



INTERNATIONALIZATION ECOSYSTEMS: A FRAMEWORK PROPOSAL FOR THE INTERNATIONAL BUSINESS THEORY

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ABSTRACT

Objective: The research proposes an original theoretical framework to explain the nature, uniqueness, and dynamics of the Internationalization Ecosystem (INT-E), streamlining the integration of contemporary International Business (IB) theories into an ecosystemic perspective. **Method:** A systematic literature review (SLR) was carried out to identify the different types of studies focused on internationalization from an ecosystemic perspective, followed by a thematic analysis, which determined the framework's key conceptual constructs. **Main Results:** An INT-E framework was conceptualized, integrating business, entrepreneurial, innovation, and platform ecosystems, extracting pivotal elements to enhance its theoretical and practical dimensions within the realm of IB studies. **Relevance/Originality:** The INT-E concept is underexplored in IB literature, especially in an ecosystemic context. It is typically seen as part of broader ecosystems like entrepreneurship or digital platforms, but here a new conceptual perspective is proposed, opening avenues for further inquiry. **Theoretical / Methodological Contributions:** Theoretically, by conceiving the INT-E framework, the research encourages the pursuit of studies on ecosystem integration and replication, which is still incipient in most IB literature. Methodologically, the application of the thematic analysis enhances the qualitative aspect of studies in IB theory. **Social / Managerial Contributions:** The framework serves as a tool for enhancing internationalization strategies across various dimensions, including export promotion, foreign direct investment (FDI) attraction and ecosystem integration.

Keywords: Internationalization Ecosystem, Business Ecosystem, Theoretical Framework.

ECOSSISTEMAS DE INTERNACIONALIZAÇÃO: UMA PROPOSTA DE FRAMEWORK PARA A TEORIA DE NEGÓCIOS INTERNACIONAIS

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RESUMO

Objetivo: A pesquisa propõe um *framework* teórico original para explicar a natureza, singularidade e dinâmica do Ecossistema de Internacionalização (INT-E), facilitando a integração das teorias contemporâneas de Negócios Internacionais (IB) em uma perspectiva ecossistêmica. **Método:** Uma revisão sistemática da literatura mapeou pesquisas focadas na internacionalização de uma perspectiva ecossistêmica; seguiu-se uma análise de conteúdo e temática, que determinou os principais construtos do *framework*. **Principais Resultados:** Foi concebido um *framework* de INT-E, integrando ecossistemas de negócios, empreendedorismo, inovação e plataforma, extraindo elementos cruciais para aprimorar suas dimensões teóricas e práticas no âmbito dos Estudos de Negócios Internacionais. **Relevância / Originalidade:** O conceito de INT-E é pouco explorado na literatura de IB, especialmente em um contexto ecossistêmico. É geralmente visto como parte de ecossistemas mais amplos, como empreendedorismo ou plataformas digitais, mas aqui é proposta uma nova perspectiva conceitual, abrindo caminhos para investigações adicionais. **Contribuições Teóricas / Metodológicas:** Teoricamente, ao conceber o *framework* de INT-E, a pesquisa contribui para incentivar a realização de estudos sobre integração e replicação de ecossistemas, que ainda são escassos na literatura de IB. Metodologicamente, o uso da análise de conteúdo e temática enriquece qualitativamente os estudos sobre Teoria de Negócios Internacionais. **Contribuições Sociais / Gerenciais:** O *framework* serve como ferramenta para aprimorar estratégias de internacionalização em várias dimensões, incluindo promoção de exportações, atração de investimentos estrangeiros diretos e integração de ecossistemas.

Palavras-chave: Ecossistema de Internacionalização, Ecossistema de Negócios, *Framework* Teórico.

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INTRODUCTION

Internationalization is theoretically defined in International Business (IB) theories as the growing participation in global markets. Foreign direct investment (FDI), joint ventures, initial public offers (IPOs), technology exchange, and exports are some of the ways this happens (Johanson & Vahlne, 1977, 1990, 2009; Wentrup, Nakamura, & Ström, 2020; Zahoor, Al-Tabbaa, Khan, & Wood, 2020). As a result, it is a phenomenon involving a wide range of organizational categories, including small and medium enterprises (SMEs), multinational enterprises (MNEs), universities, technological centers, government agencies, and even civil society representatives. In its multidimensional network, this complicated and dynamic ecology incorporates both local and international stakeholders (Costa Jr., Cavalcanti, Fernandes, & Araújo, 2022; Distefano, Gambillara, & Di Minin, 2016; Johnson, Dahl, & Mariussen, 2019; Luo, 2021; Sekliuckiene, Sedziniauskienė, & Viburys, 2016).

Research on internationalization holds paramount importance due to its profound implications for the socioeconomic advancement of nations, contributing significantly to economic expansion and employment generation (Bradley, Duruffe, Hellman & Wilson, 2019; Roig, Sun-Wang & Manfredi-Sánchez, 2020; Van Schijndel, 2019; Wentrup et al., 2020). Moreover, it stands as a pivotal domain within studies on innovation and entrepreneurship, while enterprises increasingly engage in global ventures to access new markets and foster innovative practices (Ferreira, Fernandes, & Veiga, 2023; Theodoraki & Catanzaro, 2021). Notably, internationalization intersects with the Triple and Quadruple Helix Theories, accentuating collaborative efforts amongst government, industry, academia, and society, whilst extending these collaborations to a global scale (Champenois & Etzkowitz, 2018; Etzkowitz et al., 2019; Ferrer-Serrano, Latorre-Martinez & Fuentelsaz, 2021; Sørensen & Hu, 2014). Furthermore, it serves as a fundamental element in various business ecosystem (BE) studies, providing a comprehensive understanding of the intricate interplay amongst local and global stakeholders (Cha, Kotabe, & Wu, 2023; Hewett, Hult, Mantrala, Nim, & Pedada, 2022; Zeng, Khan, & Silva, 2019).

Moore (1993) introduced the term ecosystem into the business literature, referring to the agglomeration

of organizations with coevolved capabilities, creating innovation and value through competition and cooperation (Hemmert et al., 2019). The concept was then perfected to encompass what was perceived as their key purpose and results, considering every ecosystem unique, such as BEs, entrepreneurial ecosystems (EEs), innovation ecosystems (IEs), and platform ecosystems (PEs) (Schafer & Henn, 2018; Thomas & Autio, 2020; Tippmann, Ambos, Del Giudice, Monaghan, & Ringov, 2023; Van Schijndel, 2019).

The expansion of the internationalization phenomenon fuels the concept of a global BE, which is defined as a network of organizations located in various parts of the world, some of which form large clusters, all of which are interdependently connected in the process of producing and delivering products, technologies, and services to a global market, thereby creating global value (Johnson et al., 2019; Luo, 2021).

The conceptual framework delineated in this study, drawing on the works of Costa Jr., Calazans, and Araújo (2023a, 2023b), adopts an Internationalization Ecosystem (INT-E) lens. This framework amalgamates four interlinked ecosystem perspectives, providing a comprehensive view of the internationalization process:

- BEs, which constitute an economic community supported by collaborative entities, including conventional business models, industries, multinational enterprises (MNEs), and clusters (e.g., Cha et al., 2023; Hewett et al., 2022; Zalan, 2018);
- EEs, specialized environments dedicated to fostering innovative and high-growth ventures, encompassing startups, scale-ups, and other non-traditional business models (e.g., Gawel, 2021; Ratten, 2021; Stolze & Sailer, 2021);
- IEs, comprising both business and social ecosystems extending beyond economic boundaries, emphasizing knowledge creation and exchange (e.g., Prokopenko, Emerenko, & Omelyanenko, 2014; Ratten, 2021);
- PEs, indicative of the digital business landscape characterized by advanced technology, knowledge dissemination, and collaborative initiatives (e.g., Ciasullo, Montera, Mercuri, & Mugova, 2022; Kolar, Reim, Parida, & Sjödin, 2022).

Such ecosystems, albeit different in nature, have boosted competitiveness through networking with

domestic and international partners, knowledge sharing, and intercultural development, resulting in higher levels of entrepreneurial activity and innovation within and outside of regional, national, and international organizations (Henn, Terzidis, Kuschel, Leiva, & Alsua, 2022; Odei & Stejskal, 2020; Tekin, Ramadani, & Dana, 2021).

Understanding the operational mechanisms and optimization strategies of diverse BEs holds fundamental importance for fostering socio-economic development. This imperative has garnered significant attention from policymakers, scholars, practitioners, and a wide array of stakeholders, transcending the boundaries of large corporations to encompass small and medium enterprises (SMEs). Contemporary competition extends beyond individual companies to encompass entire ecosystems, including urban centers and nation-states. Such entities are increasingly focused on mobilizing financial capital, attracting FDI, enhancing infrastructure, implementing place branding initiatives, safeguarding cultural heritage, and promoting tourism. These efforts aim to cultivate geographical hubs conducive to innovation, entrepreneurial endeavors, technological advancements, and the internationalization of businesses (Bradley et al., 2019; Roig et al., 2020; Van Schijndel, 2019; Wentrup et al., 2020).

Furthermore, the global economy demands international and regional BEs, which may represent further challenges to the Global South and other emerging markets (Buyukbalci & Dulger, 2022; Ray, Kathuria, & Kumar, 2020; Wentrup et al., 2020) which, in spite of being perceived as highly entrepreneurial, may face severe limitations due to their informal economy, infrastructure restrictions, weak institutions, lack of complementary assets, and the often reduced collaboration between university and industry (Corsi, Feranita, Hughes & Wilson, 2022; Henn et al., 2022).

Despite the burgeoning literature exploring the nexus between internationalization, associated support mechanisms, and overall organizational performance, notable gaps persist within the specialized domain concerning BEs. Specifically, there is a dearth of research focusing on the internationalization dynamics within EEs and their propensity to transcend geographical constraints through extensive global networking. This deficiency underscores the need

for further investigation into the nuanced interplay between diverse EEs, thereby elucidating their interconnectedness beyond conventional market-centric paradigms (Hult, Gonzalez-Perez & Lagerström, 2020; Rong, Kang, & Williamson, 2022; Schafer & Henn, 2018; Sørensen & Hu, 2014; Theodoraki & Catanzaro, 2021).

Thus, the current article aims to answer the following question: “What are the key components and dynamics of INT-Es, and how can a theoretical framework enhance our understanding of these ecosystems within the context of contemporary IB theories?”

Through an approach encompassing a systematic review (Denyer & Tranfield, 2009) and thematic analysis (Boyatzis, 1998; Guest, MacQueen, & Namey, 2012), the article aims to propose a theoretical framework (Gerring, 2001) to explain the nature, uniqueness, and dynamics of the INT-E, streamlining the integration of contemporary IB theories into an ecosystemic perspective.

1. THEORETICAL FRAMEWORK

1.1. Business Ecosystems

With ontological roots tracing back to the Biological Sciences, the concept of ecosystems refers primarily to biotic (living organisms) and abiotic (physical environment) factors, their dynamics and interdependence. This was adapted to the idea of a business environment to study and explain the co-effect and co-evolution of organizations and their external environment, that is, how different actors, both institutions and individuals, in a non-centrally organized economic community, but rather through informal arrangements, co-exist, thrive, innovate, cooperate and compete (Hewett et al., 2022; Moore, 1993; Rasmussen & Petersen, 2017; Velt, Torkkeli, & Saarenketo, 2018).

The BE concept spreads beyond the traditional idea of clusters, marketing ecosystems, business networks or even global value chains. It includes other players who are not usually taken into account in these traditional views, characterized by the nonlinearity of relationships in value-creating transactions, such as social networks, local communities, the judiciary, regulatory authorities, research institutions, civil society representatives and other meta-organiza-

tions, comprised of legally autonomous entities (Cha et al., 2023; Hewett et al., 2022; Parente, Geleilate & Rong, 2018; Zalan, 2018).

The ecosystem notion is accepted by several authors as an appropriate paradigm to understand the dynamics of business development and different levels of interactions in a market economy (e.g., Cha et al., 2023; Rong et al., 2022). However, it can be perceived from several different perspectives, such as EE (e.g. Ferreira et al., 2023; Schafer & Henn, 2018; Theodoraki & Catanzaro, 2021); IE (e.g., Gawel, 2021; Odei & Stejskal, 2020; Prokopenko et al., 2014; Tippmann et al., 2023); digital ecosystem (e.g., Nambisan, Zahra, & Luo, 2019; Yonatan, 2017); and several other standpoints focused on the dynamics and functions of a complex, multifaceted and interdependent multi-system that spans across different industries, geographies and cultures (Moore, 1993; Tippmann et al., 2023).

Ecosystems are constantly evolving, varying considerably amongst nations and industries, due to the different relationships amongst its institutions, the level of competitiveness, the type of infrastructure, the businesses' life cycles, and also cultural specificities (Moore, 1993; Parente et al., 2018). Notwithstanding the importance given in the IB literature to international networking formation and configuration for the internationalization process, there remain several knowledge gaps when it comes to international ecosystem interdependence, specifically with digital businesses (Knight & Liesch, 2016; Kolagar et al., 2022; Parente et al., 2018).

1.2. Entrepreneurial ecosystem

To understand economic, cultural and social developments in entrepreneurship, the concept of EE was rapidly adopted in the specialized literature (Audretsch & Belitski, 2017; Ratten, 2021). The concept encompasses the dynamic entrepreneurial interactions amongst different layers of factual or potential actors, organizations, institutions and formal as well as informal business processes co-existing and evolving simultaneously in a given region (Gawel, 2021; Ratten, 2021; Schafer & Henn, 2018; Stolze & Sailer, 2021), that focus on the creation, growth and scale of new businesses, diversifying economic bases and promoting economic, technological and social devel-

opment (Zahra & Hashai, 2022) on micro, meso and macro level (Ferreira et al., 2023).

Entrepreneurial studies have been progressing rapidly and varying considerably in scope, but with a single purpose to understand what actors and processes truly constitute an EE. Amongst the key areas of interest in the studies on EE, internationalization is now being explored either on its own or as related to other phenomena (Ferreira et al., 2023; Theodoraki & Catanzaro, 2021). The internationalization entrepreneurial perspective opens a new avenue regarding EEs, bringing the concept of global culture within its canon, which leads to higher opportunity recognition and network embeddedness (Ferreira et al., 2023; Henn et al., 2022). The internationalization perspective on EEs may involve studies on *born globals*, large MNEs and cross-border platforms; however, a systematic approach on entrepreneurial internationalization is still vague within the current literature, especially regarding internationalization support ecosystems (ISE) and other forms of transnational bridges between EEs (Hemmert et al., 2019; Theodoraki & Catanzaro, 2021; Van Schijndel, 2019).

In the specialized literature, EEs are perceived as involving several domains, or expertise areas, that are necessary to the development, growth and scaling of new businesses:

- policy (legislations and government incentives);
- culture (a pro-entrepreneurial view amongst citizens and civil society);
- human capital (including entrepreneurial talent and specialized labor formation);
- finance (access to different forms of financing, including angel investors, venture capital funds and private equity);
- markets (ecosystem orchestration, networks and partnerships at different levels);
- entrepreneurial support structure (the overall business infrastructure and professional support available including entrepreneurial connectors);
- entrepreneurial discovery process—EDP (the acquisition of more complete and accurate knowledge through joint interactions; local context (the specificities that make each ecosystem unique) (Audretsch & Belitski, 2017; De Cock, Andries & Clarysse, 2021; Fakhreldin, 2021; Ferreira et al., 2023; Hemmert et al., 2019; Johnson et al., 2019; Tekin et al., 2021).

1.3. Innovation ecosystem and the triple and quadruple helix

The concept of IE is closely linked with entrepreneurship, as entrepreneurs are a fundamental element of innovative economic systems (Prokopenko et al., 2014; Ratten, 2021). Innovation ecosystems can be perceived as a collaborative arrangement for the open creation, dissemination and utilization of knowledge and technology amongst closely linked actors, including organizations, businesses, research centers, policymakers and, to a considerable extent, other civil society representatives (Costa, 2022; Gawel, 2021; Sekliuckiene et al., 2016; Tippmann et al., 2023).

Like EEs, IEs present several different interdependent domains that are studied in the specialized literature:

- science & technology (involves the outputs of higher education institutions—HEIs);
- venture capital (concerning financial resources and business competencies within the ecosystem);
- innovative infrastructure (including business incubators, accelerators, technology parks, innovation centers as well as the services provided by different businesses to support innovative organizations);
- innovation demand (beyond the consumer market, also involving technology-oriented organizations and intellectual property);
- legislative and legal framework (the legal conditions to improve innovation through ecosystems participants);
- human capital (innovation oriented managers, executives and engineers with competence to operate in an ecosystem with a large number of collaborations) (Costa, 2022; Odei & Stejskal, 2020; Prokopenko et al., 2014; Rasmussen & Petersen, 2017; Ray et al., 2020; Roig et al., 2020).

Innovation systems have been studied in the specialized literature, specially the arrangements amongst key players that is known as the triple helix (TH) framework (Champenois & Etzkowitz, 2018; Etzkowitz et al., 2019; Sørensen & Hu, 2014). The TH framework emphasizes the importance of innovation as an economic development engine, increasing the demand on universities, industries and government representatives to work synergistically to bring measurable economic, social and technological results on a global scale, given that successful international entrepreneurship re-

quires multiple relationships (Baier-Fuentes, Guerrero, & Amorós, 2021; Sørensen & Hu, 2014).

The core element on the TH framework is a series of trans-institutional agreements as well as the promotion of a mindset focused on knowledge-based collaboration amongst universities, industries and government, not centered on boundaries between producers and users of knowledge, but rather on strategies to increase synergy and facilitate institutional cooperation towards open innovation (Champenois & Etzkowitz, 2018; Etzkowitz et al., 2019; Ferrer-Serrano et al., 2021; Sørensen & Hu, 2014).

Beyond the concept of TH, much like the EE and BE perspectives, authors agree that it is necessary to think of a model to include a fourth helix—civil society—which is conceived as an essential player, given that an open innovation culture is born within it, directly influencing the traditional interplay between university, industry and government in knowledge-based economies (Distefano et al., 2016; Ikram, Su, Fiaz, & Rehman, 2018).

Like EEs, IEs tend to expand internationally. Domestic innovation solely with domestic partners appears less effective. Broader networks are crucial, drawing on diverse sources of technical, managerial, and tacit knowledge. Global technology exchange is fostered through cross-border collaborations between the scientific community, public institutions, the private sector, and civil society. The TH model and its variants are thus essential for understanding the dynamics and formation of IEs (Costa, 2022; Odei & Stejskal, 2020; Ray et al., 2020; Roig et al., 2020).

Therefore, the Triple and Quadruple Helix concept may also be perceived as an internationalization model, given that it is not only about regional collaborations, but about open innovation that may occur on a global scale (Sørensen & Hu, 2014). The internationalization pattern of the helix system, however, is not clear in the literature, as there is an insufficient body of knowledge explaining its internationalization process. It may take an incremental path, different to each helix in each region or there might be common strategies for ecosystem internationalization, involving further collaboration amongst the helixes. The model is wide open, and demands significant new studies (Civera, Meoli, & Vismara, 2019; Distefano et al., 2016; Rasmussen & Petersen, 2017; Thurner, Gershman, & Roud, 2015).

1.4. Digital platforms and ecosystem

Digital technology plays a key role, as it allows for the entrepreneurial activity to be extended to distant geographic markets, being characterized by intangible flows of data and information, access to free products and services, marginal cost reductions, instant access to knowledge worldwide, joint development operations beyond domestic boundaries, and availability of considerable resources for the development of digital infrastructure, which places great pressure on international business theorists and some long-held assumptions about the global business environment (Knight & Liesch, 2016; Kolagar et al., 2022; Nambisan et al., 2019; Wentrup et al., 2020).

Digital transition and digitization are key driving forces behind globalization and business internationalization, providing businesses with innovative ways to enter foreign countries, as more actors are participating in transborder transactions from SMEs to MNEs, including new breeds of micro-multinational companies (Brouthers, Chen, Li, & Shaheer, 2022; Luo, 2021; Nambisan et al., 2019; Sooreea, Damodar, Sharma, & Sooreea-Bheemul, 2018), through new and successful platform-based business models that embrace several value chains into a global digital ecosystem (Hewett et al., 2022; Ratten, 2021; Rong et al., 2022). Such digital ecosystems rely on flexible specialization and large-scale collaboration across organizational, geographical and cultural borders, extending the concept of EEs beyond its geographical limitations through digital conceptualization, being truly open to worldwide participation whilst transforming traditional IB theories (Knight & Liesch, 2016; Nambisan et al., 2019; Ratten, 2021; Zalan, 2018).

Digital Platform Ecosystems (DPEs)—encompassing technology platforms, digital transition and servitisation, digitization, new and disruptive business models, as well as new strategies for collaboration, knowledge and technology exchange and open innovation—are a pervasive phenomenon that influences the dynamics of any form of BE, making them more fluid, lively, disruptive and rather unpredictable, which directly affects the internationalization phenomenon, as new liabilities may emerge—especially the difficulties of integrating ecosystems in an end-to-end manner, which may lead to new levels of competitive advantage (Ciasullo et al., 2022; Costa, 2022;

Kolagar et al., 2022; Nambisan et al., 2019; Rong, Wu, Shi & Guo, 2015; Yonatany, 2017).

1.5. Internationalization ecosystem

IB scholars have conducted extensive inquiries into the complexities of BEs within foreign markets, underscoring the necessity for a re-examination of internationalization strategies (Parente, Rong, Geleilate, & Misati, 2019; Ray et al., 2020). However, prevailing theoretical frameworks, often centered on resource-centric paradigms, demonstrate an adaptive or reactive orientation and lack a comprehensive understanding of ecosystem dynamics. These frameworks overlook critical factors such as demand generation, institutional and cognitive proximity, digital ecosystems, disruptive business models, uncertainty in international markets, value appropriation, post-entry BE operations, and the integration of ecosystems (Axinn & Matthyssens, 2002; Knight & Liesch, 2016; Nambisan et al., 2019; Ray et al., 2020; Rong et al., 2015). Additionally, the focus of IB theory on key elements and contributors to internationalization within both local and global ecosystems, particularly emerging contributors across intricate value chains, remains unclear (Johanson & Kao, 2010; Johanson & Vahlne, 2009; Knight & Liesch, 2016; Rong et al., 2022).

When examining born globals, “young, entrepreneurial start-ups that initiate international business soon after their inception” (Cavusgil & Knight, 2015, p. 3), and entry into the internationalization process, research has centered on the amalgamation of uncertain market conditions, technological advancements, and entrepreneurial orientations from individuals and markets across multiple countries. However, studies often lack a clear focus on entrepreneurial elements, particularly in the post-internationalization phase (Baier-Fuentes et al., 2021; Fakhreldin, 2021; Oviatt & McDougall, 1994; Simba, 2015; Thurner et al., 2015; Velt et al., 2018).

Networking assumes a pivotal role within IB theories, as the internationalization process manifests as a networking phenomenon, indicating that “a firm’s problems and opportunities in international business are becoming less a matter of country-specificity and more one of relationship-specificity and network-specificity” (Johanson & Vahlne, 2009, p. 1426).

This process operates through collaborations and partnerships across domestic and foreign markets, involving multiple stakeholders and extending beyond final products and markets to encompass the entire value chain across various industries (Baier-Fuentes et al., 2021; Magni, Chierici, Fait, & Lefebvre, 2022; Odei & Stejskal, 2020; Ratten, 2021).

Ecosystems are recognized as a potential source of competitive advantage in the internationalization process, despite inherent challenges such as scalability issues due to inadequate local infrastructure or pivotal local actors/assets, difficulties in international ecosystem integration, and a failure to adapt to standardized ecosystem models. Further obstacles include barriers to reconfiguration, ambiguity regarding key ecosystem characteristics, and overall challenges in coordination and control. Moreover, a lack of clear guidelines for public policy further complicates the scenario (Bradley et al., 2019; Li, Chen, Yi, Mao, & Liao, 2019; Nambisan et al., 2019; Rong et al., 2022; Tatarinov, Ambos, & Tschang, 2022; Theodoraki & Catanzaro, 2021; Velt et al., 2018).

The IB, entrepreneurship, and innovation literature have introduced the concept of the internationalization process as a sub-ecosystem, termed internationalization support ecosystem. These ecosystems, encompassing public and private actors organized at the regional level, are aimed at facilitating international integration through effective internationalization strategies (Johnson et al., 2019; Luo, 2021; Theodoraki & Catanzaro, 2021). However, research on INT-Es remains at a nascent stage, lacking an in-depth understanding of their influence on the internationalization process, presenting an inadequate dimensioning of international networking configurations and limited insights into complex actors and processes such as start-ups, born globals, early internationalization, and the integration challenges posed by ecosystems (Knight & Liesch, 2016; Rasmussen & Petersen, 2017; Rong et al., 2015; Yonatan, 2017).

Thus, we propose the conceptualization of INT-Es as contemporary and dynamic BEs, characterized by their emphasis on open innovation, collaborative work practices, and technology-driven business models. At their core, these ecosystems prioritize internationalization as the key element shaping their nature. The transnational nature of internationalization is central to the model, signifying a fundamental shift

toward global collaboration and market engagement. Organizations within the ecosystem actively participate in cross-border activities, leveraging innovation and collaborative strategies to navigate the complexities of the global business landscape.

2. METHODOLOGY

The current study is exploratory and descriptive in nature, as it analyses the concept, structure, and dynamics of the INT-E, thereby describing facts and phenomena of reality to develop a conceptual framework that can explain its functioning, involving various stakeholders (Myers, 2013; Santangelo & Meyer, 2017; Saunders, Lewis, & Thornhill, 2016).

The work was divided into two stages: a systematic literature review—SLR (Denyer & Tranfield, 2009; Tranfield, Denyer, & Smart, 2003) and a thematic analysis (Boyatzis, 1998; Guest et al., 2012), to achieve a theoretical saturation capable of “linking similar concepts and processes in different stances, experiences, contexts and events” (Morse, 2018, p. 1398), providing collective insights and shared knowledge through theoretical synthesis in a pragmatic way (Van Aken, 2004).

The SLR was carried out to identify in the current literature the different types of research and approaches taken to understand internationalization from an ecosystemic perspective, in order to determine the dynamics, actors and specificities of such ecosystems. A search by topic was conducted on Science Direct, Scopus and Web of Science from June, 2022 to January, 2023. Table 1 presents the justifications for the research keywords.

The systematic review began by examining the abstracts of 134 articles, identified through a targeted search in Science Direct, Scopus, and Web of Science databases. We employed specific search criteria, focusing on titles, abstracts, and keywords with terms like “Internationalization AND Ecosystem,” “Internationalization” AND ‘Triple Helix’”, and “Internationalization AND ‘Quadruple Helix’”.

This process was restricted to peer-reviewed articles within specified subject areas like Business Management, Accounting, Economics, and Management, without constraints on publication year or language. Following the initial screening, 67 articles were subjected to a comprehensive full-text analysis, guided

Table 1. Keyword justification.

Keyword	Theoretical Justification
Ecosystem	The term “ecosystem” is pivotal in understanding internationalization, capturing dynamics across industries (Henn et al., 2022; Luo, 2021; Zahoor et al., 2020). It fosters competitiveness and socio-economic development (Roig et al., 2020). Ecosystems provide a comprehensive framework for global processes (Moore, 1993; Tippmann et al., 2023).
Internationalization	“Internationalization” stands as the foundational concept of international business theory, signifying expansion into global markets (Knight & Liesch, 2016; Wentrup et al., 2020; Zahoor et al., 2020). It spans diverse entities, from SMEs to MNEs, underpinning complex ecosystems (Johnson et al., 2019). These global business ecosystems evolve into networks for worldwide goods and services production and distribution (Johnson et al., 2019; Luo, 2021).
Triple and Quadruple Helix	The “Triple and Quadruple Helix” concept is essential for understanding collaboration dynamics in the market from an ecosystemic perspective (Johnson et al., 2019; Leydesdorff, 2012). It drives internationalization, aiding to identify pivotal changes (Distefano, Gambillara, & Di Minin, 2016). Triple helix collaboration stimulates early entry strategies (Baier-Fuentes et al., 2021). The Triple Helix Model is crucial for successful entrepreneurship and internationalization (Sørensen & Hu, 2014; Stolze & Sailer, 2021).

by our qualitative inclusion criteria that aimed at uncovering articles that delved into the nuances of internationalization and ecosystems.

This methodology was designed to unearth patterns, trends, and literature gaps, ultimately categorizing 67 articles for an in-depth review and thematic analysis. This strategic approach aimed at building a robust foundation for identifying and understanding the critical elements shaping internationalization processes and theories (Costa et al., 2022; Denyer & Tranfield, 2009; Tranfield et al., 2003), and focused on the following text elements:

- objectives;
- key theoretical background;
- geography and universe;
- main results;
- results discussion;
- contributions;
- e) limitations;
- recommendations for further research.

This specific grouping sought to present a narrative synthesis in order to identify key elements behind a convoluted and fragmented body of literature, lending coherence to the data (Guest et al., 2012; Zahoor et al., 2020). The structured research protocol is displayed in Table 2.

The thematic analysis was conducted using a framework adapted from Boyatzis (1998) and Gest et al. (2012), which involved several key steps. Initial-

ly, the dataset was thoroughly reviewed for the researchers to gain familiarity with the content. Subsequently, coding was applied to capture the essence of the narratives within the data. This process facilitated the identification of emergent themes, contributing to a comprehensive thematic exploration. Ultimately, this approach led to the development of the INT-E framework. By following a systematic methodology and integrating theoretical and empirical insights, the study’s relevance and applicability in the field of IB research were enhanced, aligning with the recommendations of Wickert, Post, Doh, Prescott and Prencipe (2021).

3. RESULTS

Following Costa Jr. et al.’s (2023a, 2023b) research, through a thematic analysis (Boyatzis, 1998; Guest et al., 2012), the current article identified four macro-categories within the IB literature that is related to INT-Es: Business, Entrepreneurial, Innovation, and Platform Ecosystems. These constructs were built from 13 meso-categories and 41 micro-categories. Each of the macro-categories and their respective meso and micro-categories are presented in Tables 3, 4, 5, and 6, alongside an explanation of their effect on the internationalization phenomenon.

Table 3 provides a structured analysis of the macro, meso, and micro-categories pertaining to BEs and their impact on internationalization. It synthesizes key theoretical perspectives found in the systematic review,

Table 2. Research Protocol.

Protocol	Details
Search Period	June 2022 to January 2023
Database	Science Direct Scopus Web of Science
Search criteria	Article title Abstract Keywords
Keywords	Internationalization AND Ecosystem Internationalization AND Triple Helix Internationalization AND Quadruple Helix
Subject Area	Business Management and Accounting (Scopus and ScienceDirect) Economics, Econometrics and Finance (Scopus and ScienceDirect) Management (Web of Science) Economics (Web of Science)
Main quality assessment criteria	Peer Reviewed Articles only
Year	Open
Language	Any
Number of articles analyzed	134
Scope of Analysis	Abstracts only
Qualitative inclusion criteria	Articles focusing on internationalization and ecosystems, exploring, directly or indirectly, the internationalization conditions, drivers, strategies, operations or theoretical foundations.
Number of articles analyzed	67
Scope of Analysis	Full text
Data extracted	Objectives Key theoretical background Geography and universe Main results Results discussion Contributions Limitations Recommendations for further research

offering insights into the complex interplay between different factors and the internationalization process.

Firstly, the concept of strategic advantage emerges as a central theme. The resource-based view (RBV) underscores the importance of a firm's unique resources and their effectiveness in international markets (e.g., Rodríguez-Gulías, Fernández-López, & Ro-deiro-Pazos, 2016; Zahoor et al., 2020). Furthermore, strategic alliances (e.g., Siripitakchai, Miyazaki, & Ho,

2015) and knowledge sharing (e.g., Magni et al., 2022) within the broader BE act as catalysts, strengthening a firm's competitive edge on the global stage; whilst dynamic capabilities allow firms to adjust their strategies and operations in response to the ever-evolving international business landscape (e.g., Nambisan et al., 2019; Santangelo & Meyer, 2017; Simba, 2015).

Secondly, the results emphasize the delicate balance between efficiency and innovation required for

Table 3. Construct 1: Business Ecosystems.

Macro-category	Meso- category	Micro-categories	Effect on internationalization
Business Ecosystem	Business strategy	Resource-Based View	The RBV view may present a framework to analyze the potential for business internationalization based on their resources and how they perform internationally.
		Transactional Costs	Internationalization strategies and coordination of imperfect markets may reduce transaction costs.
		International Ambidexterity	Internationalization demands both an exploratory and exploitative process, focused on innovation and efficiency.
		Dynamic Capabilities	Dynamic capabilities are necessary to address rapidly-changing international environments.
		Strategic Alliances	Strategic collaborations tend to facilitate firms and ecosystems internationalization by optimizing competitive advantage and reducing transactional costs.
		Knowledge-based View	Knowledge plays a key role for both firms and ecosystems in the internationalization process.
	Clusters	Regional Clusters	Clusters create ecosystemic conditions that may favor internationalization and global competitive advantage.
		Public Policies	Cluster formation may have a positive correlation with internationalization.
	Networking, supply chain and knowledge sharing	Knowledge Transfer	Internationalization requires knowledge transmission and transference.
		Supply Chain Management	Close linked supply chains may affect the internationalization process.
	Foreign Direct Investment	Cross-Border Venture Capital Investments	Access to cross-border venture capital investment favors the internationalization process.
		Mergers & Acquisitions	M&A may act as internationalization strategies for companies.

Source: Based on Costa Jr., Calazans and Araújo (2023a, 2023b).

successful internationalization. Internationalization strategies themselves can be drivers of efficiency by reducing transaction costs associated with operating in imperfect markets. However, firms must also prioritize exploration and innovation to ensure long-term success (e.g., Hult et al., 2020; Luo, 2021; Thurner et al., 2015). This concept of international ambidexterity (e.g., Buyukbalci & Dulger, 2022) highlights the need to maintain a balance between exploiting existing resources and capabilities for efficiency, while also exploring new opportunities and fostering innovation.

Furthermore, collaboration within the BE serves as a key accelerator for internationalization. Regional clusters provide a supportive environment by fos-

tering networking, knowledge sharing, and efficient supply chain management (e.g., Buyukbalci & Dulger, 2022; Nambisan et al., 2019; Santangelo & Meyer, 2017). Additionally, supportive government policies can further incentivize cluster formation and international expansion efforts. Lastly, the importance of knowledge transfer within the firm and across the ecosystem is paramount to ensure successful expansion into new markets (e.g., Johnson et al., 2019; Kuberska & Mackiewicz, 2022; Parente et al., 2018; Ratten, 2021).

Table 4 presents a structured analysis of the macro-, meso-, and micro-categories pertaining to EEs and their impact on internationalization, highlighting

Table 4. Construct 2: Entrepreneurial Ecosystems.

Macro-category	Meso-category	Micro-categories	Effect on internationalization
Entrepreneurial Ecosystem	Entrepreneurial activity	Local Support Ecosystems	Local networks go global not as a single firm but as a system.
		Economic Resilience	Economic resilience may make the internationalization process more efficient.
		Entrepreneurship Policies	Entrepreneurial business creation may facilitate the internationalization process.
	International Entrepreneurship	Mixed Embeddedness Theory	Migrant entrepreneurship may have an impact on the internationalization of organizations.
		Ecosystem Integration	Ecosystem integration may facilitate internationalization.
		Transnational Entrepreneurship	Transnational entrepreneurship may affect internationalization on many levels, such as entry strategies and resource allocation.
	Academic Entrepreneurship	Entrepreneurial Education	Entrepreneurial education may focus on internationalization.
		Technology-Based University Spin-Offs	Research may involve several universities across different countries, increasing the possibility of international commercial applications.
		Business Incubators and Accelerators	Incubation and acceleration may focus on internationalization at many different levels.
	Entrepreneurial organizations	Small and Medium Organizations	Internationalization is not exclusive to large organizations; SMEs must also seek to internationalize.
		Startups and Scaleups	Their business models favor internationalization at many different levels.
		Born Global Firms	Internationalization is part of the company strategy since inception and occurs more rapidly.
		Multinational Enterprises	They foster global economic integration, drive cross-border trade, and influence foreign markets through investments, trade relationships, and the transfer of technology and expertise.

Source: Based on Costa Jr., Calazans and Araújo (2023a, 2023b).

the collective efforts of a network of interconnected actors within the ecosystem.

The concept of local-go-global emerges as a key theme. Local EEs, characterized by robust local networks, can collectively establish a global presence (e.g., Odei & Stejskal, 2020; Prokopenko et al., 2014; Roig et al., 2020; Covi, 2016). This underscores the importance of collaboration and knowledge sharing within the ecosystem (e.g., Ray et al., 2020; Velt et al., 2018). Furthermore, a resilient and supportive ecosystem can act as a catalyst for internationalization by fostering economic resilience and advocating for

government policies that incentivize international expansion (e.g., Ikram et al., 2018; Rong et al., 2015).

Diversity serves as another crucial driver of internationalization within these ecosystems. International entrepreneurs, including migrant entrepreneurs, bring a wealth of heterogeneous perspectives and experiences that can significantly impact how organizations approach internationalization strategies (e.g., Thurner et al., 2015; Wentrup et al., 2020). This concept extends to the importance of ecosystem integration, where effective collaboration between diverse actors fosters a more favorable environment

for internationalization, with due consideration for transnational factors (e.g., Henn et al., 2022; Musso & Francioni, 2015; Tatarinov et al., 2022).

Education plays a critical role in equipping ventures for international success. By integrating internationalization into entrepreneurial education programs, universities can empower startups with the knowledge and skills necessary to navigate the complexities of global expansion. This focus on internationalization extends to university spin-offs, where global research collaborations can increase the potential for commercially viable international applications of their research endeavors (e.g., Henn et al., 2022; Prokopenko et al., 2014).

The analysis emphasizes that internationalization is not limited by firm size. Business incubators and accelerators can play a vital role in supporting the internationalization efforts of SMEs (e.g., Kolagar et al.,

2022; Zahoor et al., 2020). Furthermore, the inherently international-friendly nature of the business models employed by startups and scaleups positions them as leaders in this domain (e.g., Tippmann et al., 2023). Born global firms, designed with internationalization as a core strategic imperative from the outset, take this concept a step further by exhibiting a more focused and accelerated approach to global expansion (e.g., Ratten, 2021; Simba, 2015).

Table 5 displays a structured analysis of the macro-, meso-, and micro-categories pertaining to IEs and their impact on internationalization from the Triple and Quadruple Helix perspective.

The analysis highlights the importance of collaboration within IEs for internationalization. University-industry collaboration, fostered by the Triple and Quadruple Helix models, can benefit both parties by facilitating knowledge exchange and joint ven-

Table 5. Construct 3: Innovation Ecosystems.

Macro-category	Meso-category	Micro-categories	Effect on internationalization
Innovation Ecosystems	Triple and Quadruple Helix	University-Industry Collaboration	Collaborative work may support the internationalization of both industries and universities.
		Innovation Networks	Innovation networks contribute to the development of competitive advantage that may support internationalization.
		Entrepreneurial Discovery Process	EDP is a factor that may directly influence internationalization through knowledge acquisition and sharing.
		Innovation Policies	Innovation policies may affect internationalization on many levels, such as distribution channels, product development and networking strategies.
	Innovation Strategy	Open Innovation	Open innovation may facilitate changes that affect internationalization such as distribution channels, product development and networking strategies.
		Smart Specialization	These areas may generate more competitive organizations at an international level.
		National Innovative Systems	Such linkages may facilitate the internationalization of specific companies or even educational institutions.
	Innovative Organizations	Research Technology Organizations	Technology development plays a strong role in companies' internationalization.
		Higher Education Institutions' 3rd Mission	It is possible to incorporate an internationalization drive as part of the 3rd mission.

Source: Based on Costa Jr., Calazans and Araújo (2023a, 2023b).

tures that support international expansion (e.g., Baier-Fuentes et al., 2021; Sooreea et al., 2018; Stolze & Sailer, 2021). Similarly, strong innovation networks contribute to the development of a competitive advantage, a key factor for successful internationalization (e.g., Ikram et al., 2018; Sørensen & Hu, 2014). Moreover, the entrepreneurial discovery process (EDP) emerges as a significant driver of internationalization. By fostering knowledge acquisition and sharing within the ecosystem, the EDP equips firms with the capabilities necessary to navigate the complexities of global markets, with technology as an internationalization driver (Johnson et al., 2019; Santoro, Mazzoleni, Quaglia, & Solima, 2021).

As with the EE, supportive government innovation policies can significantly impact internationalization on multiple levels, influencing distribution channels, product development and shaping networking strategies. Additionally, policies promoting Open Innovation within the ecosystem can facilitate changes that enhance internationalization efforts (e.g., Prokopenko et al., 2014; Van Schijndel, 2019).

The concept of smart specialization highlights the importance of focusing resources on specific areas of innovation with high international competitiveness. This strategy fosters the development of organizations with a stronger competitive edge in the global marketplace (e.g., Distefano et al., 2016; Johnson

et al., 2019). Likewise, robust national innovation systems, characterized by strong linkages between actors, can facilitate the internationalization of specific companies or even educational institutions focusing on knowledge transfer and social impact. This emphasizes the significance of a supportive national environment for international expansion (e.g., Santoro et al., 2021; Sharif & Baark, 2011).

Table 6 presents a structured analysis of the macro-, meso-, and micro-categories pertaining to PEs and their impact on internationalization, highlighting the convergence of digital technologies, platform-based business models, and a globalized digital economy within the internationalization phenomenon.

The digital economy is inherently more global and integrated than traditional economies. This interconnectedness creates a fertile ground for internationalization, as platforms and marketplaces can facilitate access to a wider customer base and resources across geographical boundaries (e.g., Cha et al., 2023; Buyukbalci & Dulger, 2022). Digital transformation, encompassing changes in customer service, distribution channels, market penetration strategies as well as digital servitisation (e.g., Ciasullo et al., 2022; Ferreira et al., 2023; Kolagar et al., 2022) significantly impacts various aspects of internationalization, enhancing companies' efficiency and customer engagement on a global scale.

Table 6. Construct 4: Platform Ecosystems.

Macro-category	Meso-category	Micro-categories	Effect on internationalization
Platform Ecosystems	Digital Transition and Digitization	Digital Servitisation	Service-oriented organizations are more capable of internationalizing and competing globally.
		Digital Transformation	Digital transition affects many aspects of internationalization such as customer service, distribution channels and market penetration.
		Digital Economy	Digital economies are more global and integrated.
	Digital Ecosystems	E-Commerce and E-Marketing	E-commerce and e-marketing may be a key strategy for companies internationalization.
		Omnichannel Strategy	The integration may occur at an international level.
		Digital Business Models	Digital business models favor value creation at an international level.
		Enabling Technologies	Advanced technologies favor business internationalization.

Source: Based on Costa Jr., Calazans and Araújo (2023a, 2023b).

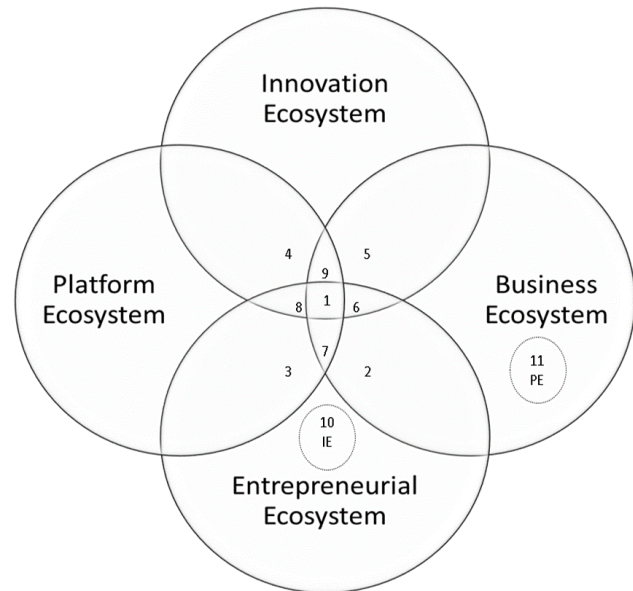
Furthermore, digital business models, designed for the interconnected nature of the digital environment, are inherently more suited for internationalization by prioritizing value creation on a global scale, leveraging economies of scale and network effects to maximize efficiency and reach (e.g., Luo, 2021; Zalan, 2018) whilst exploiting the use of advanced technologies such as cloud computing, big data analytics, and artificial intelligence (AI), playing a crucial role in facilitating business internationalization (e.g., Costa & Castro, 2021; De Cock et al., 2021).

The research results point to an INT-E framework encompassing four interrelated ecosystems concepts:

- Business Ecosystems (the economic community supported by a foundation of collaborating organizations and individuals including traditional business models and industries, MNEs, and clusters);
- Entrepreneurial Ecosystems (specialized BEs focused on the creation of innovative and high-growth new ventures, startups, scaleups and other forms of non-traditional business models);
- Innovation Ecosystem (business and social ecosystems that involve actors beyond the economic sphere, focused on knowledge creation and exchange);
- Platform Ecosystem (the digital BE, characterized by high technology, knowledge transfer and collaboration).

All those concepts are interrelated to some degree and also focus on the idea of internationalization as a necessary strategy for survival and growth. Thus, it is possible to argue that the concept of INT-Es incorporates elements of all other ecosystems analyzed, being a central connective idea. Additionally, based on the environment characteristics and interrelation amongst actors, every ecosystem is unique. Nonetheless, based on the common characteristics found in the concepts of the different ecosystems, it is also possible to suggest different types of ecosystemic arrangements, all related to the internationalization process in a distinct way, as expressed in Figure 1.

The integration seen in Figure 1 contributes to the intricate structure of an INT-E. Business Ecosystems form the economic foundation, fostering collaboration amongst diverse entities, including traditional industries, multinational enterprises, and clusters. Entrepreneurial Ecosystems focus on innovation and high-growth ventures, injecting dynamism into the ecosystem by nurturing startups and non-traditional



Source: Based on Costa Jr., Calazans and Araújo (2023a, 2023b).

Figure 1. Internationalization framework—key organizations per node.

business models. Innovation Ecosystems broaden the perspective beyond the economic sphere, emphasizing knowledge creation and exchange, which are essential for fostering adaptability and competitiveness. Lastly, Platform Ecosystems, with their digital focus, facilitate advanced technology, knowledge transfer, and collaboration, providing a transformative layer to the Internationalization Ecosystem. Together, these interrelated ecosystems create a synergistic environment, wherein business, entrepreneurial, innovative, and digital dimensions harmonize to shape the complexities of international business interactions and expansion, each with specific characteristics, but prone to rapid transformation.

4. DISCUSSION

We have proposed the concept of INT-Es as contemporary and dynamic business frameworks that prioritize open innovation, collaborative work practices, and technology-driven business models. These ecosystems integrate various elements from business, entrepreneurial, innovation, and PEs into a concise framework (see Figure 1 and Tables 3, 4, 5, 6 and 7). At their core, they emphasize internationalization as the defining element shaping their nature,

Table 7. Ecosystem Dynamics.

Int.	Sets	Type of Ecosystem
1	$BE \cap EE \cap IE \cap PE$	Core Internationalization Ecosystem Model — Modern and dynamic ecosystems, based on open innovation, collaborative work and technology driven business models. Internationalization has become the most essential aspect of the model's nature, as it is essentially transnational.
2	$BE \cap EE$	MNE/SME Integration Ecosystem — Traditional and Innovative business working in partnership for open innovation to address specific industry problems. Internationalization occurs mainly as a secondary factor.
3	$EE \cap PE$	New Digital Business Ecosystem — Disruptive digital business models, working in collaboration through platforms. Internationalization is a key aspect of its process.
4	$IE \cap PE$	Open Digital Innovation Ecosystem — Higher education institutions (HEIs), spinoffs and other forms of organizations born and bred to produce disruptive business models in partnership with entrepreneurial universities and other supporting organizations. Internationalization is a key aspect of its process.
5	$BE \cap IE$	Triple Helix (TH) Model and Variants Ecosystem — Traditional TH Model, internationalization is not a primary concern, but growing in importance.
6	$BE \cap EE \cap IE$	TH Model and Variants Ecosystem (focused on new business models) — Traditional TH Model and its variants, internationalization has become a central element.
7	$BE \cap EE \cap PE$	Digital Business Ecosystem (focused on digitization and digital transition) — Startups and scaleups working in partnership with traditional investors seeking disruptive business models. Internationalization is a central aspect of its ecosystem dynamics.
8	$EE \cap IE \cap PE$	Digital TH Model and its Variants Ecosystem — HEIs, spinoffs, startups and scaleups, working within disruptive clusters of SMEs and/or platforms. Internationalization is a central aspect of its ecosystem.
9	$BE \cap IE \cap PE$	Digital TH Model and its Variants Ecosystem (focused on traditional business models) — HEIs, spinoffs, startups and scaleups working within clusters of traditional business. Internationalization may occur indirectly, but it is a central aspect of its ecosystem.
10	$EE \cap IE$	Digital Incubation/Acceleration Ecosystem — Highly open and innovative organizations, working in partnership with local and international ecosystems. Internationalization is perceived as central, but there is a lack of studies on its dynamics. This is the cradle of the born global firm.
11	$BE \cap PE$	Digitalization Ecosystem — Traditional business models undergoing digital transition and digitization or integration into larger platforms. Internationalization is encouraged as a core strategy.

Source: Based on Costa Jr., Calazans and Araújo (2023a, 2023b).

reflecting a fundamental shift towards global collaboration and market engagement. Organizations within these ecosystems actively participate in cross-border activities, leveraging innovation and collaborative strategies to navigate the complexities of the global business landscape while fostering integration across diverse ecosystem domains.

The core INT-E framework proposed in the study encapsulates a future-oriented and adaptive approach, acknowledging that thriving in the contemporary business environment demands a strategic and integrated focus on internationalization with an ecosystemic perspective. Its originality lies in the specific focus on BE, EE, IE, and PE in relation to international-

ization, offering a unique perspective. Whilst ecosystem research already exists in IB theory, albeit in early stages, the framework's specific emphasis on how each ecosystem shapes internationalization may be a valuable contribution to guide future enquiries.

The integration of IB theory with the concept of INT-Es offers valuable insights for both theory development and empirical investigation. BEs, encompassing elements like resource-based views, strategic alliances, and knowledge transfer, play crucial roles in facilitating internationalization efforts by reducing transactional costs and fostering innovation. Similarly, EEs contribute significantly to internationalization through local support networks, academic entrepreneurship,

and the rapid internationalization strategies of born global firms. IEs, characterized by university-industry collaboration and open innovation, promote the development of competitive advantage and facilitate internationalization at both organizational and national levels. Likewise, PEs, driven by digital transition and e-commerce strategies, enable businesses to compete globally and create value internationally. These insights provide a comprehensive framework for understanding the complex dynamics of internationalization within diverse ecosystem contexts, thus advancing the field of IB theory and practice.

Conceptualizing the INT-E as a complete system prompts a call for future research on ecosystem amalgamation and replication. This approach offers a fresh perspective currently underrepresented in IB literature. By studying how IEs can be combined and successfully reproduced, researchers can lay the groundwork for a prospective theoretical framework in IB.

When placing the concept of INT-E as a core and connective element within other ecosystem concepts, the authors argue that internationalization may occur in different ways and scenarios, but the INT-E, the environment that supports and promotes international expansion of its actors on many different levels, demands key characteristics of all four ecosystem concepts presented.

Thus, the framework proposed presents an integration model of the different ecosystems. It is important to note that the intersections represented in the Venn Diagram (Figure 1) only point to the links with the most prominent interactions, seeking to explain the subtle differences that are found in different ecosystems. However, each ecosystem concept presented carries common characteristics and goals, and they are all connected through specific processes and initiatives such as networking, knowledge sharing, and internationalization strategies. Further details for each intersection are presented in Table 7.

Table 7 provides a systematic framework that categorizes different ecosystemic intersections within the INT-E framework, offering insights into the varying characteristics and organizational dynamics associated with international business expansion. Each intersection represents a distinct configuration of business entities, ranging from traditional models to disruptive digital ecosystems, and highlights the role of internationalization within them.

From an IB theory perspective, this table offers a typology of ecosystems categorized by the intersection of BEs, EEs, IEs, and PEs. The core analytical lens here is the prevalence of internationalization within each model. The framework reveals two distinct categories: ecosystems where internationalization is central (sets 1, 3, 4, 7, 8, 10, 11) and those where it holds a seemingly secondary, albeit growing, importance (sets 2, 5, 6, 9). Interestingly, some models prioritize open innovation and collaboration for international success (sets 1, 3, 4, 8, 10), reflecting the rising importance of knowledge exchange across borders in the current globalized environment. Others emphasize traditional and innovative business integration to address industry challenges (sets 2, 5, 6, 9). Notably, digital transformation emerges as a key driver in sets 7 and 11, highlighting the increasing influence of digital platforms on internationalization strategies.

The type of actors involved also varies across models. Sets 4, 8, 9, and 10 showcase the involvement of HEIs and spin-off companies, potentially fostering research-driven internationalization. Likewise, sets 7 and 8 feature startups and scale-up companies, indicative of a more entrepreneurial and agile approach to global markets. Interestingly, set 2 focuses on the collaboration between MNEs and SMEs, suggesting a model that leverages established networks for internationalization. Nonetheless, given the dynamic nature of such framework, all major actors may be present across the model.

The INT-E framework brings some original thought to IB theory and also theoretical contributions. The framework classifies ecosystems based on the intersection of BE, EE, IE, and PE. This may help scholars compare and contrast different ecosystem models and their impact on internationalization. Moreover, by highlighting the centrality or secondary nature of the internationalization phenomenon in each model, the framework encourages research on how ecosystem dynamics influence firms' internationalization goals. Finally, linking specific actor types (HEIs, startups, MNEs) to different ecosystem models provides insights into how different players navigate internationalization within each ecosystem.

Lastly, we have outlined a comprehensive research agenda for scholars investigating INT-Es in Table 8.

Key areas for theoretical development, empirical research, and exploration of specific challeng-

Table 8. Internationalization Ecosystem Research Agenda.

Area	Research Questions
Theoretical Development	<p>How do INT-Es differ from traditional business ecosystems?</p> <p>What role do open innovation, collaboration, and technology play in INT-Es?</p> <p>How do INT-Es across industries and regions compare?</p> <p>How do INT-Es impact firm internationalization (born globals, emerging players, collaboration)?</p>
Empirical Research	<p>Conduct case studies of specific IEs to understand their dynamics and impact.</p> <p>Develop quantitative studies to identify key INT-Es characteristics and their link to internationalization success.</p> <p>Conduct global comparative research on INT-Es across different contexts.</p>
Specific Challenges	<p>How can INT-Es be scaled across diverse geographic locations?</p> <p>How do startups, born globals, and other emerging players function within INT-Es?</p> <p>How do firms navigate collaboration, innovation, and value creation post-entry within INT-Es? How effective are Internationalization Support Ecosystems (ISES) in fostering internationalization as opposed to other types of ecosystems?</p>
Policy Implications	<p>How can government policies support the development and growth of INT-Es?</p> <p>What are effective governance models for INT-Es to ensure collaboration, competition, and sustainability?</p>

es faced by IEs were identified. Additionally, the agenda addresses potential policy implications for fostering the growth and effectiveness of IEs in the global marketplace. By focusing on these research questions, we aim to develop a deeper understanding of IEs and their impact on firm internationalization strategies.

In terms of practical implications, this study furnishes a structured framework through which entities can position themselves predicated on internal goals, operational characteristics, and interconnectedness. Notably beneficial for organizations focused on export-oriented businesses, internationalization promotion, or FDI attraction as argued by Costa Jr. (2023), this framework may facilitate comparative evaluations of performance across various strata of ecosystemic interactions. In doing so, these organizations can discern unidentified collaboration opportunities and avenues for collaboration, thereby augmenting the overall robustness of the BE.

4.1. Future investigations and research limitations

Future enquiries ought to be directed towards underexplored areas not addressed in this study (see Table 8). The conceptual framework introduced herein

engenders novel avenues for future research objectives, particularly within the domain of the TH model and its variations. One avenue for further investigation is a detailed analysis of how different helices interact to drive internationalization. Additionally, studying diverse BEs could provide valuable insights into their internationalization paths, strengthening the framework presented in this article.

The present study acknowledges some limitations that warrant consideration. Firstly, the selection of studies for the SLR was subject to a selection based on qualitative criteria (see Table 2), potentially introducing bias inherent to the authors' judgment. Moreover, the diverse nature of the literature reviewed, lacking an integrated theoretical standpoint, may introduce potential inconsistencies and lack of clear definitions in the analysis. Such barriers could be addressed through further research to establish a unified theoretical framework.

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