with start-ups  
*Start-ups*  
Countries’ VC availability (innovation driven) will have a positive effect on FinTech entrepreneurship in countries with a higher level of FinTech entrepreneurs; countries’ private sector credit availability will have a constant positive effect on FinTech entrepreneurship; innovation alliances/collaboration directly stem from the open innovation rationale, whenever a firm engages in an alliance, aimed at jointly developing innovation with external partners, it inherently displays open innovation principles  
*Corporates*  
Although innovation is used and internalised at the firm level, firms are part of a large network of multiple participants; multinational companies have a “knowledge advantage” that stems from their network of subsidiaries spread out across the globe and managers can tap into or access novel knowledge. The ability of firms to leverage, develop and upgrade their knowledge assets constitutes a level of formal and informal innovation activities  
*Start-ups*  
Entrepreneurial actors give incumbents fresh insights and complementary business ideas. They also assist in the coordination and motivation of ecosystem participants, which results in the creation of common cooperative norms and routines that the actors design and modify together |

**Source:** Authors

Table 3.
Table 4. Primary select review of modes of corporate engagement with start-ups (CEWS)

<table>
<thead>
<tr>
<th>Modes</th>
<th>Corporate strategy</th>
<th>Corporate venture capital</th>
<th>Corporate accelerators</th>
<th>Accessing innovation</th>
<th>Ecosystem creation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study concentration (number of studies)</td>
<td>28%</td>
<td>16%</td>
<td>14%</td>
<td></td>
<td>24%</td>
</tr>
<tr>
<td>Prominent theoretical perspectives captured</td>
<td>Institutional theory and effectuation theory</td>
<td>Agency theory and synergy theory</td>
<td>Social capital theory</td>
<td>Open innovation theory</td>
<td>Network theory and activity theory</td>
</tr>
<tr>
<td>Contexts addressed</td>
<td>Organisational context: organisational identity and agility</td>
<td>Interorganisational relationships context: non-equity modes of engagement and iterative engagement processes</td>
<td>Organisational context: vision alignment and product market fit</td>
<td>Interorganisational relationships context: synergies and innovation outposts</td>
<td>Multilateral relationships context: network curation and network depth and breadth</td>
</tr>
<tr>
<td></td>
<td>Innovation context: business transformation, creative disruptions and decision logics</td>
<td>Innovation context: patent portfolios and digitalisation</td>
<td>Innovation context: entrepreneurial innovation</td>
<td>Innovation context: curation of innovation ecosystems and managing innovation</td>
<td>Interorganisational relationships context: co-evolving business models, combining assets and activities and corporate entrepreneurship</td>
</tr>
<tr>
<td></td>
<td>Interorganisational relationships context: exit strategy and preference for non-equity alliances</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(continued)
<table>
<thead>
<tr>
<th>Modes</th>
<th>Corporate strategy</th>
<th>Corporate venture capital</th>
<th>Corporate accelerators</th>
<th>Accessing innovation</th>
<th>Ecosystem creation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nature of engagement process</td>
<td>Planned participation</td>
<td>Opportunity driven</td>
<td>Planned interventions</td>
<td>Collaborative</td>
<td>Emergent</td>
</tr>
<tr>
<td>Drivers</td>
<td><strong>Corporates:</strong> venture identity embeddedness</td>
<td></td>
<td><strong>Corporates:</strong> finding champions to play dual role (innovators and facilitators of growth)</td>
<td><strong>Corporates:</strong> market development/creation</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Start-ups:</strong> risk mitigation and uncertainty avoidance</td>
<td></td>
<td><strong>Start-ups:</strong> ensuring corporate alignment for resource accessibility</td>
<td><strong>Start-ups:</strong> validation, scaling</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Corporates:</strong> build or acquire decision</td>
<td></td>
<td><strong>Corporates:</strong> accelerators to be later transformed into an ecosystem</td>
<td><strong>Corporates:</strong> development of a high innovation culture</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Start-ups:</strong> access to expertise and financial resources</td>
<td></td>
<td><strong>Start-ups:</strong> autonomy with meaningful interactions</td>
<td><strong>Start-ups:</strong> network deepening and formation for product fit</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Corporates:</strong> high innovation in value proposition and portfolio of patents</td>
<td></td>
<td></td>
<td><strong>Corporates:</strong> newer value propositions and market identification</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Start-ups:</strong> financial starvation</td>
<td></td>
<td></td>
<td><strong>Start-ups:</strong> survival and growth</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Corporates:</strong> direction of innovation flow and cost efficiency</td>
<td></td>
<td></td>
<td><strong>Corporates:</strong> establishment of incubation for pilot testing</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Start-ups:</strong> access to new market segments</td>
<td></td>
<td></td>
<td><strong>Corporates:</strong> structure of the ecosystem</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Corporates:</strong> market experience and resource abundance</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td><strong>Start-ups:</strong> niche innovation and creative disruption</td>
<td></td>
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<tr>
<td></td>
<td><strong>Corporates:</strong> organisational structure</td>
<td></td>
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<tr>
<td></td>
<td><strong>Start-ups:</strong> effort to communicate and build trust</td>
<td></td>
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</tr>
<tr>
<td></td>
<td><strong>Corporates:</strong>: level of investment intermediation</td>
<td></td>
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<tr>
<td></td>
<td><strong>Start-ups:</strong>: locus of opportunity</td>
<td></td>
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<tr>
<td></td>
<td><strong>Corporates:</strong>: identifying and selecting the right start-up cohort</td>
<td></td>
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<tr>
<td></td>
<td><strong>Start-ups:</strong>: entrepreneurial agility and flat structure</td>
<td></td>
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</tr>
<tr>
<td></td>
<td><strong>Corporates:</strong>: establishment of incubation for pilot testing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Start-ups:</strong>: structure of the ecosystem</td>
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<td></td>
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<tr>
<td></td>
<td><strong>Corporates:</strong>: supporting innovation processes within a close network of partners</td>
<td></td>
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<tr>
<td></td>
<td><strong>Start-ups:</strong>: co-creation and co-evolution in a resource driven environment</td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td></td>
<td><strong>Corporates:</strong>: agility and flat structure of start-ups</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Start-ups:</strong>: imbalance in network participation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Source:** Authors

Table 4. Corporate engagement with start-ups
is accessing innovation which acts as a tool to foster better access to open innovation by allowing the big firms to bring about creative disruption by including the start-up into its models of operation (Weiblen and Chesbrough, 2015). Fifth is the ecosystem creation, focusing on robust network creation among competent and complementary participants by following the principles of coevolution and cooperation among the members (Geissdoerfer et al., 2018).

Corporate strategy emerged as the most researched mode of CEWS, and about 28% of the reviewed literature attests to this. Corporate strategy has been mainly captured from the institutional and effectuation theoretical perspectives (Shepherd et al., 2021; Steiber and Alänge, 2021). The studies have shown a high degree of inter-organisational context such as organisational identity, agility, non-equity alliances leading to better management of innovation and business transformations (Brueller and Capron, 2021). The bottlenecks observed were the difficulty faced by start-ups in scaling, which, in turn, pushes them to get absorbed by large corporations (Shepherd et al., 2021). There are also difficulties of managing differences of organisational structure and building trust (Marvel et al., 2016). However, the corporate strategy mode enables start-ups to seek growth and provides survival aspirations (Ching and Caetano, 2021).

Corporate venture capital (CVC) mode of CEWS has been studied in 16% of the reviewed literature. This mode operates on equity-based partnerships and is also transitioning to non-equity modes of engagement. It shows high inter-organisational context. This mode has been viewed mainly from the perspective of agency and synergy theory. Through this mode, both large corporations and start-ups seek improvements in their present operations for incremental growth, and to promote continuous innovation (Wessendorf et al., 2019; Gutmann, 2019). The nature of this process is opportunity driven (Wessendorf et al., 2019). Non-equity-based alternatives, however, are more favourable because of knowledge and technological transfers supported by the funder (Drover et al., 2017). The elements that influence the corporate venture capital form of cooperation process are portfolio structure, corporate expertise, interpersonal ties, management sway and strategic financial focus (Fels et al., 2021).

Corporate accelerators have been seen as the most recent addition to the process of CEWS, with about 14% of the reviewed literature focusing on this domain. It has been viewed mostly from the lens of social capital theory (Mian et al., 2016). Innovation is fostered via corporate accelerator programmes in CEWS. Proposition, process, people and place drive technical advances and capability transfers (Kohler, 2016; Mian et al., 2016). Corporate accelerators are engines of entrepreneurial innovation which when associated with large corporations can tap into niche areas with high growth potential (Bonamigo et al., 2022). Accelerator programme effectiveness in the engagement process is observed through the increasing demand, and apparent possibilities for collaboration between the large corporation and the start-up are amplified through incubator and accelerator programmes (Cohen et al., 2019b).

About 24% of the literature reviewed focused on the accessing innovation mode of CEWS. The theoretical lens mostly used is open innovation. Synergistic partnerships can be formed by having access to new market segments and paying less to purchase new technologies or innovations than to develop or produce them internally (Chaudhary et al., 2022). Large enterprises are drawn to start-ups’ innovation capability for driving creative disruption which allows for gaining a competitive edge (Jiao et al., 2022; Flamini et al., 2022). The conversion of existing enterprises into operational and scalable new firms is made possible through engagement activity, and the benefit accrues to engagement partners via
the use of new technologies, better access to markets and a robust network of stakeholders (Flamini et al., 2022).

About 17% of the literature reviewed focused on ecosystem creation, thus pointing towards a deeply embedded network of partners who work closely based on complementarity of business, industry and value propositions (Gocke et al., 2022). Network theory is the most widely used theoretical perspective for understanding ecosystems as a mode of CEWS. Flexibility associated with start-ups and their role as innovation facilitators and business transformers coupled with geographical proximity justifies the ecosystem creation as a driver of CEWS (Barros et al., 2020). Ecosystem creation is facilitated by business transformation, co-value generation, broad stakeholder engagement and sustainable business innovation (Geissdoerfer et al., 2018). Coordination of managerial responsibilities, comprehension of the type of innovation being sought, effective training and preparation of employees and flexible entrepreneurial environment strengthens the engagement (de Vasconcelos Gomes et al., 2021). The start-ups’ zeal and intrapreneurship have a favourable impact on CEWS, encouraging co-evolution and co-value generation (Gocke et al., 2022). The degree of intentionality, the ease with which knowledge and technical competence are exchanged and the efficiency of the operating model for the overall innovation ecosystem strategy is what drives this mode of CEWS (Ojaghi et al., 2019).

The primary review of literature revealed that large corporations strategically use start-ups as engines of sustainability, competitive advantage, industry disruption, innovation and long-term corporate growth (Alonso et al., 2020). As a corporate strategy move, start-ups are viewed as prospective partners for enterprises across all industries since they are increasingly technology-driven and have the flexibility to pivot quickly (Billore and Billore, 2020). Engagement is driven by the start-ups, and large corporations need to catch on to new ideas for fruitful product/service development (Bilal et al., 2022). The dynamic capabilities of firms are shaped and developed by the knowledge gained through the experiences of engagement via different modes (Jurksiene and Pundziene, 2016).

Among the five prominent modes of CEWS observed in the literature, corporate strategy and corporate venture capital emerged as the most used modes which have also been studied extensively in the literature. However, as the above table shows, there is an emerging preference for ecosystem creation and accessing innovation by large companies to engage with start-ups. The industry perspectives gathered from the studies show that corporate strategy (Rudeloff et al., 2022), ecosystem creation (Barros et al., 2020) and open innovation (Weiblen and Chesbrough, 2015) are the main motivations driving the interest of large corporations to associate with start-ups. While each mode has shown different motivations for engagement (Bagno et al., 2020), there are certain barriers (Singh et al., 2021) reported as well which we capture in the subsequent findings of our systematic review of literature.

3.2 Findings of Phase 2 (systematic review of literature on corporate engagement with start-ups)

In this phase, the empirical studies available across the five predominant modes of CEWS have been examined. Table 5 shows the article count (63) and the percentage of empirical and exploratory studies devoted to CEWS across 24 top-ranked journals. The article distribution across the journal has been graphically represented in Figure 12.

Table 6 provides a summary of the description of the 63 empirical papers of the exhaustive literature review.
### Table 5.
Journal title and articles per journal included in our exhaustive review

<table>
<thead>
<tr>
<th>Journal title</th>
<th>Article count</th>
<th>% of studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>California Management Review</td>
<td>7</td>
<td>11.1</td>
</tr>
<tr>
<td>Strategic Entrepreneurship Journal</td>
<td>7</td>
<td>11.1</td>
</tr>
<tr>
<td>Technovation</td>
<td>5</td>
<td>7.9</td>
</tr>
<tr>
<td>Entrepreneurship Theory and Practice</td>
<td>5</td>
<td>7.9</td>
</tr>
<tr>
<td>Research Policy</td>
<td>5</td>
<td>7.9</td>
</tr>
<tr>
<td>Strategic Management Journal</td>
<td>3</td>
<td>4.8</td>
</tr>
<tr>
<td>Entrepreneurship and Regional Development</td>
<td>3</td>
<td>4.8</td>
</tr>
<tr>
<td>Organization Science</td>
<td>3</td>
<td>4.8</td>
</tr>
<tr>
<td>Administrative Science Quarterly</td>
<td>3</td>
<td>4.8</td>
</tr>
<tr>
<td>Technological Forecasting and Social Change</td>
<td>3</td>
<td>4.8</td>
</tr>
<tr>
<td>Journal of Business Venturing Insights</td>
<td>2</td>
<td>3.2</td>
</tr>
<tr>
<td>Journal of Business Research</td>
<td>2</td>
<td>3.2</td>
</tr>
<tr>
<td>Long Range Planning</td>
<td>2</td>
<td>3.2</td>
</tr>
<tr>
<td>Journal of International Business Studies</td>
<td>2</td>
<td>3.2</td>
</tr>
<tr>
<td>Academy of Management Annals</td>
<td>2</td>
<td>3.2</td>
</tr>
<tr>
<td>Journal of Management</td>
<td>1</td>
<td>1.6</td>
</tr>
<tr>
<td>International Business Review</td>
<td>1</td>
<td>1.6</td>
</tr>
<tr>
<td>Finance Research Letters</td>
<td>1</td>
<td>1.6</td>
</tr>
<tr>
<td>Academy of Management Review</td>
<td>1</td>
<td>1.6</td>
</tr>
<tr>
<td>Management and Organization Review</td>
<td>1</td>
<td>1.6</td>
</tr>
<tr>
<td>Small Business Economics</td>
<td>1</td>
<td>1.6</td>
</tr>
<tr>
<td>Journal of Cleaner Production</td>
<td>1</td>
<td>1.6</td>
</tr>
<tr>
<td>Strategy Science</td>
<td>1</td>
<td>1.6</td>
</tr>
<tr>
<td>American Business Review</td>
<td>1</td>
<td>1.6</td>
</tr>
<tr>
<td>Total</td>
<td>63</td>
<td>100.0</td>
</tr>
</tbody>
</table>

**Source:** Authors

### Figure 12.
Graphical representation of the article distribution across the journals

**Source:** Figure by authors
<table>
<thead>
<tr>
<th>Modes</th>
<th>Corporate strategy</th>
<th>Corporate venture capital</th>
<th>Corporate accelerators</th>
<th>Accessing innovation</th>
<th>Ecosystem creation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study concentration (number of studies)</td>
<td>25% (16)</td>
<td>17% (11)</td>
<td>13% (8)</td>
<td>22% (14)</td>
<td>23% (14)</td>
</tr>
<tr>
<td>Most studied geographical contexts</td>
<td>USA, Europe, India and China, Australia</td>
<td>USA, UK, Europe, Latin America, Pakistan</td>
<td>USA, Europe, Australia, Philippines</td>
<td>USA, UK, Europe</td>
<td>USA, India and China, Europe</td>
</tr>
<tr>
<td>Prominent industry/sector focus</td>
<td>Heavy R&amp;D and tech-based industries (AI, platform-based), finance, maritime</td>
<td>Pharmaceutical, biotechnology, micro and nanotechnology, FinTech, AI</td>
<td>Tech-based start-ups, AI</td>
<td>Space industry, tech-based start-ups, finance, digital, nano-technology</td>
<td>Cleantech, ICT, digital and platform-based ventures, ecosystems support organisations</td>
</tr>
<tr>
<td>Most used methodologies</td>
<td>Multiple case study and semi-structured interviews, confirmatory factor analysis</td>
<td>Confirmatory factor analysis</td>
<td>Multiple case study</td>
<td>Multiple case study, single case study, comparative studies</td>
<td>Multiple case study and semi-structured interviews, confirmatory factor analysis, comparative studies</td>
</tr>
</tbody>
</table>

Table 6. Findings from the systematic review of the literature across the CEWS modes with start-ups.
<table>
<thead>
<tr>
<th>Modes</th>
<th>Corporate strategy</th>
<th>Corporate venture capital</th>
<th>Corporate accelerators</th>
<th>Accessing innovation</th>
<th>Ecosystem creation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prominent theory perspectives</td>
<td>Strategic alliances theory, knowledge spillover theory, dynamic capability theory, stakeholder theory, effectuation theory, corporate entrepreneurship, network theory</td>
<td>Resource-based view, network theory, social embeddedness theory, social capital theory, sustainable entrepreneurship ecosystems, ecosystem support view, causal asymmetry, corporate entrepreneurship</td>
<td>Resource dependency theory, complementary asset profiling, brand asset, exchange theory, path dependence theory, resource-based view</td>
<td>Open innovation, corporate entrepreneurship, transaction cost theory, innovation outposts, Resource-based framework, strategic entrepreneurship, organisational design</td>
<td>Corporate acceleration design, complementary asset profiling</td>
</tr>
</tbody>
</table>

**Source:** Authors
3.2.1 Contexts and prominent theory perspectives across corporate engagement with start-ups modes. Answering the second research question, i.e. “what are the contexts and prominent theory perspectives used to look at CEWS modes?”, the majority of the studies were from the UK, the USA and Europe, while few studies were from the emerging contexts. The theory lenses mostly used were strategic alliance theory (Aharonson et al., 2020; Anokhin et al., 2021), resource-based view (Wouters et al., 2018; Bergman and McMullen, 2022), complementary asset profiling (Kolokas et al., 2022) and open innovation (Amit and Han, 2017).

Corporate strategy mode was the most explored one in CEWS, as 16 out of 63 articles focused on this. Corporate strategy has been investigated in tech-based and innovative industries like information and communications technology (ICT) and R&D intensive sectors in the USA and Europe (Baloutsos et al., 2020; Enkel and Sagmeister, 2020), strategic alliance theory (Aharonson et al., 2020; Anokhin et al., 2021) and resource-based view (Wouters et al., 2018; Bergman and McMullen, 2022) have been predominantly used to look at the corporate strategy mode. Few scholars have also used the knowledge perspective (Huizingh, 2017; Galkina et al., 2022), network modelling (Audretsch et al., 2020; Valeri, 2021) and stakeholder alignment (Enkel and Sagmeister, 2020) to capture the motivations driving the corporate strategy mode.

About 14 articles out of 63 focused on accessing innovation in the context of high-tech industries with a likeability for innovative product market fit, nanotechnology and space industry in geographies such as the USA and Europe. Accessing innovation has been known to show tremendous potential to facilitate CEWS, particularly in digital start-ups (Kollmann et al., 2021; Ghezzi et al., 2022). It has been largely seen from the lenses of open innovation (Decreton et al., 2021; Lamire et al., 2021) and corporate entrepreneurship (Zhang et al., 2020). Some scholars have also studied accessing innovation from the theory perspective of innovation outposts (Amit and Han, 2017) and transaction cost theory (Weber and Heidenreich, 2018b).

About 14 articles out of 63 concentrated on the ecosystem creation mode of CEWS, to zero in on co-specialisation and network formation for the long-term growth and benefit. Industries like cleantech, ICT have been studied in the context of developed economies such as the USA and Europe. Ecosystem creation, an equally significant mode of CEWS, has been studied from the lens of network theory (Ketchen and Craighead, 2020) and social capital theory (Dickel et al., 2018; Lingens et al., 2021a, 2021b). Other scholars have also focussed on theoretical perspectives such as sustainable entrepreneurship (Doblinger et al., 2019) and ecosystems support view (Ter Wal et al., 2016).

CVC T featured as one of the other significant modes of CEWS. Some 11 out of 63 articles, in the context of developed economies like the USA and UK and in industries like biotechnology, nanotechnology and FinTech, focused on corporate venture capital. Resource-based view along with complimentary asset profiling (Kolokas et al., 2022) have been predominantly used to study the corporate venture capital mode of CEWS. Some other perspectives used to look at this mode were the brand asset and exchange theory, as alliances concentrate on co-development of novel value propositions (Forti et al., 2020).

Corporate venture capital and corporate strategy modes have some overlaps as both have been studied in similar industrial contexts (Blevins and Ragozzino, 2018; Huang and Madhavan, 2021; Samuelsson et al., 2021), and the objectives of both are focussed on building dynamic capabilities (Korshunova et al., 2021) and synergies (Zhang and Guler, 2020).

About 8 studies out 63 focused on corporate accelerators in contexts such as the USA, Europe and Australia (only one study focused on the Philippines), mainly in tech-based
industries (Bliemel et al., 2019; Moschner et al., 2019; Kurpjuweit and Wagner, 2020). Corporate accelerators have been looked at from the lens of corporate entrepreneurship (Oh et al., 2016). Complementary asset profiling has also been used as a lens to study both corporate accelerators and corporate venture capital and mainly in tech-based start-ups (Riepe and Uhl, 2020).

From the perspective of large firms, corporate accelerators are used to manage innovation (Cavallo et al., 2019), while start-ups use them with the objective of creating disruption (Kurpjuweit and Wagner, 2020). Both corporate accelerators and accessing innovation have been studied across tech-based, FinTech and IT enabled platform-based businesses. In the next section, we go on to answer our third research question, i.e. “what are the perspectives held by corporates and start-ups while pursuing distinctive CEWS mode?”

3.2.2 Perspectives of corporates and start-ups across corporate engagement with start-ups modes. Both large corporations and start-ups exhibit various motivations and aspirations across different CEWS modes. Table 7 captures the perspectives, motivations and advantages of engagement across different modes:

- **Corporate strategy**: growth, value creation and risk mitigation are the advantages that drive large corporations to adopt this mode of CEWS (Fisher et al., 2016). Start-ups, on the other hand, engage with large companies to seek strategic balance, stakeholder alignment and understanding of the negotiation space (Aharonson et al., 2020). In strategy orientation, broadly classified, two types of corporate and start-up alliances exist: cooperation agreements based on a short- or medium-term partnership (Perez and Cambra-Fierro, 2015), aiming at sharing certain strategic resources in terms of R&D, and capital participation-based strategic alliance that leads to an investment of large amounts of financial capital into a potentially scalable venture run (Jurksiene and Pundziene, 2016). Large corporations have access to resources, scale, power of markets and routines, and thus are interested to work with start-ups to protect their strategic position and enable innovation capability (Weiblen and Chesbrough, 2015). A start-up engaging with a large organisation is typically motivated by their resources, such as corporate capital, physical and intangible assets, firm capabilities and industry experience (Bergman and McMullen, 2022b).

- **Corporate venture capital**: this mode is used by large corporations for engaging with start-ups, particularly with a strong patent portfolio (Blevins and Ragozzino, 2018), to manage innovation through equity and non-equity-based arrangements to mobilise financial and non-financial resources for start-ups. Start-ups seek this mode to eliminate the risk of debt and investments (Cavallo et al., 2019). Corporate venture capital allows for technological and product-related outcomes for both large corporations and start-ups (Weiblen and Chesbrough, 2015). Corporate venture capital allows incumbents to foster innovation while ensuring start-ups enjoy their agility by allowing them to function as a separate and independent unit (Riepe and Uhl, 2020).

- **Corporate accelerators**: this mode provides a powerful strategy for fostering ideas from start-up businesses (Oh et al., 2016). Start-ups that use cutting-edge technologies to create new products and business models provide a significant source of innovation (Weiblen and Chesbrough, 2015; Davidsson et al., 2021), and therefore, appeal to large corporations for generating novel ideas (Bikard et al., 2019). However, this also necessitates that corporate accelerators must be skilfully planned by large corporations to create mutual benefit through innovation-oriented
<table>
<thead>
<tr>
<th>Modes</th>
<th>Corporate strategy</th>
<th>Corporate venture capital</th>
<th>Corporate accelerators</th>
<th>Accessing innovation</th>
<th>Ecosystem creation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perspectives</td>
<td>Establishing collaboration processes, collective risk mitigation strategies,</td>
<td>Managing innovation by equity and non-equity arrangements to mobilise financial and non-financial resources for start-ups, particularly with a strong patent portfolio</td>
<td>Accelerators complement existing engagement modes to identify start-up cohorts/clusters to foster innovation</td>
<td>Open-innovation and co-partnering lead to collective product/service development and disruptive innovation capacity</td>
<td>Adding start-ups in the network leads to knowledge accumulation and enhancing possibilities for opportunity exploitation</td>
</tr>
<tr>
<td>of corporates and start-ups</td>
<td>opportunity exploitation and synergy creation of synergies</td>
<td>Start-up</td>
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<td>Start-up</td>
<td>Start-up</td>
<td>Start-up</td>
<td>Start-up</td>
<td>Start-ups as co-partners and successful facilitators lead to co-evolution to develop and manage innovative product/services</td>
</tr>
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<td></td>
<td>Creation of an entrepreneurial support to explore non-traditional modes of engagement for market knowledge and access and technical expertise sharing</td>
<td>Creation of an entrepreneurial support to explore non-traditional modes of engagement for market knowledge and access and technical expertise sharing</td>
<td>Creation of an entrepreneurial support to explore non-traditional modes of engagement for market knowledge and access and technical expertise sharing</td>
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<td>Creation of an entrepreneurial support to explore non-traditional modes of engagement for market knowledge and access and technical expertise sharing</td>
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<td></td>
<td>CVC driven by technological and product-market outcomes for integrating with and investing in start-ups for innovation, disruption and industry dominance</td>
<td>CVC driven by technological and product-market outcomes for integrating with and investing in start-ups for innovation, disruption and industry dominance</td>
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<td>CVC driven by technological and product-market outcomes for integrating with and investing in start-ups for innovation, disruption and industry dominance</td>
</tr>
<tr>
<td>Advantages</td>
<td>Creating support network driven by dynamic capabilities, strategic synergies and stakeholder alignment</td>
<td>Creating support network driven by dynamic capabilities, strategic synergies and stakeholder alignment</td>
<td>Creating support network driven by dynamic capabilities, strategic synergies and stakeholder alignment</td>
<td>Creating support network driven by dynamic capabilities, strategic synergies and stakeholder alignment</td>
<td>Creating support network driven by dynamic capabilities, strategic synergies and stakeholder alignment</td>
</tr>
<tr>
<td></td>
<td>Corporates: venture identity embeddedness</td>
<td>Corporates: build or acquire decision</td>
<td>Corporates: finding champions to play dual role (innovators and facilitators of growth)</td>
<td>Corporates: market development/creation</td>
<td>Value creation by identifying specific configurations or combinations of input to produce an outcome of interest for both the partners</td>
</tr>
<tr>
<td></td>
<td>Start-ups: risk mitigation and uncertainty avoidance</td>
<td>Start-ups: access to expertise and financial resources</td>
<td>Start-ups: ensuring corporate alignment for resource accessibility</td>
<td>Start-ups: validation, scaling</td>
<td>Start-ups: to embed in ecosystem</td>
</tr>
<tr>
<td>Motivations</td>
<td>Corporates: to become an orchestrator</td>
<td>Corporates: to become an orchestrator</td>
<td>Corporates: to become an orchestrator</td>
<td>Corporates: to become an orchestrator</td>
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</table>

Table 7. Perspectives of corporates and start-ups across various CEMW modes
<table>
<thead>
<tr>
<th>Modes</th>
<th>Corporate strategy</th>
<th>Corporate venture capital</th>
<th>Corporate accelerators</th>
<th>Accessing innovation</th>
<th>Ecosystem creation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inspirations</td>
<td>Corporates: entrepreneurial experience</td>
<td>Corporates: high innovation in value proposition and portfolio of patents</td>
<td>Corporates: accelerators to be later transformed into an ecosystem</td>
<td>Corporates: development of a high innovation culture</td>
<td>Corporates: exploration of complementarities for industry evolution</td>
</tr>
<tr>
<td>Facilitators</td>
<td>Corporates: market experience and resource abundance</td>
<td>Corporates: direction of innovation flow and cost efficiency</td>
<td>Corporates: simplifying the process and propositions</td>
<td>Corporates: newer value propositions and market identification</td>
<td>Corporates: supporting innovation processes within a close network of partners</td>
</tr>
<tr>
<td></td>
<td>Start-ups: niche innovation and creative disruption</td>
<td>Start-ups: access to new market segments</td>
<td>Start-ups: fostering network within and outside accelerators</td>
<td>Start-ups: survival and growth</td>
<td>Start-ups: co-creation and co-evolution in a resource driven environment</td>
</tr>
</tbody>
</table>

**Source:** Authors
programmes (Stevenson et al., 2022). Managers on both sides should consider the proposition, process, people and place to effectively harness start-ups’ creativity and make the corporate accelerator programme a part of a firm’s entire innovation strategy (Haddad and Benner, 2021).

- **Accessing innovation**: in this mode, the corporate-start-up engagement is seen as a way to speed up innovation for the incumbent, but it can also function as a unique way to create a start-up cohort to be a part of an innovation ecosystem (Usman and Vanhaverbeke, 2017). Both prospects allow corporations to learn from these ecosystems on how best to adjust their business and operational model according to changing technological trends (Hogenhuis et al., 2017).

- **Ecosystem creation**: an ecosystem is usually managed by a focal actor, called an orchestrator (the large corporation), who plays a key role within an ecosystem (Dickel et al., 2018). Large corporations seek to add start-ups in their network leading to knowledge accumulation, which enhances the possibility for exploration and exploitation of opportunities in the industry (Prashantham and Birkinshaw, 2020). Start-ups seek to partner and engage with large corporations as co-partners and successful facilitators to develop and manage innovative product/services (Egan, 2021). Both large corporations and start-ups focus on value creation by identifying specific configurations or combinations of their competencies to produce an outcome of mutual interest (Vedula and Fitza, 2019; Busch and Barkema, 2022).

The drivers, outcomes and the barriers of CEWS have been reported in the following section, which addresses our fourth and final research question, i.e. “what are the drivers, outcomes and barriers noted across the CEWS modes?”

### 3.2.3 Drivers, outcomes and barriers observed across corporate engagement with start-ups modes

#### 3.2.3.1 Drivers of corporate engagement with start-ups modes.

- **Corporate strategy drivers**: the drivers for the large firms included corporate-strategy fit, overcoming organisational inertia and acquiring human capital (Audretsch et al., 2020). For the start-ups, the drivers were knowledge and resource access, level of autonomy in operationalising innovation processes and flexibility of pilot testing new value propositions without financial risks involved (Wouters et al., 2018).

- **Corporate venture capital drivers**: the drivers concerning large firms included the length of investment, type of start-up being targeted and the product/market fit being addressed (Reuer and Devarakonda, 2017; Kücher and Feldbauer-Durstmüller, 2019). The contemporary venture capital firms engage with start-ups to enhance technological breakthroughs and expand their patent portfolios (Kollmann et al., 2021). Additionally, large corporations seek to add value to in-house R&D by integrating the competencies of an innovative start-up (Cavallo et al., 2019). Start-ups get access to market tracking and the customer experience effect to develop and enhance new products/services (Riepe and Uhl, 2020).

- **Corporate accelerators drivers**: the drivers reported for large firms were building a cohort of start-ups with niche and unique value propositions (Bliemel et al., 2019). Start-ups seek corporate accelerator programmes to engage with highly innovative firms and industry leaders (Brueller and Capron, 2021). The motives of both partners, in this mode, are technological development, entering globalised markets
<table>
<thead>
<tr>
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<th>Accessing innovation</th>
<th>Ecosystem creation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drivers</td>
<td>Corporate strategy-fit; overcoming organisational inertia; acquiring human capital</td>
<td>Corporate level (firm age and size; length of investment; investment type; patent portfolio)</td>
<td>Corporate level (value proposition complementarity; identifying relevant product/service market fit)</td>
<td>Corporate level (open innovation arrangements; degree of R&amp;D focus; innovative capacity level; technology adoption rate)</td>
<td>Corporate level (expansion of network and alliances; asset complementarity; intention of participation; learning new markets)</td>
</tr>
<tr>
<td></td>
<td>Start-up level (innovation (inbound and outbound); knowledge and resource access; level of autonomy; flexibility in integration process)</td>
<td>Start-up level (corporations’ superior knowledge of markets and technologies; reputation benefits; investment amount)</td>
<td>Start-up level (time-bound support; programmed events (quiz, hackathons, university incubators, etc.))</td>
<td>Start-up level (organizational structure; human capital available; autonomy and control; knowledge transfers; speed of integration)</td>
<td>Start-up level (structure of network relationships; availability of sponsors)</td>
</tr>
<tr>
<td></td>
<td>Industry level (market demand; industry/sector alignment)</td>
<td>Industry level (regulatory approvals; industry attractiveness)</td>
<td>Industry level (education, and intensive mentoring; open and competitive application process; focus on small teams and not on individual founders; pilot testing opportunities)</td>
<td>Industry level (industry competition; rapid creative disruption; compliances)</td>
<td>Industry level (niches and new market identification)</td>
</tr>
<tr>
<td>Outcomes</td>
<td>Value addition (seizing opportunities and managing threats help in knowledge transfers and capability building)</td>
<td>Value addition (introduces accessibility of financial and non-financial resources and connecting start-ups to credible venture capitalists with specialised experience)</td>
<td>Value addition (large corporations and start-ups join strengths to launch new ideas/propositions)</td>
<td>Value addition (complementary sources of value creation as it provides start-ups access to strategic resources and corporations create an innovation ecosystem)</td>
<td>Value addition (every new value proposition has to be built with different partners by the orchestrator of the network to broaden and deepen the network)</td>
</tr>
<tr>
<td></td>
<td>Strength of engagement (quick adoption of innovation leads to discovering, evaluating and exploiting opportunities in volatile environments)</td>
<td>Strength of engagement (quick insights into new markets and propelling innovative ideas)</td>
<td>Strength of the engagement (facilitates the process for technology adoption and new market identification)</td>
<td>Strength of the engagement (fosters inbound and outbound open innovation with rapid product development by co-partnership)</td>
<td>Strength of the engagement (high proactiveness of partners; high-performing alliance; participants’ complementarity; robustness in relationship)</td>
</tr>
<tr>
<td></td>
<td>Performance (improved industry position)</td>
<td>Performance (cvc funds can boost early growth of start-ups; entrepreneurs either find a market willing to adopt their solution or there is learning from failure)</td>
<td>Performance (value addition)</td>
<td>Performance (worth adding)</td>
<td>Performance (continued)</td>
</tr>
<tr>
<td>Modes</td>
<td>Corporate strategy</td>
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<tr>
<td>by disrupting the market and new market creation</td>
<td>improvement</td>
<td>(\text{Performance}) Demonstrates a positive effect on return on investment for firms with high innovation and better patent portfolios</td>
<td>(\text{Partner level}) Decision to shift towards external fundraising while being in an arrangement with one or more investors; terms of collaboration</td>
<td>(\text{Robust management of innovation ecosystems with improved profitability})</td>
<td>Exploration and exploitation of opportunities; risk minimisation; better growth and survival</td>
</tr>
<tr>
<td>Barriers</td>
<td>(\text{Partner level}) Misalignment of strategic aims/objectives; differences in value systems; misalignment of complementarities, competencies and experience</td>
<td>(\text{Environmental level}) Rising demand for non-financial resources by start-ups; industry/sector specific financial resources</td>
<td>(\text{Partner level}) Start-up’s organizational limitations and lack of track record; less or no evidence of growth</td>
<td>No barriers were reported</td>
<td>(\text{Partner level}) Applicability of the engagement; difference in attitude and behaviour; insufficient policy support; inconsistent financial support; cultural factors</td>
</tr>
<tr>
<td>(\text{Environmental level}) Lack of intellectual property agreements; difference in attitudes towards open innovation culture within the sector; different mechanisms to measure innovation</td>
<td>(\text{Financial level}) Identifying relevant start-up cohort/s; choice of right fit for the accelerator</td>
<td></td>
<td></td>
<td>(\text{Environmental level}) Market size; product development; transaction costs of coordination; geographical factors</td>
<td></td>
</tr>
</tbody>
</table>

**Key findings**

- Competitiveness of firms derives from their ability to leverage, develop and upgrade their knowledge assets; while innovations may be used and/or internalised at the firm level, firms exist as part of a network of multiple participants.
- CVC investments have a positive relationship with corporate-financial, corporate-strategic, technological and venture performance domains; rapid enhancement of start-ups’ growth; improved band asset development.
- Different corporate start-up engagements are not run in isolation, but are synchronised to exploit the overall potential in co-evolutionary manner.
- Creation of systematic structures and processes to make innovation ecosystem robust by involving competent participants by using appropriate configurations for engagements.
- Development of a core competency for the participants of the ecosystem; the number of traditional resources needed decreases with the maturity and degree of standardisation of the ecosystem.

Table 8.

**Corporate engagement with start-ups**
<table>
<thead>
<tr>
<th>Modes</th>
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<th>Ecosystem creation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limitations/ gaps noted</td>
<td>Identifying the efficiency and the performance of the integration processes, and people involved in the engagement process</td>
<td>To check the success of (CVC) variables in different geographies because results from one area cannot be generalised</td>
<td>Emergence of corporate accelerators in the tech-based industries, particularly in emerging economies</td>
<td>Implications for emerging market multinational corporations’ tie-ups with start-ups and performance of the engagement; impact of cultural distance, industrial competition and national innovation capacity</td>
<td>Research needed on traditional measures such as programme success or entrepreneurial exit rates to assess the efficacy ecosystem building</td>
</tr>
</tbody>
</table>

**Source:** Authors
Accessing innovation drivers: the corporates seek to acquire and build upon their distinctive technological competence. This propels them to connect with highly innovative start-ups (Amit and Han, 2017). For start-ups, the drivers reported were market accessibility and integration with the robust R&D capability of the large firm (Fernandez et al., 2018).

Ecosystem creation drivers: both large firms and start-ups are driven by value proposition complementarity and product-market fit with an intention of expanding the network of partners (Ter Wal et al., 2016). Start-ups and corporations seek to make the ecosystem more social for knowledge accumulation and to explore innovative opportunities (Busch and Barkema, 2022). Co-creational attitude fosters a strong sense of co-partnership and speeds up the innovation process (Bergman and McMullen, 2022c).

3.2.3.2 Outcomes of corporate engagement with start-ups.

Corporate strategy outcomes: large corporations aspire to collaborate with start-ups to jointly develop new products and services, investigate untapped market potential or manage innovation (Monteiro and Birkinshaw, 2017) and to achieve synergistic benefits (Wouters et al., 2018). Engagements with start-ups can also assist corporates in predicting the future of their sectors/industries (Brueller and Capron, 2021). Even though corporations and start-ups can be seen as being in distinct worlds, their union may be the key to long-term innovation in an industry (Fisher et al., 2016).

Corporate venture capital outcomes: this mode for large firms leads to an accelerated process of innovation by avoiding large R&D costs (Riepe and Uhl, 2020). Start-ups, backed by corporate venture capitalists, have seen to be positively associated with generation of patents (Alvarez-Garrido and Dushnitsky, 2016) and a bigger brand development for larger corporations (Agarwal and Braguinsky, 2015). Firms that consistently engage in venture funding have been found to outperform firms with more sporadic patterns of investing in start-ups (Dickel et al., 2018; Bhagavatula et al., 2019). Corporate venture capital investments have also shown a positive relationship with corporate-financial, corporate-strategic and venture performance domains of the invested venture (Huang and Madhavan, 2021).

Corporate accelerators outcomes: this results in large corporations and start-ups joining their strengths to launch new value propositions (Bikard et al., 2019). This is favourable for quick adoption of technology and identifies potentially profitable, niche and untapped markets (Oh et al., 2016). Corporate accelerators are sought-after as they ensure quick mobilisation of resources, innovation processes and industry/market accessibility (Moschner et al., 2019).

Accessing innovation outcomes: enables an organisation to be more effective in creating and capturing value in the market/industry (Kollmann et al., 2021). MNCs have a preference for partners that are geographically clustered as opposed to non-clustered (Oetzel and Miklian, 2017). The risk-taking ability and proactiveness of start-ups lead to product/service innovation (Zhang et al., 2020). Coordination among actors in an innovation ecosystem facilitates shared culture, mutual understanding, cooperative norms and competitiveness that are adjusted for the actors (Decreton et al., 2021).
3.2.3.3 Barriers across corporate engagement with start-ups modes.

- **Corporate strategy barriers:** there may be the risk of the negotiator bringing in other stakeholder groups that might deter the focus on priorities or steer away from the original terms of the negotiation strategy (Galkina et al., 2022). Other barriers include misalignment of strategic aims, differences in value system, lack of intellectual property agreement, negative attitudes towards innovation and misalignment of complementarity, competencies and experiences (Baloutsos et al., 2020).

- **Corporate venture capital barriers:** barriers were mostly noted around growing need and preference for non-financial resources such as industry expertise and market report access. Investors are also influenced by global industry practices and norms. The strength of the relationship between corporate venture capital availability and high-tech start-ups varies across countries with differing innovation classifications (Kolokas et al., 2022). An inclination to bring diversity of investors may also cause hindrances in the engagement process (Brouthers et al., 2022).

- **Corporate accelerators barriers:** the combination of risk-taking and proactiveness leads to product/service innovation, but there are high chances of the start-up being absorbed within the large organisation’s structure at a later stage which defeats the purpose of a programme-based engagement (Decreton et al., 2021).

- **Accessing innovation barriers:** there were no barriers as such reported by the studies. This may be because firms increasingly rely on open innovation to boost the performance of their innovation activities, and open innovation strategy paves way for the engaging firms to build capabilities, including technical capabilities, absorptive capacity and dynamic capabilities.

- **Ecosystem creation barriers:** the main weakness with start-ups is their limited ability to scale up high-volume operations (Hogenhuis et al., 2017). Large firms typically exhibit radically different areas of strengths and weaknesses, and any loophole in the complementarity may cause problems in the terms of collaboration (Ter Wal et al., 2016; Egan, 2021). As new knowledge gets accumulated, there might be hindrances in managing jointly acquired knowledge due to differences in organisational processes (Prashantham and Kumar, 2019).

The exhaustive review enables us to propose an integrative research framework of CEWS by capturing the various drivers, outcomes and the barriers of CEWS. Figure 13 below provides an integrative understanding of how CEWS has been captured in the literature.

### 4. Discussion
CEWS has been shown to be a powerhouse of competitive advantage, industry disruption, innovation and long-term corporate growth (Ahlstrom et al., 2018; Gerwe et al., 2022). There is a consensus in the literature that by partnering with a start-up, an incumbent can give itself a competitive boost and further recognition in the
industry (Vanhaverbeke and Victor, 2023). Start-ups may encounter uncertainty and risks in and experience volatile acceptance rates (Prashantham and Kumar, 2019), but their innovation capability makes them appealing for large firms (Ching and Caetano, 2021).

Incumbents desire to work with start-ups to collaboratively develop new products and services, look into untapped markets or resolve innovation challenges. For a start-up, an incumbent could be a valuable partner to evaluate product-market fit, scale up operations, increase product diversification or earn credibility within the industry. Engagements with start-ups can also help larger organisations to cut costs and inefficiencies, promote agile behaviour and review the future of their industries from the vantage of entrepreneurs. Even while incumbents and start-ups can be perceived to be very different stages of growth and status, combining efforts on their part can lead to innovation and long-term growth.

At the corporate level, the drivers of CEWS engagement have been a combination of vision fit, strategic fit, open innovation model and the degree of R&D focus, which ensure that the dynamic capabilities are shaped and developed by the knowledge gained through the mode of engagement (Huizingh, 2017). Supportive government policies and the presence of opportunities for innovation are also motivators for start-ups to seek engagement (Anokhin et al., 2021). At the start-up level, knowledge embeddedness, resource sharing, flexibility of integration policy and innovation culture-fit drive the engagement. When a start-up enters into a partnership with an incumbent, it may alter the fundamental business plan to maximise the benefits of the relationship (Audretsch et al., 2020). This adjustment allows for better engagement leading to better exploitation of opportunities (Enkel and Sagmeister, 2020). Start-ups provide a setting for testing novel ideas and concepts outside of the conventional business/organisation structure (Tijan et al., 2021). The transformational changes of most industries are increasing the emphasis on start-ups’ role in corporate innovation (Fernandez et al., 2018; Sarkar and Banerjee, 2019).

It is evident from the literature that CEWS allows for start-ups to acquire resources to enable them to grow, while for large companies, this presents a way to reduce the risks
associated with radical innovation (Gerwe et al., 2022). The key drivers of corporate start-up engagement have been found to be access to new technology, the growth of new clientele in developing markets and lower expenses for internal R&D (Brueller and Capron, 2021). Some large firms also conduct their internal start-up initiatives locally to encourage and support the local/regional start-up ecosystem (Buckley and Prashantham, 2016; Vanhaverbeke and Victor, 2023). Start-ups are viewed as prospective co-partners for enterprises across all industries because they are increasingly technology-driven and have the flexibility to pivot quickly (Horne and Fichter, 2022).

To achieve the desired engagement outcomes, both corporates and start-ups need to ensure robust value addition which can strengthen the engagement to lead to an increase in profitability and higher survival rates for the start-ups (Aharonson et al., 2020). Significant value addition is achieved by building a consortium of capabilities and competencies to identify the right cohort of start-ups to engage with and manage overall innovation strategies (Liguori et al., 2019). This leads to the building of an ecosystem of partners that complement each other and ensure knowledge transfers to create novel and unique value propositions (Huang and Madhavan, 2021; Kolokas et al., 2022). Once the ties are strong, both partners are able to adopt the innovation practices based on their dynamic capabilities (Kollmann et al., 2021), resulting in network broadening and network deepening with the integration of more mutually inclusive partners (Prashantham, 2021). Furthermore, this allows the partners to spot industry opportunities and untapped markets to foster inbound and outbound innovation (Weiblen and Chesbrough, 2015; Dams et al., 2021).

CEWS allows for start-ups to acquire resources and additional assistance to help them grow, and for large companies this presents a way to reduce the risks associated with radical innovation (Gerwe et al., 2022). The key drivers for corporate start-up engagement have been found to be access to new technology, the growth of new clientele in developing markets and lower expenses for internal R&D (Brueller and Capron, 2021). Some of the large firms also conduct their internal start-up initiatives locally to encourage and support the local/regional start-up ecosystem (Buckley and Prashantham, 2016). But organisations are increasingly coming to believe that it would be advantageous for them to have access to new technologies through their engagement with start-ups, which would potentially benefit both parties while undertaking creative initiatives (Shankar and Shepherd, 2019a). Start-ups are viewed as prospective co-partners for enterprises across all industries because they are increasingly technology-driven and have the flexibility to pivot quickly (Horne and Fichter, 2022).

By collaborating with start-ups, established companies may access and learn about new technologies (Bergman and McMullen, 2022). Co-creation between large companies and tech start-ups is one of the ideas that is gaining momentum. However, there are less studies on measurements and frameworks for evaluating the business consequences of the corporate-start-up co-creation process (Liguori et al., 2019; Shahid, 2023).

While corporate start-up engagements have been found to have numerous benefits, there can be difficulties as well (McKinsey, 2022). Very importantly, there are cultural distinctions between start-ups and big businesses (Usman and Vanhaverbeke, 2017). Start-ups are nimble, flexible, innovative and have flat hierarchies, whereas large corporations are risk-averse and have set structures. Both large corporations and start-ups may face difficulties due to the large gap between their organisational cultures, structures, complementary capabilities, leadership qualities, innovation processes as well as complications imposed by the external environment (Frare and Beuren, 2021; Korshunova et al., 2021). Additionally, start-ups have limited time and rely on swift decision-making on financing, while corporate decision-making processes can take longer (Buckley and Prashantham, 2016). There may be
other barriers to CEWS such as misalignment of strategic aims, differences in value system, lack of intellectual property agreement, negative attitudes towards innovation, lack of complementarity, competencies and experiences (Baloutsos et al., 2020). Therefore, external sensing is necessary for both large corporations and start-ups to improve their capabilities (Kolokas et al., 2022).

Further, the barriers may arise due to high conflicts of interest regarding different strategic motives leading to misalignment of objectives and complementarities. Start-ups face the challenge of being absorbed by the large corporation (Samuelsson et al., 2021). The challenge lies for large corporations to balance two competing factors – i.e. how to bring in and manage innovation, while simultaneously maximising their current operations. Engagements between large corporations and start-ups may suffer from differences in value creation resulting from value system differences, connectivity differences and contextually different organisation structures (Prashantham, 2021). Thus, some of the most critical barriers reported for CEWS are differences in organisational profiles, different work structures, conflict in corporate vision, innovation profile, industry orientations and inept network building capacity.

An important research gap that can be noted in the literature on CEWS is that most of the studies are from developed economies, such as the USA, the UK and Europe, and very few studies are available from the emerging economies. This may be because the start-up revolution and ecosystem building in emerging countries is a relatively recent phenomenon (Prashantham et al., 2020). However, as technology absorption and start-up innovation is rising in emerging economies, CEWS will be a key area of interest for large firms to develop their strategic perspectives (Shankar and Shepherd, 2019). In-depth studies are required to investigate the conditions under which different types of multinational enterprise (MNE) – small and medium-sized enterprises (SME) cooperation takes place and the performance implications for different types of cooperation (Decreton et al., 2021).

Even while the literature frequently emphasises how difficult it is for start-ups to connect with the large organisations, little has been said on how engagements get structured (Prashantham, 2021). Geographical proximity has been noted as an important factor in the engagement process, but the most significant drivers leading to CEWS success has been seen to be the degree of market knowledge, network building capacity, maturity of the large corporation, communication quality and the integration of talent from start-ups (Prashantham and Kumar, 2019; Abhari and McGuckin, 2023).

CEWS in the open innovation context paves the way to develop an innovation-centred approach to understand the dynamics and success of innovation in organisations. CEWS processes and practices have different impacts in different industry sectors. Successful outcomes depend to a great extent on the approach taken by the parties involved, and how they establish and learn from the best practices.

5. Implications
5.1 Theoretical implications
This review advances three key contributions. Firstly, even though prior research exists on CEWS, there is no systematic review available in this domain. This review enables us to capture the contexts, perspectives, drivers, outcomes, barriers of corporates and start-ups across different CEWS modes. Secondly, this systematic review enabled us to advance an integrative framework which will aid future research in this domain. Thirdly, the review also highlights the research gaps which exist in this field, such as, efficiency and performance of the engagement process have not been empirically tested across contexts. Also, at which stage of the lifecycle is the most value generating one for CEWS, and the
influence of the engagement team on CEWS activities. Given the growing attention on CEWS, this review is a timely and relevant scholarly work which future research will be able to benefit from.

5.2 Practical implications
This review provides a detailed list of the drivers that can be used by the practitioners to plan desired outcomes in different CEWS modes. There have been multiple use cases of engagement between corporates and start-ups in developed and emerging economies that have resulted in mutual value creation. For instance, to enhance biological therapy for patients with rheumatoid arthritis, for instance, Queen Mary University of London and the UK-based health tech start-up “Living with” announced their collaboration in November 2020 (Radziwon et al., 2022). The start-up’s remote monitoring application and the university researchers’ artificial intelligence-based solution were integrated to create this patented optimisation approach (Vanhaverbeke et al., 2022). In an emerging economic context, the creation of “Aadhaar”, a national registration system in India in which individuals are assigned unique 12-digit numbers for identification purposes, has been possible by combining the strengths of many private, independent and young and innovative start-ups working together to provide an integrated platform. An important instance of the innovation ecosystem can be seen in the case of Toyota partnering with Aurora to tap into the self-driving car market – they partnered with a third company, parts supplier Denso, to create a robo-taxi. Thus, a range of collaborations can be seen from the need to create better health systems to social security to fulfilling evolving consumer needs and preferences can be seen to occur through corporate and start-up collaboration and co-evolution.

6. Future research agenda
The exhaustive review and the proposal of an integrative framework will aid future researchers to take important cues from this study. Future research may look into expanding and validating the proposed framework by also empirically testing it. Studies were fewer on how open innovation facilitates CEWS outcomes across different modes of CEWS. Future research may take this up by gathering longitudinal data in this area. Also, as observed by Vanhaverbeke et al. (2017) and Chesbrough (2017), relational capital and ecosystems may emerge to be the new innovation imperatives and this can be investigated further in the context of CEWS.

More recently, other partners such as non-profit entities, universities and government agencies have begun to adopt and use open innovation principles. This kind of broad sector collaborations require further and deeper analysis. Another phenomenon that can be studied is the multilateral, networked patterns of knowledge flows, innovation ecosystem integrations and R&D consortia. Network forms require orchestration for attracting, coordinating and integrating partners in an ecosystem, and are crucial for overcoming challenges that tend to occur in a silo approach.

7. Conclusions and limitations
This review found that CEWS relies on the complementarities between the large organisations’ resource capability, market and information access and the start-ups’ innovative products/services and use of advanced technologies. However, there are significant variations in how start-ups and large corporations operate. These difficulties stem from cultural alignment with a new venture, aligning work structures and the business motives of each entity.
Start-ups plan and manage open innovation activities with big firms, and in doing so they overcome the risks associated with being young and small. On the other hand, gaining a window of opportunity into niche products/technology typically motivates corporate venture capital investment to engage with start-ups. The influence of investment spending on acquisition performance critically depends on how strong the acquirer’s internal knowledge base is. Additionally, it has been found that venture-backed start-ups do better than those with erratic or no investment. Collaboration between large firms and start-ups can initiate a chain reaction that drives intensive collaboration and co-specialisation. For a start-up, an incumbent may be a valuable partner to evaluate product-market fit, to scale up operations, increase product diversification or earn credibility within the industry.

CEWS being a young domain, the initiatives are developing independently across various contexts. However, but there is a need to develop a consensus in the field – for instance, emerging economies today have an impact globally and insights from these contexts will be necessary to gauge the success factors for CEWS across different geographies and cultures.

This research has some limitations. We have used three research databases to conduct this review, and adding more databases may bring more insights. We have taken into consideration research studies up to January 2023, more studies may have come in after this time period. Future research may take an important cue from our research and extend or revise the framework we have provided in this study.

References


Further reading

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