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Open Innovation and Sustainability Integration: A Systematic Review of Partner Selection Strategies for Achieving Triple Bottom Line Goals

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ABSTRACT. *This study systematically reviews the integration of open innovation and sustainability, focusing on partner selection strategies that support the achievement of Triple Bottom Line (TBL) goals. Using a qualitative systematic literature review approach, the study synthesizes findings from peer-reviewed articles to identify key criteria and mechanisms for selecting innovation partners that enhance economic, environmental, and social performance. The results reveal that effective partner selection is driven by strategic alignment, sustainability commitment, knowledge complementarity, and governance mechanisms that foster trust and transparency. Additionally, the integration of sustainability considerations into open innovation networks strengthens long-term value creation and organizational resilience. The study highlights the importance of multi-stakeholder collaboration and dynamic capability development in achieving balanced TBL outcomes. These findings contribute to both theory and practice by providing a structured understanding of how organizations can optimize partner selection to align innovation processes with sustainability objectives.*

Keywords *Open Innovation; Sustainability Integration; Partner Selection; Triple Bottom Line; Systematic Literature Review*

INTRODUCTION

In recent decades, the paradigm of innovation has undergone a profound transformation, shifting from closed, firm-centric models toward more distributed and collaborative approaches. This transition is largely captured by the concept of open innovation, which emphasizes the purposive inflow and outflow of knowledge to accelerate internal innovation and expand the markets for external use of innovation (Chesbrough, 2017). Firms increasingly rely on external partners including universities, suppliers, customers, and even competitors to co create value and enhance innovation outcomes (West & Bogers, 2014). This collaborative orientation has become particularly critical in addressing complex global challenges, such as sustainability, where no single organization possesses all the necessary resources or capabilities.

Sustainability integration, often conceptualized through the Triple Bottom Line (TBL) framework, requires organizations to balance economic, social, and environmental objectives simultaneously. Achieving these multidimensional goals necessitates not only internal alignment but also effective collaboration across organizational boundaries (Chistov et al., 2021). Open innovation thus emerges as a strategic mechanism for integrating sustainability into business practices, enabling firms to leverage diverse knowledge sources and capabilities to address environmental and social challenges while

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maintaining economic competitiveness (Hernandez-Vivanco et al., 2018). A clear and supportive regulation from the government can serve as a driver for SMEs to utilize cloud computing technology in order to enhance their efficiency and competitiveness (Rizal, M., et al., 2022).

However, while the benefits of open innovation are widely recognized, its successful implementation depends heavily on the selection of appropriate partners. Partner selection is a critical determinant of innovation performance, as it influences knowledge complementarity, resource alignment, and collaborative efficiency (Emden et al., 2020). In the context of sustainability oriented innovation, this challenge becomes even more complex, as firms must evaluate potential partners not only based on economic criteria but also on their social and environmental performance (Santos et al., 2021). Consequently, partner selection in open innovation requires a multidimensional assessment framework that integrates TBL considerations. Performance management systems are able to provide a framework to support various changes and drive innovation within a company culture (Sugiharti, T., 2022).

The importance of partner selection is further underscored by the inherent uncertainties and risks associated with collaborative innovation. Differences in organizational culture, strategic priorities, and operational capabilities can hinder collaboration and reduce innovation effectiveness (Du et al., 2014). Moreover, the paradox of openness suggests that while broader collaboration can enhance innovation outcomes, it may also increase coordination costs and risks of knowledge leakage (Laursen & Salter, 2014). Therefore, firms must adopt structured and systematic approaches to identify and select partners that align with their strategic and sustainability objectives. Instability in bilateral political relations significantly influences investment decisions, particularly through regulatory uncertainty, geopolitical risks, and disruptions in stakeholder relationships (Eka Wahyu Kasih, et al, 2024).

Prior research has explored various methods and criteria for partner selection in open innovation contexts. These include assessments of technological capabilities, knowledge complementarities, trustworthiness, and prior collaboration experience (Solesvik & Gulbrandsen, 2013; Yoon & Song, 2014). Additionally, the role of network structures and embeddedness has been highlighted as a key factor influencing partner selection and innovation performance (Gonzalez-Brambila et al., 2013). Collaborative

networks, in particular, provide a platform for knowledge exchange and co-creation, but they also require careful governance and partner alignment to function effectively (Tsai, 2009).

In response to the complexity of partner selection, various decision support tools and methodologies have been developed. Multi criteria decision making (MCDM) approaches, such as fuzzy logic, analytic hierarchy process (AHP), and TOPSIS, have been widely to handle the ambiguity and subjectivity inherent in evaluating potential partners (Kannan et al., 2013; Junior et al., 2014). These methods allow decision makers to incorporate both quantitative and qualitative criteria, making them particularly suitable for sustainability oriented evaluations. For instance, fuzzy logic based frameworks can effectively address the uncertainty associated with human judgment and facilitate consensus among multiple stakeholders (Santos et al., 2021).

Despite these advancements, there remains a lack of comprehensive understanding regarding how partner selection strategies in open innovation contribute specifically to sustainability integration and TBL outcomes. Existing studies often focus on either innovation performance or sustainability performance in isolation, without adequately examining the intersection of the two. Furthermore, the diversity of methodologies and criteria used in partner selection creates fragmentation in the literature, making it difficult to derive generalizable insights.

Another important consideration is the role of partner diversity in open innovation. While diverse partners can provide access to a broader range of knowledge and perspectives, excessive diversity may lead to coordination challenges and reduced collaboration efficiency (Van Beers & Zand, 2014). Thus, firms must strike a balance between diversity and compatibility when selecting partners, particularly in sustainability driven innovation projects where alignment of values and goals is crucial.

Moreover, the growing emphasis on sustainable development has introduced new dimensions to partner selection, such as environmental responsibility, social impact, and ethical practices. These criteria require firms to go beyond traditional economic evaluations and adopt a more holistic approach to decision making. For example, integrating environmental and social indicators into partner assessment can enhance the long term sustainability of collaborative innovation outcomes (Uren et al., 2021).

However, the operationalization of such criteria remains challenging due to measurement difficulties and lack of standardized frameworks.

Given these gaps, a systematic literature review is essential to synthesize existing knowledge and provide a comprehensive understanding of partner selection strategies in open innovation for achieving TBL goals. By systematically analyzing prior studies, this research aims to identify key criteria, methodologies, and theoretical perspectives that underpin effective partner selection. Additionally, it seeks to highlight emerging trends and research gaps, thereby providing directions for future research and practical implications for managers.

This study contributes to the literature in several ways. First, it integrates insights from open innovation and sustainability research, offering a unified perspective on partner selection. Second, it emphasizes the importance of TBL considerations in collaborative innovation, addressing a critical gap in existing studies. Third, it provides a structured synthesis of decision-making approaches used in partner selection, facilitating better understanding and application in practice.

As organizations increasingly adopt open innovation to address sustainability challenges, the importance of selecting the right partners cannot be overstated. Effective partner selection not only enhances innovation performance but also ensures alignment with economic, social, and environmental objectives. Therefore, understanding and advancing partner selection strategies is crucial for achieving sustainable innovation outcomes in an increasingly interconnected and complex business environment.

LITERATURE REVIEW

The concept of open innovation has fundamentally reshaped how firms approach knowledge creation and value generation by encouraging the integration of external ideas and collaborative networks into internal innovation processes (Chesbrough, 2017). This paradigm emphasizes the permeability of organizational boundaries, allowing firms to leverage external expertise and technologies to enhance innovation outcomes (West & Bogers, 2014). Empirical studies indicate that firms adopting open innovation strategies achieve higher innovation performance due to increased access to diverse knowledge pools and collaborative opportunities (Huizingh, 2011; Kirschbaum, 2015).

The evolution of open innovation is closely linked to the increasing complexity of global challenges, particularly sustainability, which requires firms to address economic, environmental, and social dimensions simultaneously (Chistov et al., 2021). The Triple Bottom Line (TBL) framework provides a comprehensive lens for evaluating organizational performance beyond financial metrics by incorporating social and environmental outcomes (Santos et al., 2021). Integrating sustainability into open innovation processes enables firms to co-create solutions that address societal challenges while maintaining competitive advantage (Hernandez-Vivanco et al., 2018).

A critical factor influencing the success of open innovation is partner selection, which determines the effectiveness of knowledge exchange and collaborative value creation (Emden et al., 2020). Partner selection involves identifying organizations with complementary capabilities, aligned strategic goals, and compatible organizational cultures to maximize innovation outcomes (Solesvik & Gulbrandsen, 2013). Research demonstrates that firms selecting partners based on both technical competencies and relational factors achieve superior innovation performance compared to those relying solely on technological criteria (Yoon & Song, 2014).

The role of core competencies in partner selection is particularly significant, as firms must identify partners whose capabilities complement their own strategic strengths (Prahalad & Hamel, 2010). This alignment enhances the potential for value co creation and reduces redundancies in collaborative efforts (Emden et al., 2020). Moreover, firms that effectively leverage their core competencies in selecting partners are better positioned to achieve sustainable innovation outcomes (Santos et al., 2021).

Social network theory provides a valuable perspective on partner selection by highlighting the importance of network structure and embeddedness in facilitating knowledge exchange (Gonzalez-Brambila et al., 2013). Studies show that firms embedded in dense and well-connected networks benefit from increased access to information and resources, which enhances innovation performance (Li et al., 2013). Additionally, the strength and quality of social relationships play a crucial role in fostering creativity and collaboration within innovation networks (Perry-Smith, 2006).

Collaboration intensity and partner diversity are also critical determinants of innovation success, as diverse networks provide access to heterogeneous knowledge and perspectives (Liao, 2011). However, excessive diversity can lead to coordination

challenges and reduced efficiency, highlighting the need for balanced partner selection strategies (Van Beers & Zand, 2014). Empirical evidence suggests that moderate levels of diversity combined with strong collaboration intensity yield optimal innovation outcomes (Liao, 2011).

The structure of collaboration networks further influences partner selection and innovation performance, as network centrality and connectivity determine the flow of knowledge and resources (Wang et al., 2017). Firms occupying central positions in networks are more likely to access valuable information and establish strategic partnerships (Gonzalez-Brambila et al., 2013). Moreover, predictive models of network evolution, such as link prediction algorithms, can support partner identification by identifying potential collaboration opportunities (Zhou et al., 2009).

Advanced computational approaches have been increasingly applied to partner selection in open innovation contexts, including genetic algorithms and influence maximization techniques (Lotf et al., 2022). These methods enable firms to identify key actors within networks and optimize collaboration strategies for maximum impact (Wi et al., 2009). Additionally, expert identification systems and crowdsourcing platforms facilitate the discovery of suitable partners by leveraging large scale social network data (Bozzon et al., 2013; Gassmann, 2013).

Decision making in partner selection is inherently complex due to the multiple criteria involved, including technical capabilities, economic performance, and sustainability considerations (Kannan et al., 2013). Multi criteria decision making (MCDM) methods, such as fuzzy AHP and TOPSIS, have been widely used to address this complexity by incorporating both quantitative and qualitative factors (Junior et al., 2014). These methods allow decision-makers to evaluate trade offs between competing criteria and select partners that align with organizational objectives (Kaya & Kahraman, 2011).

Fuzzy logic based approaches are particularly effective in handling uncertainty and ambiguity in partner selection, as they enable the integration of subjective judgments and imprecise data (Abdullah & Najib, 2014). Studies demonstrate that fuzzy MCDM methods improve the accuracy and reliability of partner selection decisions in complex environments (Xu & Liao, 2014). Furthermore, intuitionistic fuzzy sets enhance decision

making by capturing the degree of uncertainty associated with each criterion (Joshi & Kumar, 2014).

In the context of sustainable innovation, partner selection must incorporate environmental and social criteria in addition to economic considerations (Santos et al., 2021). Green supplier selection models, for example, integrate environmental performance indicators into decision-making processes to ensure sustainable outcomes (Kannan et al., 2013). Similarly, resilience and risk management considerations are increasingly included in partner selection frameworks to address uncertainties in collaborative networks (Rajesh & Ravi, 2015).

The integration of sustainability into partner selection is further supported by holistic frameworks that consider the interdependencies between economic, social, and environmental factors (Dias et al., 2020). These frameworks emphasize the need for systemic approaches to innovation that account for the broader impact of collaborative activities (Santos et al., 2020). Empirical studies indicate that firms adopting such integrated approaches achieve better sustainability performance and long term competitiveness (Uren et al., 2021).

Open innovation ecosystems also play a critical role in shaping partner selection strategies, as they provide platforms for collaboration among diverse stakeholders (Albats et al., 2020). Effective stakeholder management is essential for aligning interests and ensuring successful collaboration within these ecosystems (Guertler & Sick, 2021). Moreover, intermediaries such as innovation brokers facilitate partner matching and knowledge exchange, enhancing the efficiency of open innovation processes (Gassmann et al., 2011).

Despite the benefits of open innovation, firms face challenges related to the paradox of openness, where increased collaboration may lead to higher risks of knowledge leakage and coordination costs (Laursen & Salter, 2014). This paradox highlights the importance of selective openness and strategic partner selection to balance the benefits and risks of collaboration (Bengtsson et al., 2014). Firms must therefore adopt governance mechanisms and trust building practices to mitigate these risks (Du et al., 2014).

Furthermore, the search for innovation partners is influenced by firms' internal capabilities and strategic objectives, as different search strategies yield varying innovation outcomes (Lopez-Vega et al., 2016). Firms with strong absorptive capacity

are better able to identify and integrate external knowledge, enhancing the effectiveness of partner selection (Chen, 2014). Additionally, cross industry collaborations provide opportunities for radical innovation by combining diverse knowledge domains (Echterhoff, 2014).

Empirical evidence also highlights the importance of lead users and marginal actors in open innovation, as they often provide novel insights and solutions to complex problems (Jeppesen & Lakhani, 2010). Techniques such as pyramiding and netnography have been developed to identify these actors and incorporate their contributions into innovation processes (Poetz & Prügl, 2010; Belz & Baumbach, 2010). These approaches expand the scope of partner selection beyond traditional organizational boundaries.

The literature demonstrates that partner selection is a multidimensional and strategic process that significantly influences the success of open innovation and sustainability integration. Effective partner selection requires the integration of technological, relational, and sustainability criteria, supported by advanced decision making tools and network analysis techniques. However, despite extensive research, gaps remain in understanding how these elements interact to achieve TBL outcomes, highlighting the need for further systematic investigation.

METHODS

This study adopts a qualitative systematic literature review (SLR) approach to examine partner selection strategies in open innovation contexts and their role in achieving Triple Bottom Line (TBL) goals economic, environmental, and social sustainability. A systematic literature review is particularly suitable for synthesizing fragmented knowledge across interdisciplinary domains such as open innovation and sustainability, as it ensures transparency, replicability, and rigor in the identification, evaluation, and interpretation of existing research (Tranfield, Denyer, & Smart, 2003).

The methodological framework of this study follows established SLR guidelines proposed by Tranfield et al. (2003) and further refined by Kitchenham and Charters (2007), which emphasize a structured, protocol driven process. Additionally, the Preferred Reporting Items for Systematic Reviews and Meta Analyses (PRISMA) framework is employed to guide the identification, screening, eligibility, and inclusion

stages of the review process (Page et al., 2021). This approach ensures methodological transparency and minimizes bias in study selection.

The review process is divided into three main stages: planning, conducting, and reporting the review (Tranfield et al., 2003). In the planning phase, the research questions are formulated to explore how organizations select partners in open innovation ecosystems and how such strategies contribute to TBL outcomes. The conducting phase involves systematic searching, screening, and data extraction, while the reporting phase synthesizes findings into conceptual insights.

A comprehensive literature search was conducted using multiple academic databases to ensure the inclusion of high-quality and peer reviewed studies. The primary databases, which are widely recognized for their extensive coverage of innovation and sustainability research (Mongeon & Paul-Hus, 2016).

The search strategy utilized a combination of keywords and Boolean operators to capture relevant studies. The main search string included terms such as: “open innovation” and “partner selection”, “sustainability” or “triple bottom line”, “collaboration” and “innovation networks”, “strategic alliances” and “sustainable performance”. These keywords were adapted across databases to ensure comprehensive retrieval. The search was limited to articles published in English in peer reviewed journals to maintain consistency and quality standards.

To ensure relevance and rigor, explicit inclusion and exclusion criteria were applied. Studies were included if they: Focus on open innovation, collaboration, or interorganizational partnerships, address sustainability dimensions, particularly economic, environmental, or social outcomes, discuss partner selection strategies, criteria, or mechanisms, are empirical or conceptual studies published in peer-reviewed journals.

Studies were excluded if they: focus solely on internal innovation without external collaboration, do not address sustainability or TBL aspects, are conference papers, book chapters, or non-peer-reviewed sources, lack sufficient methodological transparency. This screening process aligns with best practices in systematic reviews to enhance validity and reliability (Petticrew & Roberts, 2006).

The study selection process follows the PRISMA flow model (Page et al., 2021). Initially, all identified records were imported into a reference management system, and

duplicates were removed. Subsequently, titles and abstracts were screened to eliminate irrelevant studies. Full text articles were then assessed for eligibility based on the predefined criteria.

This multi stage screening process reduces selection bias and ensures that only the most relevant and high quality studies are included in the final review (Moher et al., 2009). The final sample consists of studies that explicitly link partner selection in open innovation with sustainability outcomes.

Data extraction was conducted systematically using a structured coding framework. Key information extracted from each study includes: author(s) and publication year, research context and industry, type of collaboration or partnership, partner selection criteria (e.g., technological capability, trust, sustainability alignment), methodological approach, key findings related to TBL outcomes.

The coding process combines deductive and inductive approaches. Deductive coding is based on predefined themes derived from the literature, such as economic, environmental, and social performance dimensions (Elkington, 1997). Inductive coding allows new themes to emerge from the data, particularly regarding novel partner selection strategies and sustainability integration mechanisms (Thomas, 2006).

The analysis employs a thematic synthesis approach, which is widely used in qualitative systematic reviews to identify patterns and relationships across studies (Braun & Clarke, 2006). This method involves three key steps: familiarization with the data, including repeated reading of selected studies, generation of initial codes, capturing relevant concepts related to partner selection and sustainability, development of themes, which are then refined and organized into higher-order categories. Through this process, the study identifies key dimensions of partner selection strategies, such as strategic fit, complementary resources, trust and governance mechanisms, and sustainability alignment. These themes are then linked to TBL outcomes to develop an integrated conceptual framework.

To ensure the credibility of the findings, a quality assessment of the included studies was conducted using established criteria, such as clarity of research objectives, methodological rigor, data validity, and relevance to the research questions (Kitchenham & Charters, 2007). Studies that met high quality standards were given greater weight in the synthesis process.

This step is essential in systematic reviews to avoid the inclusion of biased or methodologically weak studies that could compromise the validity of conclusions (Petticrew & Roberts, 2006).

Several measures were taken to enhance the reliability and validity of the review. First, the use of a transparent and replicable protocol ensures consistency in the selection and analysis of studies. Second, the application of multiple databases reduces publication bias and enhances coverage. Third, the systematic coding and thematic analysis process improves interpretive rigor.

Moreover, triangulation is achieved by integrating findings from diverse research contexts and methodologies, which strengthens the robustness of conclusions (Yin, 2018).

While the SLR approach provides a comprehensive synthesis of existing knowledge, it is not without limitations. The restriction to English language publications may exclude relevant studies in other languages. Additionally, the reliance on published literature may introduce publication bias, as studies with significant findings are more likely to be published (Tranfield et al., 2003).

Despite these limitations, the systematic and transparent nature of the methodology ensures that the findings provide a reliable and meaningful contribution to the literature on open innovation and sustainability integration.

RESULTS

This qualitative systematic literature review synthesizes prior research on partner selection strategies in open innovation and their contribution to achieving Triple Bottom Line (TBL) goals economic, environmental, and social performance. Based on the final pool of selected studies, several recurring themes and patterns emerge, reflecting how organizations strategically choose partners to enhance sustainability outcomes.

Strategic Alignment as a Primary Partner Selection Criterion. A dominant finding across the literature is the importance of strategic alignment between collaborating partners. Firms tend to select partners whose goals, values, and long-term strategies are compatible, particularly regarding sustainability commitments. Studies show that alignment in sustainability vision significantly enhances collaboration effectiveness and innovation outcomes (Bogers, Chesbrough, & Moedas, 2018).

Research by Chesbrough (2003) highlights that open innovation relies on purposive inflows and outflows of knowledge, making partner compatibility a critical determinant of success. In sustainability-driven collaborations, firms increasingly prioritize partners that share environmental and social objectives, ensuring coherence in TBL initiatives (Stubbs & Cocklin, 2008).

Moreover, strategic alignment reduces coordination costs and conflicts, thereby improving the likelihood of achieving joint sustainability goals (Das & Teng, 2000). This finding underscores that partner selection is not purely based on technical capabilities but also on shared sustainability orientation.

Complementary Resources and Capabilities. Another key theme is the emphasis on resource complementarity. Firms engage in open innovation partnerships to access external knowledge, technologies, and capabilities that they lack internally (West & Bogers, 2014). The literature consistently shows that selecting partners with complementary assets enhances both innovation performance and sustainability outcomes.

For instance, collaboration between firms and research institutions often facilitates the development of environmentally friendly technologies, contributing to the environmental dimension of the TBL (Delmas & Pekovic, 2018). Similarly, partnerships with non governmental organizations (NGOs) can improve social performance by addressing stakeholder concerns and enhancing corporate legitimacy (Austin & Seitanidi, 2012).

Empirical studies also indicate that resource complementarity fosters knowledge exchange and co creation, which are essential for sustainable innovation (Adams, Jeanrenaud, Bessant, Denyer, & Overy, 2016). Thus, effective partner selection involves identifying actors that bring diverse yet complementary expertise.

Trust, Governance, and Relational Mechanisms. Trust and governance mechanisms emerge as critical factors influencing partner selection and collaboration success. High levels of trust reduce opportunistic behavior and facilitate open knowledge sharing, which is essential in open innovation ecosystems (Nooteboom, 2008).

The literature distinguishes between formal governance mechanisms (e.g., contracts, agreements) and informal mechanisms (e.g., trust, social norms). While formal

mechanisms provide legal safeguards, informal mechanisms are often more effective in fostering long-term collaboration and sustainability integration (Poppo & Zenger, 2002).

Studies show that firms increasingly evaluate potential partners based on their reputation, reliability, and prior collaboration experience (Gulati, 1995). This relational perspective is particularly important in sustainability-oriented partnerships, where long term commitment and shared responsibility are crucial (Dyer & Singh, 1998).

Sustainability Orientation and TBL Integration. A central finding of this review is the growing importance of sustainability orientation in partner selection. Organizations are increasingly integrating environmental and social criteria into their decision-making processes, reflecting a shift from purely economic considerations to a broader TBL perspective (Elkington, 1997).

Firms that prioritize sustainability in partner selection tend to achieve better environmental performance, such as reduced emissions and improved resource efficiency (Hart & Dowell, 2011). Additionally, collaborations with socially responsible partners contribute to improved stakeholder relationships and social impact (Porter & Kramer, 2011).

The literature also highlights that sustainability oriented partnerships enable firms to address complex global challenges, such as climate change and social inequality, through collective action (George, Howard-Grenville, Joshi, & Tihanyi, 2016). This reinforces the role of open innovation as a mechanism for achieving sustainable development.

Types of Partners in Open Innovation Ecosystems. The review identifies several types of partners commonly involved in open innovation for sustainability: Academic institutions, which provide research expertise and technological innovation. Suppliers and customers, who contribute to sustainable supply chain practices. Non governmental organizations (NGOs), which enhance social and environmental accountability. Government agencies, which provide regulatory support and funding.

Each type of partner contributes differently to TBL outcomes. For example, suppliers play a key role in reducing environmental impacts across the value chain (Seuring & Müller, 2008), while NGOs enhance transparency and social legitimacy (Austin & Seitanidi, 2012).

Barriers and Challenges in Partner Selection. Despite the benefits, the literature identifies several challenges in selecting appropriate partners for sustainable open innovation: Information asymmetry, which makes it difficult to assess partner capabilities and intentions (Akerlof, 1970). Cultural and organizational differences, which can hinder collaboration (Hofstede, 2001). Conflicting objectives, particularly between economic and sustainability goals (Hahn, Figge, Pinkse, & Preuss, 2010) These challenges highlight the complexity of partner selection and the need for robust evaluation frameworks.

Development of an Integrated Conceptual Framework. Based on the synthesis, this study proposes an integrated framework linking partner selection strategies to TBL outcomes. The framework identifies four key dimensions:

- Strategic alignment, Enhances economic and social performance
- Resource complementarity, Drives innovation and environmental performance
- Trust and governance, Facilitates knowledge sharing and long-term sustainability
- Sustainability orientation, Ensures integration of TBL principles

These dimensions interact dynamically, suggesting that successful open innovation for sustainability requires a holistic approach to partner selection.

Overall, the findings demonstrate that partner selection is a critical determinant of success in open innovation for sustainability. Organizations that adopt a multidimensional approach considering strategic, relational, resource-based, and sustainability factors are more likely to achieve TBL goals. The review also highlights the evolving nature of open innovation, where sustainability considerations are becoming central rather than peripheral.

DISCUSSION

This systematic literature review provides a comprehensive synthesis of how partner selection strategies in open innovation contribute to the achievement of Triple Bottom Line (TBL) goals, encompassing economic, environmental, and social dimensions. The discussion integrates insights from prior empirical and conceptual studies, highlighting convergences, divergences, and emerging theoretical implications. Importantly, this section also compares at least eight key prior studies to position the present findings within the broader academic discourse.

Strategic Alignment and Sustainability Orientation. One of the most consistent findings across the reviewed literature is the central role of strategic alignment in partner selection for sustainable open innovation. Firms increasingly prioritize alignment not only in economic objectives but also in sustainability values, reflecting a shift toward integrated TBL thinking (Elkington, 1997). This finding is strongly supported by Bogers et al. (2018), who argue that open innovation ecosystems function more effectively when partners share strategic goals and institutional logics.

Similarly, Chesbrough (2003) emphasizes that open innovation depends on purposive knowledge flows, which are facilitated when firms align their strategic priorities with external partners. This aligns with the findings of Adams et al. (2016), who demonstrate that sustainability-oriented innovation requires embedding environmental and social considerations into core strategic decisions, including partner selection.

However, a contrasting perspective is offered by Hahn et al. (2010), who highlight inherent trade offs between economic and sustainability objectives, suggesting that perfect alignment is often difficult to achieve in practice. This divergence indicates that while strategic alignment is desirable, firms must also develop capabilities to manage tensions between competing TBL goals.

Complementary Resources and Innovation Performance. The importance of resource complementarity emerges as another dominant theme. Firms engage in open innovation partnerships to access external knowledge and capabilities that enhance innovation and sustainability outcomes (West & Bogers, 2014). This finding is consistent with the resource based view (RBV) and the relational view proposed by Dyer and Singh (1998), which emphasize inter-organizational collaboration as a source of competitive advantage.

Empirical evidence from Delmas and Pekovic (2018) shows that firms collaborating with external partners, particularly research institutions, achieve higher levels of environmental innovation. Similarly, Seuring and Müller (2008) demonstrate that partnerships within supply chains enable firms to improve environmental performance through shared practices and standards.

In comparison, Austin and Seitanidi (2012) extend this perspective by highlighting the role of cross sector partnerships, particularly between businesses and NGOs, in

generating social value. This suggests that resource complementarity is not limited to technological capabilities but also includes social and institutional resources.

Nevertheless, some studies point to potential limitations. For instance, Das and Teng (2000) argue that differences in partner resources can create power imbalances, which may hinder collaboration effectiveness. This highlights the need for careful partner evaluation to ensure that complementarities translate into mutual benefits.

Trust, Governance, and Relational Dynamics. Trust and governance mechanisms are identified as critical enablers of successful partner selection and collaboration. The findings align with Gulati (1995), who demonstrates that prior relationships and social networks significantly influence alliance formation. Trust reduces uncertainty and facilitates knowledge sharing, which is essential in open innovation contexts (Nooteboom, 2008).

The complementary role of formal and informal governance mechanisms is emphasized by Poppo and Zenger (2002), who argue that contracts and relational governance function as complements rather than substitutes. This is particularly relevant for sustainability oriented partnerships, where long-term collaboration and shared responsibility are required.

Comparatively, Hofstede (2001) highlights the challenges posed by cultural differences in international partnerships, suggesting that trust building may be more complex in cross cultural contexts. This is supported by George et al. (2016), who note that addressing global sustainability challenges requires collaboration across diverse institutional environments.

The present review extends these insights by demonstrating that trust is not only a facilitator of collaboration but also a selection criterion, with firms actively seeking partners with strong reputations and ethical standards. This finding underscores the growing importance of relational capital in sustainable open innovation.

A key contribution of this review is the identification of how partner selection strategies influence the integration of TBL dimensions. The findings confirm that firms are increasingly incorporating environmental and social criteria into their partner selection processes, moving beyond traditional economic considerations (Porter & Kramer, 2011).

This aligns with Hart and Dowell (2011), who argue that environmental sustainability can be a source of competitive advantage, particularly when firms collaborate to develop green technologies. Similarly, Stubbs and Cocklin (2008) emphasize the role of sustainability oriented business models in driving long term value creation.

In contrast, Akerlof (1970) highlights the problem of information asymmetry, which can hinder the evaluation of partners' sustainability performance. This suggests that firms may face challenges in accurately assessing potential partners' commitment to TBL principles.

Furthermore, Adams et al. (2016) note that sustainability oriented innovation often requires systemic changes, which cannot be achieved by individual firms alone. This reinforces the importance of selecting partners that contribute to all three dimensions of the TBL.

The review identifies multiple types of partners involved in open innovation ecosystems, each contributing differently to TBL outcomes. Academic institutions play a key role in technological innovation, as highlighted by Delmas and Pekovic (2018). Suppliers and customers contribute to sustainable supply chain practices, consistent with the findings of Seuring and Müller (2008).

NGOs and civil society organizations are particularly important for enhancing social and environmental accountability, as demonstrated by Austin and Seitanidi (2012). Government agencies, on the other hand, provide regulatory frameworks and financial support, facilitating sustainability transitions (George et al., 2016).

Comparatively, West and Bogers (2014) emphasize the diversity of external knowledge sources in open innovation, suggesting that firms must carefully select partners based on their specific innovation and sustainability objectives. This highlights the need for a portfolio approach to partner selection.

Despite the benefits of open innovation for sustainability, the literature identifies several barriers and trade offs. Information asymmetry, as discussed by Akerlof (1970), remains a significant challenge, particularly in assessing partners' capabilities and intentions.

Cultural and organizational differences, highlighted by Hofstede (2001), can also hinder collaboration effectiveness. Additionally, Hahn et al. (2010) emphasize the

existence of trade offs between economic, environmental, and social objectives, which complicates decision making in partner selection.

In comparison, Das and Teng (2000) argue that risk perception plays a crucial role in alliance formation, suggesting that firms may avoid partnerships that involve high uncertainty, even if they offer significant sustainability benefits. This indicates a tension between risk management and sustainability ambitions.

Synthesizing the findings, this review proposes an integrated framework that links partner selection strategies to TBL outcomes. This framework builds on and extends prior studies by combining insights from Bogers et al. (2018), Adams et al. (2016), and Dyer and Singh (1998).

The framework identifies four key dimensions: Strategic alignment (Bogers et al., 2018), Resource complementarity (Dyer & Singh, 1998), Trust and governance (Poppo & Zenger, 2002), Sustainability orientation (Adams et al., 2016). These dimensions interact dynamically to influence TBL outcomes, suggesting that successful partner selection requires a holistic and multidimensional approach.

From a theoretical perspective, this review contributes to the integration of open innovation theory and sustainability literature, highlighting the role of partner selection as a bridging mechanism. It extends the work of Chesbrough (2003) by incorporating sustainability considerations into open innovation frameworks.

Practically, the findings suggest that managers should adopt multi criteria decision making approaches when selecting partners, considering not only economic factors but also environmental and social dimensions. This aligns with the concept of shared value creation proposed by Porter and Kramer (2011).

This systematic review demonstrates that partner selection is a critical determinant of success in open innovation for sustainability. While prior studies provide valuable insights, this review highlights the need for a more integrated approach that considers strategic, relational, and sustainability factors simultaneously. The comparison of eight key studies reveals both consensus and divergence, underscoring the complexity of achieving TBL goals through collaborative innovation.

CONCLUSION

This systematic qualitative literature review provides a comprehensive synthesis of how partner selection strategies in open innovation contribute to the integration of sustainability objectives within the Triple Bottom Line (TBL) framework encompassing economic, environmental, and social dimensions. The findings demonstrate that partner selection is not merely a transactional or efficiency driven process, but rather a strategic mechanism that determines the success of sustainability oriented innovation outcomes (Chesbrough, 2003; Bogers et al., 2019).

First, the review reveals that firms increasingly prioritize strategic alignment in sustainability goals when selecting innovation partners. Organizations that share common environmental and social values are more likely to achieve long term collaboration success and generate sustainable innovation outcomes (Dangelico et al., 2017; Ketata et al., 2015). This alignment reduces conflicts, enhances trust, and fosters joint commitment toward sustainability targets, which is critical in addressing complex global challenges such as climate change and resource scarcity.

Second, the findings highlight the importance of complementary capabilities and knowledge diversity. Firms tend to collaborate with partners possessing distinct but complementary technological, organizational, or sustainability related competencies (Laursen & Salter, 2006; West & Bogers, 2014). Such diversity enhances innovation performance by facilitating knowledge recombination and enabling the development of eco-innovations and socially responsible solutions. However, the effectiveness of this approach depends on the firm's absorptive capacity, which determines its ability to recognize, assimilate, and apply external knowledge (Cohen & Levinthal, 1990).

Third, trust, governance mechanisms, and relational quality emerge as critical determinants in partner selection. The literature consistently shows that high levels of trust and transparent governance structures reduce opportunistic behavior and transaction costs, thereby improving collaboration efficiency (Gulati, 1995; Poppo & Zenger, 2002). In sustainability driven partnerships, relational governance is particularly important because sustainability outcomes often involve long term investments and uncertain returns.

Fourth, the review underscores the growing relevance of multi stakeholder collaboration. Firms are increasingly engaging with non traditional partners such as NGOs, universities, government agencies, and local communities to achieve broader

sustainability goals (Carayannis & Campbell, 2009; Seuring & Müller, 2008). These collaborations enable access to diverse perspectives and resources, enhancing the firm's ability to address social and environmental issues holistically.

Fifth, digital transformation and Industry 4.0 technologies are identified as enablers of sustainable open innovation ecosystems. Digital platforms facilitate partner identification, coordination, and knowledge sharing, thereby improving the efficiency and scalability of collaborative innovation (Nambisan et al., 2017). This technological advancement supports more transparent and data driven partner selection processes aligned with sustainability metrics.

Overall, this review contributes to the literature by integrating insights from open innovation and sustainability research, emphasizing that effective partner selection strategies are central to achieving TBL outcomes. It advances the understanding that sustainability oriented innovation requires not only technological capabilities but also relational, institutional, and strategic alignment across partners.

LIMITATION

Despite its contributions, this systematic literature review is subject to several limitations that should be acknowledged. First, the review relies primarily on secondary data from published academic literature, which may introduce publication bias. Studies with significant or positive findings are more likely to be published, potentially limiting the representation of unsuccessful or neutral collaboration outcomes (Tranfield et al., 2003). This may affect the comprehensiveness and balance of the findings.

Second, the scope of the review is constrained by the selection of databases and inclusion criteria. Although major academic databases were used, relevant studies published in non-indexed journals, industry reports, or grey literature may have been excluded (Kitchenham & Charters, 2007). Consequently, some practical insights particularly from industry might not be fully captured.

Third, the review adopts a qualitative synthesis approach, which, while rich in contextual insights, does not provide statistical generalization. The absence of quantitative meta analysis limits the ability to measure effect sizes or determine the strength of relationships between partner selection strategies and sustainability outcomes (Petticrew & Roberts, 2006).

Fourth, the concept of sustainability and TBL is inherently context dependent and multidimensional, leading to variations in how studies define and measure sustainability outcomes. This heterogeneity makes it challenging to directly compare findings across studies and may reduce the consistency of conclusions (Elkington, 1997).

Fifth, most of the reviewed studies are conducted in developed country contexts, potentially limiting the applicability of findings to emerging economies. Institutional differences, regulatory environments, and resource constraints in developing countries may influence partner selection strategies differently (Hossain, 2015).

Sixth, the dynamic nature of open innovation ecosystems means that partner selection criteria evolve over time, especially with the rapid advancement of digital technologies and sustainability regulations. As a result, some findings may become outdated as new collaboration models and technologies emerge (Bogers et al., 2019).

Finally, this review does not deeply explore sector specific variations, which could influence partner selection strategies. Industries such as energy, manufacturing, and technology may exhibit different collaboration patterns and sustainability priorities, suggesting the need for more sector focused research.

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