

Repositioning the Individual in Co-Creation and Ecosystem Research: Through the Lens of Open Innovation 2.0

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Abstract:

This study examines why individuals within firms have received limited theoretical attention in Open Innovation 2.0 (OI 2.0) research, particularly in studies addressing co-creation and innovation ecosystems. Grounded in the perspective of Open Innovation 2.0 (OI 2.0) as an innovation ecosystem involving collaboration among industry, academia, government, and citizens, and emphasizing the integration of economic value creation and the resolution of societal challenges, the study investigates the structural reasons behind this theoretical invisibility through a structured literature review.

Prior research related to OI 2.0 and its adjacent streams has primarily focused on inter-organizational knowledge flows, ecosystems, and business model openness, with analytical attention concentrated at macro- and meso-levels such as industries, networks, and organizations. Although some studies have addressed micro-foundations by examining employees or internal change agents, the accumulation of theory explicitly centered on individuals within firms remains limited. Similarly, co-creation and ecosystem research have tended to privilege structural and institutional explanations, leaving individual-level practices underexamined.

Through a systematic analysis of prior literature, this study identifies three structural factors that contribute to the invisibility of individuals within firms. First, theoretical linkages among co-creation, ecosystem research, and open innovation remain underdeveloped, and the OI 2.0 perspective has not been fully integrated into academic discourse. Second, individual actions and value-creating practices within firms are frequently absorbed into collective constructs such as organizational capabilities or culture, obscuring individuals as distinct units of analysis. Third, prevailing research orientations emphasize economic value creation, resulting in limited theoretical and empirical attention to individuals who integrate economic and societal value in practice.

By clarifying these structural conditions, the study argues for repositioning individuals within firms, rather than citizens or users, as central agents of OI 2.0. Focusing on individuals within firms who mediate organizational and societal logics enables OI 2.0 research to move beyond predominantly structural explanations and to better capture the human mechanisms through which economic and societal value are integrated in co-creation and ecosystem

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contexts.

As digital transformation and AI-driven innovation continue to expand, establishing a micro-level theoretical perspective centered on individuals within firms becomes increasingly important for advancing OI 2.0 research.

Keywords: *Open Innovation 2.0, co-creation, ecosystem, individuals within firms, micro-foundations*

1. Introduction

The purpose of this paper is to clarify the structural background behind the limited theoretical attention paid to individuals within firms in the theoretical development of Open Innovation 2.0 (OI 2.0), which seeks to balance co-creation and economic and societal value generation.

For analytical clarity, this study conceptualizes the evolution of open innovation into three stages—OI 1.0, OI 1.5, and OI 2.0—and focuses on OI 2.0, which aims to integrate economic value creation with the resolution of societal issues.

OI 2.0 has been proposed by the European Commission not only as a policy initiative but also as a guiding paradigm for promoting innovation through collaboration among industry, academia, government, and civil society. In fact, in Japan as well, the concept of OI 2.0 has been introduced in the White Paper on Open Innovation published by the Ministry of Economy, Trade and Industry (METI) and the New Energy and Industrial Technology Development Organization (NEDO). Notably, citizen-participatory co-creation methods—such as Living Labs, which are regarded as a hallmark of OI 2.0—have been widely adopted in innovation hubs across the country. These developments indicate that the principles of OI 2.0, which originated in Europe, have significantly influenced both policy design and corporate practices in Japan.

However, while OI 2.0 has gained traction at the level of policy practice, it has not been sufficiently explored in academic research. Existing OI 2.0 research has tended to focus on macro- and meso-level factors such as inter-organizational networks, institutional arrangements, and business models, with limited theoretical attention given to individual actors (Bogers et al. 2017; 2018; Chesbrough et al. 2006, 2014c, 2024). Similarly, research on co-creation and ecosystems has predominantly discussed structural factors—such as systems, networks, and organizational architecture—leaving individuals who generate value within firms theoretically marginalized.

Indeed, theoretical frameworks for understanding the role of individuals in innovation do exist. Examples include intrapreneurs (Pinchot 1985), boundary spanners (Aldrich and Herker 1977), and human-centered perspectives in open innovation research (Bogers et al. 2017; 2018; Chatenier et al. 2010; Chesbrough et al. 2024).

In addition, recent attention has been directed toward the exploration of micro-foundations in prior research (Chesbrough et al. 2024), aiming to refine theoretical understandings through analyses of individual capabilities and behaviors in the role of “OI employees.” However, most of these frameworks remain situated within the contexts of OI 1.0 or OI 1.5 and tend to interpret the role of individuals from the standpoint of economic value creation. While this line of inquiry is significant, much of the discussion still falls short of fully integrating the context of OI 2.0, which emphasizes co-creation and ecosystems as mechanisms for the simultaneous creation of economic and societal value.

The practices that embody the foundational integration of economic and societal value—the ideal

proposed by OI 2.0—remain under-theorized. Although OI 2.0 explicitly incorporates citizens and users as key actors in innovation ecosystems, this study deliberately focuses on individuals within firms. This focus reflects the structural position of firms as key loci of accountability, resource allocation, and decision-making in OI 2.0 practices. Individuals within firms operate at the interface between organizational objectives and societal demands, mediating multiple logics in multi-actor co-creation processes. Without theorizing these corporate individuals, OI 2.0 research risks attributing coordination failures and value integration challenges solely to structural factors, while overlooking the human agency through which such integration is practically achieved.

2. Review of Prior Research and Theoretical Gap in OI 2.0

This section reviews the evolution of prior research on open innovation (OI), with particular focus on the theoretical characteristics of OI 2.0—a framework that seeks to integrate co-creation with both economic value creation and the resolution of societal issues. Within this context, the section examines how individuals within firms have been addressed—or overlooked—in existing OI literature, clarifies the limitations of current theoretical treatments and derives the research question (RQ) that this study aims to address.

(1) From Closed Innovation to Open Innovation

In the early 20th century, the advancement of industrialization supported the emergence of vertically integrated firms to achieve mass production based on in-house R&D, contributing to economic growth. These firms were structured to complete all processes—from technology development to production and distribution—internally, without sharing knowledge externally. Their innovation efforts depended heavily on internal resources centered around in-house R&D, a model known as closed innovation (CI). This model was theorized by Chandler (1990) and came to be widely known as the “Chandler Model” (Hanna and Wada 2001; Lamoreaux et al. 2002; Langlois 2003; Sakamoto 2007; Tokuda et al. 2011). However, with the development of digital technology and the expansion of inter-firm collaboration since the 1990s, the limitations of CI became increasingly apparent, leading to the decline of the Chandler Model. In response, Chesbrough (2003) proposed the concept of open innovation (OI), which actively integrates both internal and external knowledge to create new value. This innovation model emphasizes openness and collaboration that transcends knowledge boundaries.

(2) Analytical Framework: Three Stages of Open Innovation

For analytical clarity, this study conceptualizes the evolution of open innovation into three stages and uses this framework as an analytical baseline for subsequent discussion.

OI 1.0 emphasizes economic value creation through outbound and inbound collaborations between industry and academia (Chesbrough 2003; 2006). OI 1.5 extends this model by incorporating co-creation, ecosystems, and alliances through industry–academia–government collaboration, while remaining fundamentally profit-oriented (Chesbrough et al. 2006; 2014c). In contrast, OI 2.0 is defined as an innovation ecosystem based on collaboration among industry, academia, government, and civil society, pursuing both economic value creation and the resolution of societal issues (European Commission 2013).

OI 1.0 is primarily firm-led and focuses on profit generation through collaboration with universities. OI 1.5 extends this model by partially addressing societal issues and introducing the coupled

model, which integrates inbound and outbound knowledge flows through alliances and ecosystems. This stage is structured around the five analytical levels proposed by Chesbrough et al. (2006): (1) individuals and groups, (2) organizations, (3) inter-organizational networks, (4) industries, and (5) national systems, forming a multi-layered framework that spans from the micro to the macro level. Nevertheless, these models remain primarily centered on economic value creation.

Building on this definition, OI 2.0 emphasizes value co-creation among industry, academia, government, and citizens in response to megatrends such as digitalization, mass collaboration (co-creation), and sustainability (Curley and Salmelin 2013). Among these initiatives, living labs—where citizens participate directly—play a central role. A distinguishing feature of OI 2.0 lies in its aim to integrate both economic value creation and the resolution of societal challenges through co-creation and ecosystem-building. This approach is in line with the concept of Creating Shared Value (CSV) proposed by Porter and Kramer (2011), which seeks to simultaneously create economic value and address societal challenges, and it can be positioned as one of the academic foundations informing the development of OI 2.0.

In parallel, the concept of ecosystems has gained significant traction in innovation studies. The concept of business ecosystems was originally introduced into management studies by Moore (1993; 1996), emphasizing the dynamic interdependence among diverse actors—such as firms, academia, government agencies, and civil society—across industry boundaries. Ecosystem-based research has increasingly focused on structural coordination mechanisms and network-level outcomes (Adner 2017; 2021; Gawer and Cusmano 2002; Iansiti and Levien 2004), shedding light on how value is co-created beyond traditional organizational boundaries, primarily at the structural and network levels.

Additionally, since the 1970s, companies have prioritized establishing competitive advantage, and activities such as CSR (Corporate Social Responsibility) and philanthropy have been regarded as either peripheral to the core business or as cost factors (Friedman 1970). However, from the 2000s onward, increasing criticism of environmental destruction and human rights violations led to greater expectations for corporate accountability to a wide range of stakeholders (Business Roundtable 2019; Freeman 1984). In response to this shift, the SDGs and the creation of societal value have been re-evaluated as key sources of corporate value and competitiveness, accelerating the trend of incorporating co-creation into corporate strategy.

Thus, contemporary corporations are expected to balance economic value creation with the resolution of societal issues through co-creation and ecosystems aligned with the principles of OI 2.0. Against this backdrop, it becomes critical to examine which actors within firms mediate these multiple logics and how such actors enable the integration of economic and societal value in practice.

(3) Why Individuals Matter in OI 2.0

Chesbrough et al. (2006) argue that to properly understand value creation and value capture in OI, it is essential to analyze not only at the “firm level,” where most academic research has traditionally concentrated, but also at the “individual level.” This is because innovation is, by nature, achieved by individuals and groups within organizations.

Nevertheless, in practice—particularly in studies grounded in OI 1.0 and OI 1.5—prior OI research has predominantly focused on inter-organizational collaboration. This tendency is rooted in the long-standing view that innovation is the result of deliberate activities within a single firm, and that R&D competition is essentially inter-firm competition (Chesbrough et al. 2006).

To overcome this traditional focus, Chesbrough et al. (2006) proposed five analytical levels for understanding innovation: (1) individuals and groups, (2) organizations and firms, (3) inter-organizational

value networks, (4) industries and sectors, and (5) national institutions and national innovation systems. These levels form a multilayered structure ranging from the micro to the macro. In today's increasingly decentralized and diversified OI processes, an integrated perspective based on this multilayered structure is essential for firms to understand and strategically leverage innovation. Chesbrough et al. (2006; 2014c) have repeatedly emphasized the need for such a multi-level perspective.

Among these, the first level—“individuals and groups”—refers to a wide range of actors both inside and outside firms. While the importance of incorporating knowledge from users and external experts is often emphasized, Chesbrough (2003) repeatedly underscores the value of internal knowledge and the roles played by the individuals and groups who possess it when presenting open innovation as a new approach to in-house R&D in large manufacturing firms. Furthermore, Chesbrough et al. (2024) point out a shift from traditional career models focused solely on internal innovation activities toward greater recognition of the contributions of individuals who create external partnerships and collaborations. Accordingly, in the subsequent sections, this study draws on the theoretical framework of Chesbrough et al. (2006), with a particular focus on “individuals within firms” and “groups within firms,” and examines how—despite their acknowledged importance—these actors have been treated in the existing literature.

Moreover, regarding the insufficient focus on individuals, Bogers et al. (2017) highlight a significant gap in OI research—namely, the critical lack of micro-level studies that explore the roles, motivations, and behaviors of individuals. They suggest that the theoretical and practical exploration of human mechanisms in OI is an urgent agenda for future research.

(4) Prior Research on Individuals as Innovation Agents within Firms

The previous section outlined how OI emerged as an alternative model to overcome the limitations of closed innovation (CI) and has since evolved theoretically into OI 2.0, which aims to integrate economic value creation with the resolution of societal issues. Building on this evolution, this section reviews prior research on individuals as innovation agents within firms from four perspectives: (1) Prior OI research grounded in OI 1.0 and OI 1.5, (2) Network theory, (3) Organizational theory, and (4) Corporate venturing (CV).

1) Prior OI Research Grounded in OI 1.0 and OI 1.5

OI has evolved in stages and is typically categorized into three phases: OI 1.0, OI 1.5, and OI 2.0. However, existing studies have primarily focused on inter-firm collaboration, while the theoretical examination of individuals within firms has received limited attention (Chesbrough et al. 2006; 2014c). Chesbrough et al. (2024) identify six types of actors involved in inbound OI processes under OI 1.0, including technology scouts, gatekeepers, and champions. Although studies grounded in the concept of micro-foundations (Bogers et al. 2017; 2018; Chatenier et al. 2010; Chesbrough et al. 2024) are gradually emerging, these studies mainly examine individual actors in relation to economic value creation. Accordingly, while prior OI studies—grounded in the contexts of OI 1.0 and OI 1.5—have accumulated insights into individual actors contributing to economic value creation, a systematic framework for identifying individuals who mediate and integrate both economic and societal value in OI 2.0 remains underdeveloped.

2) Network Theory

Various actors who mediate knowledge have been discussed, such as brokers (Burt 1992), technology

brokers (Hargadon and Sutton 1997), and interpreters (Richter and Teramoto 1995). However, all these frameworks are primarily oriented toward the maximization of economic value.

3) Organizational Theory

Attention has been paid to actors who span organizational boundaries, such as boundary spanners (Aldrich and Herker 1977) and gatekeepers (Allen 1977), who are valued for facilitating the flow of information and interfacing with external environments.

4) Corporate Venturing (CV)

In CV research, intrapreneurs (Pinchot 1985) are positioned as agents who autonomously create new businesses within large corporations. While they leverage internal resources and engage in cross-boundary activities, most remain within the confines of a closed-innovation approach.

5) Summary of Prior Research

Taken together, prior research across these four streams has generated rich insights into the roles of individuals within firms as agents of innovation. Studies grounded in OI 1.0 and OI 1.5 have identified various individual roles that contribute to economic value creation through inter-firm collaboration. Network theory, organizational theory, and corporate venturing research have similarly highlighted boundary-spanning, brokering, and entrepreneurial behaviors that facilitate knowledge transfer and innovation outcomes.

However, despite differences in theoretical orientation, these streams share a common limitation: individuals are predominantly conceptualized as agents for economic value creation, efficiency, or organizational performance. The role of individuals as mediators who integrate economic and societal value—an essential requirement in the context of OI 2.0—has remained under-theorized. Consequently, existing research offers limited guidance for understanding how individuals within firms navigate and reconcile multiple logics across firms, ecosystems, and society, particularly in contexts where economic and societal objectives must be pursued simultaneously.

To clarify this structural limitation and to make the theoretical gap explicit, Table 1 summarizes prior research on individuals within firms by research stream, focal role, and value orientation.

Table 1. Evolution of Conceptualizations of Individuals within Firms from CI to OI 2.0: An Emphasis on Economic Value Creation and an Emerging Theoretical Gap

Category		Individual within the Firms
CI	• leverage internal resources and conduct cross-boundary activities • primarily for economic value creation	Intrapreneurs (Pinchot 1985)
OI 1.0 (Chesbrough 2003)	• contribute to <u>economic value creation</u> • Industry–Academia collaboration	• Boundary Spanners (Aldrich and Herker 1977) • Gatekeepers (Allen 1977) • six types of actors of OI (Chesbrough et al. 2024) • concept of micro-foundations (Chatenier et al. 2010; Bogers et al. 2017; Bogers et al. 2018; Chesbrough et al. 2024)
OI 1.5 (Chesbrough et al. 2006, 2014c)	• contribute to <u>economic value creation</u> • Industry–Academia–Government collaboration	

OI 2.0 (European Commission 2013; Curley and Salmelin 2013)	• the integration of <u>economic and societal value</u> in the context of co-creation and ecosystems • Industry–Academia–Government–Citizen collaboration	(Theoretical gap: individuals not yet systematically addressed under OI 2.0)
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Source: Author’s compilation based on prior studies

(5) Why Have Individuals Within Firms Remained Underexplored? —Setting the Research Question

In OI 2.0, innovation is no longer organized through bilateral firm–firm or firm–university relationships but through multi-actor, multi-logical interactions involving firms, governments, and citizens. In such contexts, focusing solely on citizens or users is insufficient to explain how economic and societal value are practically integrated, because firms remain key loci of decision-making, accountability, and resource allocation. Individuals within firms are uniquely positioned to mediate organizational logics and societal demands, translating co-creation outcomes into both economic and social value. Without theorizing these mediating individuals, OI 2.0 research risks misattributing coordination failures to structural factors alone, while overlooking the human mechanisms through which value integration is achieved.

Within the theoretical framework of OI 2.0, which seeks to integrate co-creation, economic value creation, and the resolution of societal challenges, the role of individuals within firms has remained insufficiently theorized. Despite being indispensable actors in OI 2.0 practices, these individuals have received limited attention in existing theoretical discussions.

This study addresses this theoretical gap by conducting a structured literature review of the OI literature, following the approach proposed by Webster and Watson (2002), which will be elaborated in the next section. Through this process, it aims to clarify both the absence of theoretical positioning of individuals and the structural reasons behind this absence in co-creation practices.

Based on this aim, the following research question is proposed:

RQ: Why have individuals within firms remained insufficiently theorized in the context of OI 2.0, which aims to integrate co-creation, economic value creation, and the resolution of societal challenges?

Through this RQ, the study aims to reexamine the micro-foundations of OI 2.0 theory and contribute to the updating of theoretical discussions regarding value-creating agents within firms.

3. Methodology

This study aims to examine why individuals within firms have remained insufficiently theorized in the context of OI 2.0. To address this question, it employs a structured literature review methodology, following the conceptual approach proposed by Webster and Watson (2002). Their method encourages concept-centric synthesis and the identification of theoretical gaps, especially in interdisciplinary fields like open innovation.

Specifically, this review was conducted through a two-step process: First, the “Go Backward” approach was used to trace foundational studies that shaped the conceptual development of co-creation and ecosystems. Then, the “Go Forward” approach identified subsequent literature citing these foundational works. This dual approach enabled a systematic mapping of how the role of individuals within firms has been positioned—or omitted—over time.

Rather than aggregating empirical findings statistically, the study adopts an interpretive approach

that analyzes the theoretical assumptions, focal units of analysis, and methodological tendencies in the selected literature. By doing so, it aims to reveal not only the absence of attention to the individual level but also the structural and disciplinary factors that have contributed to this omission.

This approach allows for a transparent and theory-driven exploration of conceptual blind spots in existing OI literature, making it suitable for addressing the research question.

The literature extraction process consisted of the following three steps.

Step 1: Using Web of Science, 1,015 articles were initially retrieved from 25 leading innovation-related journals (including Academy of Management Journal, Academy of Management Review, Administrative Science Quarterly, California Management Review, Harvard Business Review, IEEE Transactions on Engineering Management, Industrial and Corporate Change, International Journal of Technology Management, Journal of Product Innovation Management, Long Range Planning, Management Science, MIT Sloan Management Review, Organization Science, R&D Management, Research Policy, Research-Technology Management, Strategic Management Journal, Technological Forecasting and Social Change, Technology, American Economic Review, Economic Journal, Journal of Marketing, Journal of Marketing Research, Journal of Political Economy, and MIS Quarterly). In this study, the initial literature was extracted based on the set of 25 core journals in the field of technology and innovation management, as adopted by West and Bogers (2014). While the broader applicability of this set is not universally confirmed, it provides a certain level of validity, as it was used as the basis for reviewing open innovation literature in their study.

This study focuses on the key theoretical characteristics of OI 2.0—namely, the integration of economic value creation and the resolution of societal challenges—and on the frameworks that support these goals: co-creation and innovation ecosystems. Based on these perspectives, six keywords were selected to guide the literature search: “co-creation,” “ecosystem,” “open innovation co-creation,” “open innovation ecosystem,” “business ecosystem,” and “innovation ecosystem.” The search covered the period from 2000 to 2025, as the concept of open innovation was first introduced by Chesbrough (2003), marking the beginning of its academic dissemination.

In Step 2, following the “Go Backward” strategy proposed by Webster and Watson (2002), a total of 1,015 publications related to co-creation and ecosystems were screened to identify those that cited Chesbrough’s series of works. From these, nine core articles theoretically connected to open innovation were selected.

In Step 3, the “Go Forward” strategy was applied to the nine core articles, resulting in 820 citing publications. From this set, after removing duplicates, 265 articles containing the terms “ecosystem” and/or “co-creation” were extracted and designated as the final set for analysis.

4. Results – Trends in the Treatment of Individuals within Firms in Co-Creation and Ecosystem Research

Following the procedures outlined in Section 3, the analytical framework was constructed based on nine core articles identified through the Go Backward method and 265 subsequent articles obtained through the Go Forward citation analysis.

Notably, two of the nine core articles were also included among the 265 Go Forward articles. This overlap highlights the central influence of these studies in shaping subsequent research on OI and co-creation.

This section begins by examining the theoretical perspectives present in the core literature, with a particular focus on how individuals within firms have been addressed and theorized, to uncover prevailing trends.

(1) Trends in Analytical Perspectives within Go Backward Literature

This section analyzes the nine core articles identified through the Go Backward method, classifying them along two axes: the five analytical levels proposed by Chesbrough et al. (2006) and the stages of open innovation (OI 1.0 / 1.5 / 2.0). With a particular focus on the context of OI 2.0, the analysis compares each article in terms of its unit of analysis, research methodology, and research objective to structurally reveal theoretical imbalances and the extent to which individuals within firms are addressed.

In this study, OI 1.0 is defined as open innovation that emphasizes the creation of economic value and is characterized by both outbound and inbound collaborations between industry and academia.

OI 1.5 is defined as a hybrid form of open innovation that emphasizes economic value creation and integrates co-creation, ecosystems, alliances, and other related concepts through industry–academia–government collaboration, combining both outbound and inbound approaches.

OI 2.0, in contrast, is defined as an innovation ecosystem based on collaboration among industry, academia, government, and civil society, which simultaneously pursues economic value creation and the resolution of social issues.

As shown in Table 1, the main findings can be summarized in three points:

First, two out of the nine articles (22%) explicitly focused on “individuals or groups within firms” as the primary unit of analysis. The remaining seven articles (78%) limited their analyses to the organizational, firm, or higher meso- or macro-levels. All nine articles (100%) adopted “organization or firm” as the primary unit of analysis, and eight of them (89%) also addressed the “inter-organizational value chain” level. These trends indicate that existing research has placed limited emphasis on micro-level analysis, with predominant attention directed toward structures, institutions, and networks.

Second, four articles (44%) were determined to adopt a perspective aligned with the ideals of OI 2.0. However, even in these cases, the individual level was treated to a limited extent. This indicates that while the principles of OI 2.0 are acknowledged at the theoretical level, several studies continue to rely heavily on frameworks characteristic of OI 1.5.

This study defines these contexts as follows:

- OI 1.5 context: Research that adopts co-creation or ecosystem frameworks but aims primarily at economic value creation.
- OI 2.0 context: Research that simultaneously pursues economic value creation and the resolution of societal issues through co-creation or ecosystem-based approaches.

Third, in terms of methodology, 56% of the reviewed articles employed qualitative organizational research. Among these, some conducted interviews or surveys with individuals; however, the data were ultimately utilized for organizational-level analysis. There were no studies—either qualitative or quantitative—that clearly focused on the individual as the unit of analysis. This indicates a lack of theoretical approaches that address micro-level elements such as individual behaviors, decision-making, and intra-organizational relationships.

Taken together, these findings reveal that individuals within firms have not been clearly theorized as key agents of co-creation. Existing research in the fields of OI and ecosystems has placed strong emphasis on structure and institutions, while theoretical frameworks that systematically address the role of individuals remain underdeveloped. It is evident that a theoretical void still exists in this area.

Table 2. Analysis list of main papers extracted by Go Backward (N = 9).
Detailed interpretation is provided in Section 4

	Authors	Summary	Research Method	Level of OI		Chesbrough et al. (2006), 5 analytical viewing angles and others (multiple answers)					
				OI 1.0–OI 1.5	OI 2.0	Individuals and Groups within Firms	Organizations and Firms	Inter-organizational Value Networks	Industries and Sectors	National Institutions and National Innovation Systems	Others (Entrepreneur, Literature Review, AI, etc.)
1	Sjodin, D.; Parida, V.; Jovanovic, M.; Visnjic, I. (2020)	In the conversion to the outcome-based service in the manufacturing industry, the consistency between value creation and value acquisition influences the success of business model innovation.	Qualitative Study (Organization)	○			○	○			
2	Chesbrough, H.; Brunswicker, S. (2014)	An empirical study that quantitatively clarified the actual state of introduction of open innovation and its progress in 125 large companies in Europe and America.	Quantitative Research (Organization)	○			○				
3	Dabrowska, J.; Alpanopoulou, A.; Brem, A.; Chesbrough, H.; Cucino, V.; Di Minin, A.; Giones, F.; Hakala, H.; Marullo, C.; Mention, A.L.; Mortara, L.; Norskov , S.; Nyland, P.A.; Oddo, C.M.; Radziwon, A.; Ritala, P. (2022)	This is a multilevel conceptual study in which digital transformation is grasped from four layers of individual, organization, ecosystem and nation, and theoretical issues and PIAI framework are presented.	Theory and Concept Research		○	○	○	○			OI 2.0 × Individual: 1 paper ○
4	Chesbrough, H.; Kim, S.; Agogino, A. (2014)	This qualitative case study analyzes the success of Chez Panisse as a process of building an open innovation ecosystem based on relationships with stakeholders.	Qualitative Study (Organization)		○		○	○			○
5	Holgersson, M.; Baldwin, C.Y.; Chesbrough, H.; Bogers, M.LAM (2022)	Conceptual research theoretically presenting the mechanism of ecosystem evolution through open innovation and changes in technology complementarity.	Theory and Concept Research	○			○	○			
6	Radziwon, A.; Bogers, M.LAM; Chesbrough, H.; Mmssen, T. (2022)	This paper presents the strategic response that AirAsia constructed the OI type ecosystem under the pandemic and overcome the economic and social crisis as a case study.	Qualitative Study (Organization)		○		○	○			
7	Majchrzak, A.; Bogers, M.LAM; Chesbrough, H.; Holgersson, M. (2023)	Focusing on the “human side” of open innovation, this paper theoretically argues that human relationships inside and outside the enterprise are key to value creation.	Theory and Concept Research	○		○	○	○			OI 1.5 × Individual: 1 paper

8	Gutmann, T.; Chochoiek, C.; Chesbrough, H. (2023)	This paper reclassifies the knowledge flow of enterprises through CVC, and proposes a new framework for the organizational practice of open innovation.	Qualitative Study (Organization)	○			○	○				
9	Kortus, L.; Gutmann, T.; Kreutzer, M. (2025)	This paper presents a case study on the ecosystem formation process of the data-driven circular economy in the German automobile industry from the viewpoint of role evolution among organizations.	Qualitative Study (Organization)	○			○	○				
Total (n = 9)			Qualitative Study (Organization)	5	4	2	9	8	0	1	1	
		Ratio (%)		56%	44%	22%	100%	89%	0%	11%	11%	

Source: Made by the Author

(2) Emerging Signs in the Go Forward Literature

This section analyzes the 265 subsequent articles identified through the Go Forward method, with the aim of exploring how individuals within firms are being theoretically addressed within the framework of OI 2.0. While the nine core articles examined in the previous section showed limited reference to individuals within firms, some of the citing follow-up studies exhibited indications of incorporating micro-level perspectives.

Here, these developments are interpreted as indications of change, and the trends are organized around the following four focal points,

(1) Emergence of Individual-Level Perspectives: Evidence from the Go Forward Literature, (2) Intersection with OI 2.0 Perspectives: Individual-Level References in Studies Addressing Economic and Societal Value, (3) Methodological and Analytical Shifts: Individual-Level Qualitative Studies, (4) Individual Roles in Digital Contexts.

It should be noted that the primary objective of this analysis is not to suggest that such trends are already dominant, but rather to highlight early shifts observed in the existing literature.

1) Emergence of Individual-Level Perspectives: Evidence from the Go Forward Literature

Among the 265 subsequent studies, 16 articles (6%) explicitly identified “individuals or groups within firms” as their primary unit of analysis. This proportion is lower than that observed in the core articles (2 out of 9, or 22%).

In this study, “individuals within firms” refers to members of the organization who are directly involved in co-creation and innovation practices. Studies focusing on individuals outside the firm such as entrepreneurs or users—were excluded. Qualitative studies were also excluded if their unit of analysis remained at the department or organizational level and did not address individual behaviors or relationships as a theoretical focus. Based on these criteria, only studies that demonstrated theoretical engagement with individuals were included.

2) Intersection with OI 2.0 Perspectives: Individual-Level References in Studies Addressing Economic and Societal Value

Of the 265 articles, 81 (31%) addressed the OI 2.0 objective of integrating economic value creation with the resolution of societal issues. Among these, 3 articles (1%) also referred to individuals within firms. These studies examined individual involvement in areas such as corporate societal responsibility and co-creation practices (Bouman and Simonse 2023; Dabrowska et al. 2022; Trevisan et al. 2024).

In contrast, 13 articles (5%), that exhibited characteristics associated with OI 1.5—namely, an orientation toward economic value creation—also included references to individuals within firms. However, in these cases, the individual was framed solely in relation to corporate performance and value generation, with little connection to societal impact. In these studies, individuals were discussed mainly in relation to corporate performance and value generation, with limited consideration of societal outcomes.

Taken together, these findings indicate that while individual-level references appear in both OI 1.5—and OI 2.0—oriented studies, explicit theorization of individuals as agents involved in the integration of economic and societal value remains limited.

3) Methodological and Analytical Shifts: Individual-Level Qualitative Studies

Among the 265 articles, 22 (8%) were classified as qualitative studies that explicitly addressed individuals as the primary unit of analysis. These studies examined topics such as individual motivations, relationships, and organizational roles, often employing case study approaches to analyze decision-making processes and innovation practices at the individual level.

Several of these studies explored how individual actions and relationships relate to firms' innovation activities, suggesting a closer examination of micro-level processes within OI research.

Consistent with the criteria described in Section 4.2(1), qualitative studies were excluded if the individual was not treated as the primary unit of analysis, even when individual-level data were collected. In addition, some of the 22 articles included analyses of individuals outside firms, such as entrepreneurs or users, which should be considered when interpreting these findings.

4) Individual Roles in Digital Contexts

Approximately 30% of the analyzed articles addressed themes related to digital transformation or digital servitization. Among these studies, several examined the roles of individuals within firms, describing them as “frontline enablers” or “frame alignment agents” in digital transformation processes.

These studies explicitly linked individual-level actions to digital transformation outcomes, indicating that some recent OI-related research has begun to consider the relationship between digitalization and individual roles. In contrast to structure- or institution-centered approaches, these analyses placed analytical attention on how individuals within firms participate in and support transformation processes in digital contexts (Dabrowska et al. 2022).

(3) Summary: Patterns in the Treatment of Individuals within Firms

The analyses in Sections 4.1 and 4.2 indicate that references to “individuals within firms” remain limited in OI 2.0 research but are more frequently observed in the Go Forward literature than in the core Go Backward articles. A small subset of recent studies has incorporated individual-level perspectives alongside organizational and ecosystem-level analyses.

Among the nine core articles identified through the Go Backward method (see Table 2), two—Dabrowska et al. (2022) and Kortus et al. (2025)—also appeared in the Go Forward dataset. While Kortus et al. (2025) primarily examine inter-organizational role dynamics in ecosystem formation, Dabrowska et al. (2022) adopt a multi-level analytical framework that includes individuals within firms, especially managerial actors, in the context of digital transformation.

The comparison of these studies suggests that differences in analytical perspective are associated with whether individual-level dynamics are explicitly addressed. Studies that incorporate multi-level frameworks are more likely to refer to individual roles, whereas those centered on inter-organizational or structural analysis tend to omit them. These observations summarize the patterns identified in the literature and provide the basis for the discussion in the following section.

5. Discussion

This section addresses the research question—“Why have individuals within firms remained underexplored?”—by examining the structural patterns and theoretical backgrounds of existing studies. Through a comparative analysis of the core literature identified via the Go Backward method and the subsequent studies identified via the Go Forward method, this section highlights the presence or absence of theoretical connections, imbalances in analytical perspectives, and prevailing teleological orientations.

Focusing predominantly on macro- and meso-level structures has shaped how challenges in co-creation and value integration are interpreted in existing OI 2.0 research. When individuals within firms are not explicitly theorized, coordination failures or integration difficulties tend to be explained primarily in terms of structural or institutional misalignment, rather than the actions and judgments of actors operating within firms.

(1) Theoretical Disjunction between Co-Creation and Open Innovation: The Absence of Connection and the Marginalization of the Individual

Among 1,015 academic articles on co-creation and ecosystems, nine cited Chesbrough's foundational work, which is widely recognized as the theoretical basis for open innovation (Table 1). This limited overlap suggests that research on co-creation and ecosystems has developed largely independently of the open innovation discourse.

Although the concept of OI 2.0 has been actively promoted in practice—particularly through policy initiatives by the European Commission—it has not yet been firmly embedded in academic theory. As a result, “individuals within firms,” who are central actors in OI 2.0, have been structurally marginalized in scholarly discourse.

Research on open innovation has consistently prioritized macro- and meso-level perspectives, such as inter-organizational collaboration and the use of external knowledge. In contrast, theoretical attention to micro-level elements—such as individual agency and intra-organizational relationships—has been limited. While micro-foundational approaches are gradually gaining attention (Bogers et al. 2017; 2018; Chesbrough et al. 2024; Majchrzak et al. 2023), their accumulation remains modest.

Furthermore, in the updated definition by Chesbrough et al. (2014c, 17), open innovation is described as “a distributed innovation process based on purposively managed knowledge flows across organizational boundaries, using pecuniary and non-pecuniary mechanisms in line with the organization's business model.” This definition places primary emphasis on the creation of economic value and aligns with the frameworks of OI 1.0 or OI 1.5. Accordingly, it leaves little theoretical space for addressing the practices of “individuals within firms” who aim to integrate economic and societal value in the context of co-creation and ecosystems under OI 2.0.

In sum, the lack of theoretical integration between open innovation and co-creation/ecosystem research has provided little conceptual foundation for exploring the role of individuals within firms in the context of OI 2.0. Bridging this gap is essential for advancing OI 2.0-oriented theorizing.

(2) Biased Perspectives: A Theoretical Structure Dominated by Macro- and Meso-Level Approaches

The core articles identified through the Go Backward method in this study (Table 2) primarily focused on macro- and meso-level subjects such as networks, inter-organizational collaboration, institutions, and the structure of industry–academia–government partnerships. This bias in perspective was especially apparent in studies aimed at constructing theoretical frameworks or synthesizing prior research, and few adopted analytical perspectives concerned with the behaviors and relationships of individuals at the ground level.

In the context of co-creation and ecosystems, researchers often prioritized capturing the dynamics of firms or industries, leaving the practices of individuals as a “black box” of field-level activity. This is also evident from the analysis of the literature identified through the Go Forward method (Table 1). Even when qualitative methods were employed, most studies emphasized organizational or departmental change and structural factors, with little theoretical attention paid to micro-level elements such as

intrinsic motivation, on-the-ground negotiation and coordination, or the construction of interpersonal relationships (Pizzichini et al. 2023). While some research, such as Podmetina et al. (2018), has recognized the role of individual competencies in open innovation, these contributions often focus on skills or attributes rather than the situated practices of individuals within organizations.

As a result, no systematic theoretical understanding of individuals within firms as agents of co-creation was developed. The analytical perspectives necessary for examining OI 2.0 practices remained secondary to dominant institutional and network-based approaches.

(3) Goal Orientation: The Dominance of Economic Rationality and the Marginalization of the “Societally Embedded Individual”

Among the 265 articles on co-creation and ecosystems, 143 (54%) explicitly stated “economic value creation” as their research objective, while 81 (31%) aimed to achieve a balance between economic value creation and solving societal problems. A smaller number of studies—9 (3%)—focused solely on societal issue resolution. These results indicate that research on co-creation and ecosystems remains primarily oriented toward economic rationality.

Among the 81 articles aiming for value duality, 3 (1%) explicitly mentioned “individuals within firms.” These cases focused on individual actions in the context of corporate societal responsibility or sustainability strategies and can be interpreted as initial indications of practices aligned with an OI 2.0 perspective. However, such studies remain limited in number.

By contrast, 13 articles (5%) addressed “individuals within firms” while pursuing economic value alone. Most of these studies examined the performance of innovation leaders or managers and their relationship to organizational capabilities (Carboni et al. 2021; Kowalkowski et al. 2025; Li et al. 2025). In these cases, individuals were positioned primarily as functional agents contributing to firm-level outcomes, with limited theoretical treatment of them as co-creators of societal value.

Accordingly, the “societally embedded individual,” who should play a central role in OI 2.0 practices, has tended to be marginalized within teleological orientations that prioritize economic rationality. This bias in research purpose constitutes one of the structural factors that has rendered individuals within firms theoretically and empirically underexplored in OI 2.0 research.

(4) The Triple Theoretical Absence and the Invisibility of the “Individual”

The theoretical invisibility of “individuals within firms” in studies addressing co-creation and ecosystems from an OI 2.0 perspective can be traced to three interrelated structural factors: the absence of theoretical linkage between co-creation and open innovation, the dominance of macro- and meso-level analytical perspectives, and a teleological bias toward economic rationality.

These overlapping tendencies have cumulatively excluded the “societally embedded individual” from scholarly focus, despite the relevance of such actors in OI 2.0 practices. The result is a multi-layered theoretical void spanning framework construction, analytical perspective, and research objectives.

This study highlights the need to adopt new analytical lenses that center individuals as agents of co-creation in OI 2.0, thus laying the groundwork for future theoretical development.

6. Conclusion

Any theoretical framework necessarily foregrounds certain units of analysis while backgrounding

others. In the case of OI 2.0 research, the persistent omission of individuals within firms is not merely a descriptive gap but has substantive consequences for explanation and prescription. By privileging macro- and meso-level constructs—such as ecosystems, networks, and institutional arrangements—existing frameworks tend to attribute coordination failures, value-integration breakdowns, or co-creation inefficiencies to structural misalignments alone. As a result, the human mechanisms through which economic and societal logics are mediated, negotiated, and enacted in practice remain analytically invisible. This structural bias risks producing distorted explanations and incomplete policy or managerial prescriptions, particularly in multi-actor innovation settings where value integration depends on situated judgment and agency.

Repositioning individuals within firms as a central analytical focus enhances the explanatory and analytical power of OI 2.0 research. By foregrounding individuals as mediators between organizational objectives and societal demands, it becomes possible to account for how economic and social values are integrated—or fail to be integrated—within concrete co-creation processes. Incorporating the individual level thus improves not only descriptive accuracy but also theoretical coherence, predictive insight, and practical relevance. This perspective enables scholars and practitioners to better identify where value integration breaks down, how coordination is achieved across multiple logics, and which forms of intervention are most likely to be effective in complex innovation ecosystems.

This study posed the following research question (RQ): Why have individuals within firms remained under-theorized in the context of OI 2.0? Through a structured review of prior research on co-creation and ecosystems, the study revealed the theoretical background behind the absence of “individuals” in OI 2.0 practices.

First, the analysis demonstrated a near-complete lack of theoretical connection between Chesbrough’s open innovation (OI) literature and research on co-creation and ecosystems, suggesting that this disconnection may have contributed to the marginalization of individuals (Section 5, Subsection 1).

Second, it confirmed a structural tendency to focus on macro- to meso-level entities—such as networks, institutions, and organizations—highlighting the persistent absence of micro-level perspectives centered on individuals (Section 5, Subsection 2).

Third, it revealed a teleological bias in research aims: economic rationality often outweighed societal considerations, or the inclusion of individuals engaged with societal issues (Section 5, Subsection 3). These patterns were synthesized in Subsection 4 of Section 5 as a structural issue—the invisibility of “individuals who embody both economic and societal dimensions.”

Notably, approximately 30% (82 of 265) of the forward-referenced papers mentioned technological changes, such as digital transformation and generative AI. In an era where such technologies dissolve organizational boundaries and individual creativity and judgment become essential to co-creation, the lack of theoretical attention to “individuals within firms” represents a significant and urgent gap. The primary contribution of this study lies in illuminating the theoretical and practical roles individuals should play in OI 2.0. By explicitly articulating the significance of individuals who bridge economic and societal value creation, the study provides a foundation for further theoretical development and more practice-oriented research.

Nevertheless, this study is theory-driven and does not include empirical examination—quantitative or qualitative—of individual behaviors and relationships. Future research should focus on empirical case studies that explore how such individuals contribute to OI 2.0-style co-creation practices. In the age of co-creation and ecosystems, the “individual” is no longer a mere component of organizational systems but a central actor in value creation, bridging firms and society. As digital transformation and generative

AI continue to progress, the importance of individuals as drivers of co-creation will likely become even more pronounced.

This study offers a first step in re-centering the individual in theoretical discussions, laying a conceptual foundation for future inquiry. Although it does not seek to build an integrated theoretical framework, this study presents an initial conceptual platform that highlights the need to position individuals more centrally in OI 2.0. Such theoretical integration remains a crucial next step in building a more inclusive and comprehensive understanding of innovation ecosystems.

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