R&D Alliances and SMEs Post-Entry Internationalization Speed: The Impact of Alliance Management Capability and Co-innovation Ambidexterity

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Research Summary

This study delves into the relationship between alliance management capability (AMC) and the post-entry internationalization speed of SMEs. We develop a novel theoretical framework that illuminates the effect of co-innovation ambidexterity as a mechanism that unlocks AMC value in speeding up SME internationalization following entry into foreign markets. To validate our framework, we conduct an empirical investigation using a sample of 278 UK-based manufacturing SMEs. Our findings support the proposition that co-innovation ambidexterity is a crucial mediating mechanism through which AMC boosts the post-entry internationalization speed of SMEs. Therefore, this research sheds new light on the critical roles of AMC and co-innovation ambidexterity during the post-entry stage, which have far-reaching implications for the fields of international entrepreneurship and international strategic alliances.

Managerial Summary

Internationalizing SMEs are increasingly forming alliances with the aim of accessing and leveraging external knowledge to tackle the challenges they typically encounter during post-entry phase. However, these alliances are difficult to establish and manage, which result in high failure rates. To address this lacuna, we argue that alliance management capability (AMC) and co-innovation ambidexterity facilitate the post-entry internationalization speed of SMEs. Using data from 278 UK-based manufacturing SMEs, we show that AMC is an important capability that allows SMEs to leverage and harness the knowledge of their alliances for co-innovation ambidexterity, which, in turn, increases their post-entry internationalization speed. Together, these findings provide important insights for those SMEs' managers who aim to develop effective strategies for rapid internationalization via strategic alliances.

***Keywords*:** post-entry internationalization speed, SMEs, R&D alliances, alliance management capability, co-innovation ambidexterity

1. Introduction

The pace of the international expansion of small and medium-sized enterprises (SMEs) once they have internationalized, or their post-entry internationalization speed (Hilmersson & Johanson, 2016; Morgan-Thomas & Jones, 2009), has been attracting increasing scholarly attention (Oviatt & McDougall, 2005; Puthusserry, Khan, et al., 2020; Sadeghi et al., 2018). Scholars have investigated how SMEs can tackle the foreign market challenges that have the potential to slow down and/or undermine their internationalization efforts (Freixanet & Renart, 2020; Prashantham et al., 2019). In this regard, prior studies have highlighted how international R&D strategic alliances[1] can enable SMEs not only to manage the challenges associated with foreign market expansion (Seo et al., 2020) but also to drive their innovation capacity through the exploitation of their partners' heterogeneous knowledge (Mei et al., 2019), which can accelerate their internationalization activities.

Yet, several studies show that SMEs vary in their potential to build successful alliances, where many SMEs find it risky and difficult to establish alliances (O'Dwyer & Gilmore, 2018; Vahlne, 2020) due to relational uncertainty and competitive tensions between partners related to knowledge misappropriation (Monteiro et al., 2017; Shijaku et al., 2020). Particularly, when international R&D strategic alliances are leveraged for the purpose of achieving rapid post-entry internationalization, SMEs find it challenging to identify international partners with complementary ranges of knowledge (Choi, 2020), comprehend the differences in legal and regulatory systems across countries (Oxley & Sampson, 2004), build relational trust and reliability with international potential partners (Freixanet & Renart, 2020), and enact monitoring and coordination systems to govern geographically distant R&D teams (Su & Moaniba, 2020). One explanation for the varying ability of SMEs to establish successful international R&D alliances is that some may be endowed with superior alliance management capability (AMC). In principle, AMC encompasses the organizational skills and management routines that a firm needs to

[1] Defined as "*voluntary arrangements between firms involving exchange, sharing, or co-development of products, technologies, or services*" in international markets (Gulati, 1998, p. 293).

effectively create, maintain, and enhance its interorganizational relationships (Schilke & Goerzen, 2010). These skills and routines are necessary to exchange credible and relevant information, harmonize relationships, and build social capital with alliance partners (Al-Tabbaa et al., 2022; Schilke & Goerzen, 2010). Therefore, AMC enables firms to augment their resource base through partnerships and to derive relational benefits, especially in complex scenarios such as international R&D alliances (Mikami et al., 2022).

Despite significant scholarly focus on AMC within the international strategic alliances domain (see, Robson et al., 2019), the investigation of the underlying linkages between AMC and post-entry internationalization speed of SMEs remain relatively limited. In specific, we identified two issues. First, there is ambiguity about the role and relevance of AMC in situations where SMEs utilize R&D strategic alliance to boost the speed of their internationalization. Internationalizing SMEs typically face two concurrent challenges a) the liabilities of newness, smallness, and foreignness associated with rapid internationalization (Dominguez & Mayrhofer, 2017), b) the difficulty of controlling opportunistic behaviors and bridging institutional distances with partners (Couper, 2019). As AMC involves a complex configuration of routines (i.e., coordination, governance, and learning), an investigation of the role played by these routines can offer important insights into the behaviors of internationalizing SMEs and related contingencies once they have entered international markets (Puthusserry, Khan, et al., 2020). Second, scholars have suggested that different types of social capital (e.g., bonding and bridging) play a vital role in SME internationalization by supporting collaborative innovation (co-innovation) to develop suitable product offerings for customers (cf. Prashantham, 2008). In this regard, AMC has the potential to combine resources and technologies and create synergies for seeking multiple co-innovation tasks simultaneously (i.e., co-innovation ambidexterity) to leverage all aspects of product/services to realize rapid internationalization benefits (Kauppila, 2015; Romero & Molina, 2011; Yeniyurt et al., 2014). However, the international entrepreneurship literature does not seem to pay explicit attention to the possibility that the acceleration of post-entry internationalization speed demands

two interrelated steps: 1) AMC to support co-innovation ambidexterity when internationalizing SMEs are involved in international R&D strategic alliances and 2) co-innovation ambidexterity to drive post-entry internationalization speed (Huang et al., 2022; Prashantham, 2008).

Our study addresses these knowledge gaps by examining how AMC drives co-innovation through international R&D strategic alliances, which in turn enhance the internationalization speed of SMEs following their new market entry. By drawing upon the resource-based view (RBV), we recognize that AMC is an appropriate mechanism that explains how a firm effectively manages its resources and capabilities to gain competitive advantages (Zahra, 2021). We propose co-innovation ambidexterity as a lower-order capability that demands AMC (as a higher-order capability) to realize rapid post-entry internationalization. This proposition aligns with the innovation routine approach identified by Schreyögg and Kliesch-Eberl (2007), who suggest that in "*volatile environments [such as international markets]—then and only then—the organization is well advised to build (or accept the evolution of) higher-order search routines in order to bring about regular modifications of established operating (lower-order) routines*" (p. 923). Collis (1994) explains that higher-order capabilities help firms better understand and better perform their lower-order capabilities. Furthermore, higher-order capabilities enable a firm not only to understand their lower-order capabilities better but also to prevent their misapplication in an effort to attain competitive advantage (Zander & Kogut, 1995). This logic suggests a mediation model with lower-order capabilities mediating the impact of higher-order capabilities on performance. Based on these arguments, we posit that AMC (i.e., a higher-order capability) can support co-innovation ambidexterity (i.e., a lower-order capability), which ultimately results in rapid post-entry internationalization.

To test our theorizing, we collected survey data from 278 UK-based manufacturing SMEs with international R&D strategic alliances. This is an important context because alliance capitalism plays a vital role in enhancing the international performance of firms. Overall, the findings show

that AMC is vital for post-entry internationalization speed of SMEs, where this effect is mediated by SMEs' co-innovation ambidexterity.

Reflecting on our conceptualization and findings, we make several key theoretical contributions. First, we enrich the existing literature on post-entry internationalization speed by demonstrating the connection between R&D strategic alliances and the speed with which SMEs achieve their objectives during this phase. To do so, we conceptualize and empirically validate the role played by AMC in enabling SMEs to effectively engage with international R&D strategic alliances suited to drive the pace of their internationalization strategy while accounting for the challenge of time compression diseconomies. We therefore address the important gap identified by Agostini and Nosella (2019) in their systematic review—indicating that the literature on strategic SME alliances is still in its infancy in regard to "*the capabilities required to internationalize through networking*" (p. 25).

Second, we add to the global strategy literature by explaining the path through which AMC can accelerate SMEs' post-entry internationalization speed. Our analysis shows that co-innovation ambidexterity is a critical mediator in this path. This is in line with the proponents of RBV who argue that higher-order capabilities help firms build and reconfigure their lower-order capabilities for superior performance (Collis, 1994). As such, we show conceptually and empirically that the possession of AMC (i.e., a higher-order capability) can contribute to the development of co-innovation ambidexterity (i.e., a lower-order capability), which ultimately results in increased SME post-entry internationalization speed (as a performance outcome). Therefore, we respond to calls to pay greater empirical attention to the mediating mechanisms through which firms can leverage their network capabilities to attain better post-entry performance (Ibeh et al., 2018).

Finally, most of the existing studies have focused on the "pre-entry" (i.e., by examining market conditions, exploring the targeted countries' institutions, and identifying the firm-level factors that all determine a firm's propensity to internationalize) and "late" stages (i.e., by investigating the effect of a firm's long-term internationalization strategy and other institutional

contingencies on its performance in a given market) of internationalization, while underestimating the complexity of what happens to firms during the intermediate ones (Hashai & Zahra, 2022; Prashantham & Young, 2011). Therefore, by focusing on the post-entry phase, which begins when the firm has managed its transition and needs to stabilize its presence in the given foreign market it has entered (Breuillot et al., 2022), our study provides a more fine-grained view of the ways in which different sets of capabilities can collectively contribute to the international growth of SMEs.

2. SME Post-Entry Internationalization Speed: A Literature Review

In the international entrepreneurship literature, internationalization speed is a key concept that refers to the rate of expansion into international markets (Hsieh et al., 2019; Oviatt & McDougall, 2005). Scholars have suggested that internationalization speed involves multiple successive stages (Johanson & Vahlne, 1977), and as indicated by Jones and Coviello (2005, p. 290), "*by definition, internationalization behavior takes place over time, manifest[ing] in a time sequence in which events occur*." Accordingly, recent studies have distinguished between pre- and post-entry internationalization speed (Freixanet & Renart, 2020; Puthusserry, Child, et al., 2020); while the former pertains to the swiftness of initial entry into an international market (Deng et al., 2018; Martin et al., 2017), the latter refers to the pace of international expansion that an SME attains once it has internationalized (Hilmersson et al., 2017; Prashantham & Young, 2011). In this sense, post-entry internationalization speed captures two key aspects: (1) the swiftness with which SMEs expand their international sales activities and (2) the rapidity with which they build reputation by committing internationally (Hilmersson & Johanson, 2016; Sadeghi et al., 2018). In other words, it is the speed at which SMEs expand their international market activities (i.e., sales revenues and reputation) rather than that with which they initiate their internationalization process (Morgan-Thomas & Jones, 2009; Puthusserry, Child, et al., 2020).

When expanding into new international markets, SMEs face many challenges, including the liability of foreignness and legitimacy issues (Freixanet & Renart, 2020; Puthusserry et al., 2021). Hence, it is vital to understand how they overcome such challenges to expedite their post-

entry internationalization speed (Deng et al., 2018; Puthusserry, Khan, et al., 2020). In this regard, the extant studies highlight the importance of networks and alliances to access any valuable knowledge suited to drive SME post-entry internationalization speed (Prashantham et al., 2019). However, the focus of these studies has been limited to the effectuation/causation process of network building (Donbesuur et al., 2022; Gabrielsson et al., 2022; Oliveira & Johanson, 2021; Prashantham et al., 2019) or to SME embeddedness in international networks of trade missions and trade fairs (Puthusserry, Child, et al., 2020; Puthusserry, Khan, et al., 2020), thereby disregarding the important role played by international R&D strategic alliances in accessing new knowledge and enhancing innovations (Corsi et al., 2022; Ferraris et al., 2019; Zhao et al., 2021). International R&D strategic alliances can be vital for the post-entry stage as they enable SMEs to learn about the market and gain access to advanced technology and other business-related aspects (Johanson & Johanson, 2021; Khan & Lew, 2018), as well as to develop the various sets of learning capabilities and specialized know-how required for subsequent entry through their alliance partners (Brunetta et al., 2020).

Despite their benefits, international R&D alliances do entail complex elements, including the competitive learning atmosphere that stems from the international nature of the partnerships (Beugelsdijk et al., 2017), the knowledge hiding that is crucial to solving core technical problems (Joshi & Lahiri, 2015; Seo et al., 2020), and the high communication and coordination costs generated by cultural friction (Arslan, 2018; Choi & Contractor, 2019; Shijaku et al., 2020). Also, SMEs can become ensnared in relationships that provide poor-quality information, resulting in lower competitive gains. This risk requires SMEs to utilize network capabilities appropriate to the development and preservation of international strategic alliances (Khan & Lew, 2018; Martín et al., 2021). Johanson and Johanson (2021) contend that "*when relationships are added, replaced, or further deepened, the firm's ability to develop cross-border business relationships, and to coordinate and utilize a set of interrelated cross-border relationships, becomes critical*" (p. 5).

3. Theoretical Framework and Hypotheses Development

According to the RBV, the possession of unique resources and capabilities enables firms to gain competitive advantages (Barney, 1991; Wernerfelt, 1984). However, it is vital to distinguish different levels of capabilities that facilitate the realization of competitive advantage. Specifically, a complex multi-phased framework that considers lower-order capabilities as a mediating variable can enable scholars to determine how valuable higher-order capabilities can be leveraged to achieve competitive advantage (Collis, 1994; Ketchen et al., 2007).

As illustrated in Figure 1, we propose co-innovation ambidexterity as a lower-order capability appropriate to enable the realization of the benefits of AMC as a higher-order capability for post-entry internationalization speed. The justification for this assertion is threefold. First, consistent with RBV scholars who suggest that lower-order capabilities are needed to deploy higher-order capabilities (Collis, 1994; Kraaijenbrink et al., 2010; Newbert, 2007; Zander & Kogut, 1995), co-innovation ambidexterity is required to capitalize on AMC. Considering that AMC is a costly firm-level capability to develop—because it requires substantial investments in, for example, the formation of dedicated alliance functions, structural mechanisms, and learning processes—co-innovation ambidexterity represents a logical lower-order capability that enables the effective utilization of AMC (Kale & Singh, 2007; Schreiner et al., 2009). This argument emphasizes the importance of balancing the cost of a capability and its actual use in international R&D alliance activities (Kogut & Zander, 1996).

Insert Figure 1 About Here

Second, SMEs have a tendency to balance radical with incremental co-innovation due to their entrepreneurial management systems and organic organizational structures (Green & Cluley, 2014). Their informal, flexible, and risk-tolerant organizational cultures support co-innovation ambidexterity without restricting it to one type of innovation (Felício et al., 2019; Zimmermann et al., 2020), which ultimately enables SMEs to compete during the early years of their international market expansion (Buccieri et al., 2020). Moreover, radical co-innovation enables SMEs to maximize their long-term international viability by remaining aligned with dynamic foreign

markets, whereas incremental co-innovation enables them to explore new ideas suited to the attainment of reliability, legitimacy, and short-term international competitiveness (Hughes et al., 2020; Puthusserry, Khan, et al., 2020). Therefore, the development of both radical and incremental co-innovation enhances the reputation of SMEs and creates demand for their products in international markets, thereby enhancing their post-entry internationalization speed.

3.1. Alliance management capability and co-innovation ambidexterity

Prior studies have attempted to associate AMC with individual innovation activities (Kauppila, 2015; Rothaermel & Deeds, 2006). Indeed, scholars have argued that AMC enables resource reconfiguration for innovation success (Parida et al., 2016; Ritter & Gemünden, 2004). By extending this line of research, we argue that SMEs can utilize AMC to generate co-innovation ambidexterity—i.e., the simultaneous creation of radical and incremental co-innovation by effectively leveraging the resources and key know-how of their R&D alliance partners. By leveraging their AMC, SMEs can manage "*the tension between exploration and exploitation*" within the context of international R&D alliances (Crossan & Berdrow, 2003, p. 1087). According to the RBV, AMC is an important high-level capability that can enable SMEs to more systematically manage their alliance relationship dynamics (Barney, 1991; Black & Boal, 1994). However, the possession of AMC is not randomly related to firms; rather, deliberate efforts must be dedicated to developing this firm-specific capability–two cases in point are Cisco and HP, firms that have successfully managed their alliances through the utilization of their AMC (cf. Draulans et al., 2003). Cisco elevated alliance managers to Director positions for ensuring a depth of experience to manage the resources and interface effectively with management (Phoenix, 2018). Training was developed by Cisco and HP to hone AMC for joint business planning, communication effectiveness, and coordination of activities. In addition, Cisco and HP have been involved in multiple alliances, and AMC enabled them to exploit the resources of their alliance partners for superior performance. Therefore, internationalizing SMEs involved in R&D alliances strategically would develop their AMC as they are engaged in internationalization and want to enhance their

post-internationalization speed by leveraging R&D alliances' knowledge and key resources; doing so can be a critical capability for survival in changing environments (cf. Kale & Singh, 2007; Schilke & Goerzen, 2010; Wang & Rajagopalan, 2015). Thus, we expect AMC to facilitate the seamless interaction among international R&D partners in order to achieve co-innovation ambidexterity for two reasons. First, high levels of AMC enable SMEs not only to develop their alliance relationships with the goal of utilizing any existing knowledge stocks to seek incremental co-innovation (Bercovitz & Feldman, 2007) but also to monitor and coordinate partnerships in order to transfer the complex and tacit knowledge required for radical co-innovation (Rothaermel & Deeds, 2006). Second, AMC enables SMEs to find suitable partners in possession of tacit information or know-how needed for the discovery, development, and commercialization of radical co-innovation (Wassmer et al., 2017), as well as to coordinate R&D activities with existing partners for the extraction of information that matches their own existing knowledge-base to support incremental co-innovation (Ardito et al., 2019; Kazadi et al., 2016).

We further explicate the impact of AMC on SME co-innovation ambidexterity by discussing the role played by its four dimensions: alliance proactiveness, interorganizational coordination, alliance transformation, and alliance learning (cf. Schilke & Goerzen, 2010). Alliance proactiveness facilitates the proactive selection of suitable international R&D partners, which gives an SME a head start in accessing the unique resource constellations suited to generate first-mover advantages in the form of radical co-innovation, as well as to build social legitimacy in support of incremental co-innovation (Inigo et al., 2020; Leischnig & Geigenmüller, 2018).

Interorganizational coordination is a vital routine in specifying the partners' roles, reducing any power asymmetry, and increasing the value of resource exchange for the generation of radical co-innovation (Dyer, 1997; Song & Di Benedetto, 2008). By the same token, interorganizational coordination supports relational commitment, thus facilitating the accumulation of knowledge for incremental co-innovation (Lingens et al., 2021).

Alliance transformation enhances the revamping and reorganization of alliances aimed at achieving co-innovation ambidexterity. By improving the partner fit, SMEs can overcome any differences among their international R&D partners and establish rapport and empathy, which, in turn, helps facilitate knowledge exchange for the concurrent development of radical and incremental co-innovation (Lichtenthaler & Lichtenthaler, 2009).

Interorganizational learning usefully encourages a shared vision and open-mindedness among international R&D partners; as such, it leads to active inquiry and experimentation for new ideas and radical co-innovation (Holmqvist, 2004) and promotes the repeated use of knowledge, which is vital for developing incremental co-innovation (Ojha et al., 2018).

Building on the above arguments, we posit that AMC is vital to SME co-innovation ambidexterity. Through this capability, SMEs are able to exploit the full potential of international R&D alliances in effectively balancing radical and incremental co-innovation. Thus, we hypothesize the following:

> **Hypothesis 1.** Alliance management capability positively influences the co-innovation ambidexterity of SMEs.

3.2. Co-innovation ambidexterity and post-entry internationalization speed

We expect co-innovation ambidexterity to promote SME post-entry internationalization speed for several reasons. First, SMEs achieve rapid post-entry internationalization by balancing the risks of both types of innovation activities while leveraging their benefits through their international alliance partners (Harmancioglu et al., 2020). For instance, radical co-innovation enhances the post-entry internationalization speed of SMEs by enabling them to offer differentiated products and processes aimed at new customers and markets, building brand image, and establishing the reputation of assets that can be valuable as these firms subsequently expand into additional foreign markets (Boso et al., 2016). However, radical co-innovation can quickly become obsolete due to rapidly changing environments and the presence of strong competitors (Azar & Ciabuschi, 2017). This, in turn, makes it risky for SMEs to rely solely on radical co-innovation to achieve rapid post-

entry internationalization. Indeed, incremental co-innovation is crucial to catch up with market leaders and keep pace with dynamic environments by quickly imitating the products, processes, and technologies of foreign rivals for immediate rewards (Hurmelinna-Laukkanen et al., 2008; Nuruzzaman et al., 2019). However, this strategic option can only provide short-term[2] viable returns stemming from minor modifications of existing products and processes, unlike those from long-term-oriented and more fundamental technological innovations (Dunlap-Hinkler et al., 2010). Incremental co-innovation efforts are often unable to benefit from a holistic approach and tend to satisfy a sensed market need, which can result in diminishing returns due to the maturity/decline of products in certain markets (Chao & Kavadias, 2008). Thus, the simultaneous pursuit of radical and incremental co-innovation can increase the post-entry internationalization speed of SMEs.

Second, radical co-innovation internalizes new knowledge in SMEs—such as new technology, new market information, or new customer demands—which enables such firms to promptly and efficiently respond to changing international market needs (Azar & Ciabuschi, 2017). Radical co-innovation also deepens the understanding of future market competition trends or the technology that is necessary to achieve rapid post-entry internationalization (Bagheri et al., 2019). By contrast, incremental co-innovation can enable SMEs to explore and absorb external knowledge (Dunlap-Hinkler et al., 2010). Also, the repeated use of new knowledge deepens the understanding of its functionality and enables the timely identification of new market opportunities suited to achieving rapid post-entry internationalization (Benhayoun et al., 2020; Buccieri et al., 2020). Therefore, SMEs should engage in incremental co-innovation to ensure their current viability and, concurrently, use radical co-innovation to preserve such viability in future competition (Hsu et al., 2013). Consequently, we argue that high levels of both radical and incremental co-innovation—

[2] The conceptualization of short- vs. long-term returns is often industry-specific. Technology-intensive industries (e.g., telecommunications equipment, software programs, and computers) have shortened the introductory and growth stages of the product life cycle (PLC) due to the advancement of technologies. For example, Hewlett-Packard introduced 23 different calculator models in eight years, and the PLC of a video game is of about nine months ((Guveritz, 1983)Other industries (e.g., pharmaceuticals) have longer PLCs of around 30 years ((Bauer & Fischer, 2000; Jüttner et al., 2006) This suggests different perceptions of short-term returns depending on the nature of the industry. In general, short-term returns can be perceived as those achieved within a specific time period, whereas long-term returns are achieved over different ones ((Ali et al., 1993; Chao & Kavadias, 2008)

rather than of just one of the two forms—support speedy SME post-entry internationalization. Based on the above discussion, we propose the following hypothesis:

> **Hypothesis 2:** Co-innovation ambidexterity is positively associated with the post-entry internationalization speed of SMEs.

3.3. The mediating role of co-innovation ambidexterity

Given the challenges involved in coordinating relationships with international partners, AMC alone may not be sufficient to enhance SME post-entry internationalization speed; subtle mechanisms may be involved in enabling the utilization of this capability in the international context. Thus, co-innovation ambidexterity may serve as an important mechanism intervening between AMC and SME post-entry internationalization speed—that is, AMC may affect SME post-entry internationalization speed through the deployment of co-innovation ambidexterity. The RBV posits that a firm's resources and capabilities need to be rare and inimitable in order to produce superior performance (Barney, 1991). Consistent with the RBV logic, SMEs possessing similar levels of AMC may exhibit different degrees of co-innovation ambidexterity—as a rare and inimitable lower-order capability—which may accelerate the pace at which SMEs attain reputation in and commitment to international markets. AMC involves the ability not only to identify suitable partners with the resources required for innovation but also to manage the complex relationships that enhance co-innovation ambidexterity (Subramanian & Soh, 2017), thus leading to rapid post-entry internationalization. More specifically, AMC can expand the scope of SMEs' external knowledge bases and improve the participation of alliance partners in the concurrent development of incremental and radical co-innovation—i.e., co-innovation ambidexterity. In turn, co-innovation ambidexterity accelerates post-entry internationalization speed. Consistent with previous arguments, we contend that co-innovation ambidexterity acts as a vital mechanism enabling SMEs to capitalize on AMC to enhance their post-entry internationalization speed. Accordingly, we hypothesize as follows:

Hypothesis 3. Co-innovation ambidexterity mediates the relationship between alliance management capability and the post-entry internationalization speed of SMEs.

4. Methodology and Context

Our study was focused on UK-based SMEs in the manufacturing sector, which are particularly vital for the UK economy. In 2018, in the UK, SMEs amounted to more than 5.9 million firms, providing 60% of all private jobs (MS, 2020), and the manufacturing industries accounted for a large share (42%) of exports, worth £275 billion (DTI, 2020). At the same time, the role played by the internationalization activities in which manufacturing SMEs engage has been regularly highlighted (Freixanet & Renart, 2020; Sinkovics et al., 2018), with the facilitation of the internationalization of SMEs being specifically proposed as a main strategy suited to meeting the UK's productivity challenges (Enterprise Research Centre, 2015).

Our study's sample was drawn from the Financial Analysis Made Easy (FAME) database. We randomly selected 2,000 manufacturing SMEs for inclusion in our study. In accordance with the UK Department of Trade and Industry (DTI, 2019), we defined SMEs as firms with fewer than 250 employees.

4.1. Data collection

The data were collected through an online survey. Prior to the data collection, we conducted a pilot survey in order to reduce any ambiguity and bias in the questionnaire (Churchill, 1979). First, we distributed the questionnaire to five senior academics in the area of strategy and international business; we then made adjustments to reflect their feedback. Second, we conducted qualitative interviews with 11 senior managers of UK manufacturing SMEs. During the interviews, the participants commented on the appropriateness and comprehensibility of the questionnaire, which was accordingly revised. A final version was thus developed for distribution to our sample SMEs.

To design the survey, we used the Qualtrics online survey tool, embedding all our questions into a shareable web link. We opted to use the Qualtrics tool as it has the potential to improve the quality of a survey's response (De Boeck et al., 2019; Strese et al., 2018). Specifically, this tool

enabled us to keep track of the participation rate, obtain the actual time spent on the survey, and monitor IP addresses to avoid any double-counting of responses. It also provided the respondents with flexibility by enabling them to answer the questions at different times (via automatic save) and included attention check questions aimed at ensuring that the participants were paying attention while answering.

Upon opening the survey web link, the respondents were asked to provide their consent and answer two screening questions with the aim of ensuring that the participating SMEs definitely had active international alliance experience (Feurer et al., 2019; Seepana et al., 2020). The first question was: "*Has your firm actively participated in strategic alliances that involved the participation of external partners, such as customers, suppliers, or competitors*?" The second was: "*Has your firm actively participated in R&D strategic alliances with international partners?*" (Idris & Saridakis, 2018). Only those participants who responded positively to both screening questions were allowed to complete the questionnaire, yielding a total of 850 respondents qualified to do so. The respondents were instructed to select a bona fide international R&D alliance that had been strategically important for them—i.e., one associated with the joint accomplishment of their respective corporate goals through knowledge and resource exchange.

A total of 285 SMEs eventually responded to the survey. Seven of these responses were then rejected due to too many missing data. We thus finally ended up with a sample of 278 usable responses, corresponding to an acceptable 13.90% response rate. Table 1 summarizes the sample characteristics.

Insert Table 1 About Here

Most of the key informants in our sample were owners/chief executive officers (CEOs) (54.07%), with the remainder being mid-level managers (45.03%). Our respondents thus had insights into the strategic alliance practices and international operations of their firms. In addition, the knowledgeability of our respondents was evaluated using an ex post check in which they were asked to rate their knowledge of "*international strategic alliance activities*" and of "*international*

business operations" on a scale ranging from 1 (*not knowledgeable at all)* to 7 (*very knowledgeable*) (Robson et al., 2019). The mean scores recorded for the answers to these questions were 6.2 and 6.5, respectively, suggesting that our respondents did indeed have sufficient pertinent knowledge.

4.2. Variables and measurement

The measurement scales were selected through a thorough review of the extant literature. All of the variables were measured on a seven-point Likert scale unless specified otherwise. In order to measure AMC, co-innovation ambidexterity, and SME post-entry speed—which are the focus of our study—we studied the perceptions of SMEs in regard to the effectiveness of their AMC in reducing the risks of being exploited and thus in realizing alliance returns linked to co-innovation ambidexterity and achieving rapid post-entry internationalization. In Table 2, we present the measures used in this study and their validation results.

Insert Table 2 About Here

AMC was operationalized as the sample SMEs' ability to establish and manage alliance relationships to achieve relational rent (Dyer et al., 2018) and/or access external resources and capabilities (Ireland et al., 2002). In line with Schilke and Goerzen (2010), we conceptualized AMC as a higher-order construct consisting of four distinct lower-order dimensions: *interorganizational coordination*, *alliance proactiveness*, *alliance transformation*, and *interorganizational learning*. Interorganizational coordination and alliance transformation were operationalized using three-item scales, whereas alliance proactiveness and interorganizational learning were measured using four items. The mean scores of these four lower-order capabilities were used to operationalize AMC. We further assessed AMC as a higher-order reflective factor, and the weights linking AMC to interorganizational coordination (0.84), alliance proactiveness (0.76), alliance transformation (0.73), and interorganizational learning (0.76) were all found to be significant at the 1% level.

Co-innovation ambidexterity refers to the simultaneous attainment of both radical and incremental co-innovation (Wang et al., 2016; Zhang et al., 2016). Following Kauppila (2015) and

Lin et al. (2013), we measured radical and incremental co-innovation on the three-item scales described in Table 2. As we theorized the synergistic benefits arising from high levels of radical and incremental co-innovation, we measured co-innovation ambidexterity as a function of both (Cao et al., 2009; Jansen et al., 2009; Lin et al., 2013). Therefore, and following the ambidexterity literature (e.g., Ardito et al., 2020; Lin et al., 2013), co-innovation ambidexterity was operationalized as the product term of radical and incremental co-innovation (i.e., co-innovation ambidexterity = radical co-innovation x incremental co-innovation). Before generating the product term, we mean-centered both the radical and incremental co-innovation scales to avoid any issue of multicollinearity (Lin & McDonough Iii, 2014; Yan et al., 2021).

Post-entry internationalization speed was conceptualized as the pace at which the international expansion of our sample SMEs proceeded once they had internationalized (Chetty et al., 2014; Sadeghi et al., 2018). In our conceptualization—consistent with Prashantham and Young (2011), Hilmersson and Johanson (2016), and Hilmersson et al. (2017)—we accounted for each sample firm's international expansion by considering two objectives: (1) international commercial intensity growth and (2) commitment to building international reputation. Therefore, and in line with previous studies (e.g., Hilmersson & Johanson, 2016; Khalid & Bhatti, 2015), we operationalized post-entry internationalization speed using a five-item scale consisting of (1) international sales growth; (2) international profitability; (3) return on investment from international business; (4) market share in the international market; and (5) each sample firm's international reputation. We asked our respondents to evaluate their level of satisfaction with these objectives for the first two years of operation in a "*specific foreign market*"—i.e., the market their firm had most recently entered.

Control variables. In our hypothesized model, we included several control variables to understand their effects on co-innovation ambidexterity and post-entry internationalization speed. Following research on strategic alliances and post-entry internationalization speed (García-Canal & Sánchez-Lorda, 2007; Wu & Ang, 2020), we used firm size, firm age, industry, international

experience, and alliance experience as control variables. First, firm size can affect co-innovation ambidexterity and post-entry internationalization speed; this is because small firms lack economies of scale, bargaining power, and resources and, therefore, rely more than medium-sized ones on external resources (Roza et al., 2011). Following previous studies (Brouthers et al., 2015; Freixanet & Renart, 2020), we captured firm size based on the number of full-time employees. Second, firm age was included as a control variable because older firms are likely to be more experienced in managing alliances and handling international market activities (Elango et al., 2019). Third, we controlled for a firm's industry affiliation because co-innovation and the achievement of rapid post-entry internationalization may be easier in some industries than in others (Hollender et al., 2017). We therefore included an industry dummy variable coded as 1 = high-technology, 2 = medium-technology, and 3 = low-technology. Fourth, we included international experience because learning through foreign operations helps SMEs to overcome any liabilities of newness and foreignness (Hollender et al., 2017). It should be noted that international experience is distinct from host-country alliance experience in that the former is gained through stand-alone operations (Zhang & Pezeshkan, 2016). To capture this aspect, we used the number of countries in which a firm was operating. Finally, we controlled for alliance experience because our sample SMEs may have benefited from the formation of more alliances, which could have influenced their co-innovation ambidexterity and post-entry internationalization speed (Choi & Yeniyurt, 2015). Alliance experience was measured as the number of alliances formed by a firm in the previous three years (Schilke & Goerzen, 2010).

5. Analyses and Results

5.1. Validity and reliability

The validity and reliability of our constructs were assessed by performing a confirmatory factor analysis (CFA) in AMOS 26. The psychometric literature recommends that the $\chi 2/DF$ value should be ideally lower than 2.00 and insignificant, RMSEA ≤ 0.07, NFI $\geq .90$, CFI $\geq .90$, and SRMR ≤ 0.07 (Bagozzi & Yi, 2012; Hair et al., 2008). Accordingly, we found that the insignificant chi-

square (i.e., $\chi 2$ (DF) = 273.17 (238); $p > .05$) and other fit indices met these threshold criteria (i.e., NFI = .94; CFI = .99; RMSEA = 0.02; SRMR = 0.04), thus suggesting an excellent model fit.

Next, we assessed convergent validity by examining the factor loadings of items onto their latent constructs. The results, shown in Table 2, suggest significant factor loadings ranging between 0.68 and 0.92 ($p < .001$), well above the threshold value of 0.40 (Hair et al., 2008). Further, all the constructs reflected internal consistency because the average variance extracted (AVE) was above .50 (Fornell & Larcker, 1981). The constructs also showed reliability as Cronbach's alpha (CA) and composite reliabilities (CRs) were above the threshold of .70 (ranging from .76 to .95) (Gerbing & Anderson, 1988). We thus concluded that, overall, the constructs of our study had good convergent validity.

Furthermore, discriminant validity was evaluated by examining the squared inter-construct correlation (SIC) estimates (Najafi-Tavani et al., 2014). First, the results, shown in Table 3, indicate that none of the correlations was close to 1 at a 99.9% confidence interval. Second, as evidenced in Table 3, the squared root of the AVE for each construct is greater than the relevant SIC estimates (Fornell & Larcker, 1981), suggesting satisfactory discriminant validity.

Insert Table 3 About Here

5.2. Assessment of potential biases

To assess any potential non-response bias, we performed a two-tailed *t*-test between two respondent sub-groups: early and late respondents (Armstrong & Overton, 1977). The *t*-test results revealed no significant difference in the mean values of the two sub-groups, along with the descriptive and main variables in our study. Thus, we concluded that non-response bias was not a serious concern in our study.

Furthermore, the use of self-reported survey data raises the potential for common method bias (CMB). We thus applied several measures to mitigate the issue. First, we followed the recommendations of Podsakoff et al. (2003) and adopted ex ante measures, such as (1) ensuring the confidentiality and anonymity of the respondents; (2) separating the dependent and independent

variables to avoid any proximity effects; (3) avoiding any double-barreled questions to enable the respondents to provide accurate responses; (4) assuring the respondents that there were no right or wrong answers; and (5) measuring all constructs of the study by means of multiple items.

Second, we assessed the CMB issue using ex ante statistical tests. We performed Harman's single-factor test by conducting an exploratory factor analysis in SPSS 26. The test produced eight factors, the first of which explained only 33.89% of the total variance. We further performed Harman's single-factor test using CFA in AMOS 26. The results revealed poor model fit ($\chi 2$ (DF) = 2,408.68 (275); $p < .001$; NFI = .45; CFI = .48; RMSEA = 0.17; SRMR = 0.15). Following Lindell and Whitney (2001), we also adopted the marker variable technique by using a variable that was theoretically unrelated to the main ones of the study. We defined this marker variable as '*the degree to which your employees do not want their decisions to be questioned*.' The results suggest that the marker variable was not statistically correlated to the main ones of our study (e.g., "alliance proactiveness" = -0.05). Together, the statistical tests confirmed that CMB did not pose a significant threat to our study results.

5.3. Structural model estimation

The hypothesized model was assessed using path analyses in AMOS 26.0. We estimated a total of six different hierarchical models. Models 1 and 2 had co-innovation ambidexterity as a dependent variable. While Model 1 was the baseline containing only the control variables, Model 2 included control variables and AMC as the independent variable. Models 3–6 had post-entry internationalization speed as a dependent variable. Of these, Model 3 was the baseline with only control variables, Model 4 encompassed control variables and AMC as an independent variable, and Model 5 contained the effect of co-innovation ambidexterity on post-entry internationalization speed. The mediation effect was tested in Model 6 by simultaneously adding AMC and co-innovation ambidexterity. Throughout Models 1–6, we noticed changes in $\chi 2$/degrees of freedom and other fit indices. The results of the path analyses are provided in Table 4.

Insert Table 4 About Here

The hypothesized structural model appeared to fit the data well ($\chi 2$ (DF) = 84.40 (75); p > .10; NFI = .96; CFI = .99; RMSEA = 0.02; SRMR = 0.03). In Hypothesis 1, we proposed that AMC has a positive impact on co-innovation ambidexterity. Model 2 (see Table 4) shows a positive association between AMC and co-innovation ambidexterity (B = 0.87; p < .001), thus supporting Hypothesis 1. In Hypothesis 2, we suggested that co-innovation ambidexterity positively affects post-entry internationalization speed. Model 5 (Table 4) shows a positive and significant (B = 0.42; p < .001) relationship between co-innovation ambidexterity and post-entry internationalization speed, thereby supporting Hypothesis 2. In Hypothesis 3, we proposed that co-innovation ambidexterity mediates the effect of AMC on post-entry internationalization speed. We followed Baron and Kenny (1986) method[3] to test the mediating relationship. In Model 4, the results were found to provide support (B = 0.26; p < .001) for the first condition of the Baron and Kenny (1986) approach. The results in Models 2 and 5 were found to provide support for the second and third conditions of Baron and Kenny's (1986) approach simultaneously. For the last condition, all the paths were added in Model 6. As evidenced by the results of Model 6 (Table 4), the effect of AMC on post-entry internationalization speed becomes insignificant when the path from AMC to post-entry internationalization speed is channeled through co-innovation ambidexterity, thus providing support for Hypothesis 3.

5.4. Robustness analyses

We conducted several supplementary analyses to check the sensitivity of our findings. First, we further validated the hypothesized mediation effect using the bootstrapping technique and the Sobel test. We used the Process macro at a 95% confidence interval using 5,000 samples (Hayes & Preacher, 2013). The results were found to suggest that AMC is positively related to co-innovation ambidexterity (B = 0.60, p < .001), and this co-innovation ambidexterity is positively related to

[3] Baron and Kenny (1986) suggested four conditions to establish mediation: (1) a significant relationship between the independent and dependent variables; (2) a significant association between the independent and mediating variables; (3) a significant linkage between the mediating and dependent variables; and (4) a reduced or insignificant effect of the independent on the dependent variable when controlling for the effect of the mediating variable on the dependent one.

post-entry internationalization speed (B = 0.22, p < .01). The standardized indirect effect of co-innovation ambidexterity on the relationship between AMC and post-entry speed was found to be 0.13 and significant (95% confidence interval [CI] [0.04, 0.22]). The results of the Sobel test were further found to confirm the significance of the indirect effect of co-innovation ambidexterity (Z = 2.92, p < .01). Thus, the bootstrapping technique and the Sobel test were found to provide formal support for Hypothesis 3. The results are summarized in Figure 2.

Insert Figure 2 About Here

Second, although the multiplicative index of co-innovation ambidexterity was found to be associated with post-entry internationalization speed, some scholars argue that a multiplicative term can result in a loss of information and interpretability that is detrimental to data analysis (He & Wong, 2004; Lubatkin et al., 2006). Therefore, we took the additive approach to obtain a measure reflecting the total level of innovation ambidexterity (Hill & Birkinshaw, 2012). In doing so, we followed previous studies (e.g., Hughes et al., 2010; Jansen et al., 2009) and calculated an additive term by tallying up radical and incremental co-innovation (i.e., radical co-innovation + incremental co-innovation). Post-entry internationalization speed was found to be significantly and positively affected by radical co-innovation (β = 0.12, p < .05), incremental co-innovation (β = 0.35, p < .001), and co-innovation ambidexterity (β = 0.28, p < .001) using the combined index. Furthermore, to assess the impact on post-entry internationalization speed, we simultaneously added the combined index of co-innovation ambidexterity and AMC into the model. The results were found to suggest that the effect of AMC on the combined index of co-innovation ambidexterity (β = 0.62, p < .001), and the effect of this index on post-entry speed (β = 0.38, p < .001) remained consistent with the initial findings of our study.

Third, a decomposed model was used to test the mediation effect of the individual dimensions of co-innovation ambidexterity—that is, radical and incremental co-innovation. We found a significant relationship between AMC and radical co-innovation (β = 0.52, p < .001), as well as between AMC and incremental co-innovation (β = 0.63, p < .001). However, we found a

significant relationship only between incremental co-innovation and post-entry speed ($\beta = 0.44$, $p < .001$). The impact of radical co-innovation on post-entry speed was found to be insignificant ($\beta = 0.11$, $p > .10$). We further found that incremental co-innovation mediates the impact of AMC on post-entry speed (standardized effect = 0.14; 95% CI [0.08, 0.20]) but found no evidence for the mediation effect of radical co-innovation for AMC and post-entry speed (standardized effect = 0.02; 95% CI [0.001, 0.08]). This confirmed our findings from the main study—i.e., that co-innovation ambidexterity is more significant than each of its dimensions.

Fourth, self-selection, omitted variables, and simultaneity raised the potential for endogeneity (Lu et al., 2018). The use of panel data—which is recommended with regard to the self-selection problem (Semykina & Wooldridge, 2010; Zaefarian et al., 2017)—was not possible in our study. Therefore, to avoid any self-selection bias, we selected our sample systematically to ensure data heterogeneity (Maria Stock et al., 2017). To address the omitted variables issue, we included the relevant control variables that might affect co-innovation ambidexterity and post-entry internationalization speed. Furthermore, the issue of simultaneity exists when the independent and dependent variables mutually affect each other. While AMC has been theorized to be a key enabler of collaborative actions and performance (Leischnig et al., 2014; Schilke & Goerzen, 2010), we used instrumental variables to assess the simultaneity issue between AMC, co-innovation ambidexterity, and post-entry internationalization speed (Jean et al., 2016; Li et al., 2021; Lu et al., 2018). The instrumental variables needed to be correlated with co-innovation ambidexterity and uncorrelated with post-entry internationalization speed and its error term (Hausman & Wise, 1981). We selected the instrumental variables based on Lachenmaier and Wößmann (2006). Specifically, as instruments, we chose the motivations[4] and constraints[5] affecting SME co-innovation decisions (Garriga et al., 2013; Holmberg & Cummings, 2009). Our correlation results confirmed that the

[4] In order to compute this measure, the respondents were asked to evaluate the motivations underpinning co-innovation decisions in terms of (1) sharing R&D costs; (2) developing technology; and (3) exchanging technical knowledge (Holmberg & Cummings, 2009) (CA = .91).

[5] This was measured by asking the respondents to evaluate the constraints hampering co-innovation decisions with regard to (1) lack of qualified human resources; (2) cost and risk aspects; and (3) issues with technologies (Garriga et al., 2013) (CA = .90).

motivations underpinning co-innovation decisions are positively correlated with co-innovation ambidexterity (r = .47, p < .001) but insignificantly correlated with post-entry internationalization speed (r = .07, p > .10). Similarly, the constraints hindering co-innovation decisions were found to be negatively related with co-innovation ambidexterity (r = -.41, p < .001) but insignificantly correlated with post-entry internationalization speed (r = -.09, p > .10). These results increased the level of confidence for the chosen instrumental variables having good explanatory power for the potential endogenous variables (Dai et al., 2018; Huybrechts et al., 2012). Therefore, we used two instrumental variables for the Durbin-Wu-Hausman test, but the results did not suggest any potential endogeneity issue (p > .10). Then, we used the two-stage least square estimation technique; in the first stage, we inspected the F-statistics (19.32; p < .001) and the R^2 value (0.37), both of which were found to be above the threshold related to weak instrument issues (Stock et al., 2002). The predicted values were saved and used in the second stage. The results were found to suggest that the effect of co-innovation ambidexterity on post-entry internationalization speed remained significant and in the expected direction (β = 0.22, p < .05) even after the addition of two instrumental variables. Overall, the results were found to suggest that endogeneity was not a serious concern in our study.

6. Discussion

The purpose of this study was to contribute to the emerging literature on SME post-entry internationalization behaviors. By drawing on the RBV and alliance literature, our study argues that SMEs can utilize AMC and co-innovation ambidexterity to enhance post-entry internationalization speed (Oviatt & McDougall, 2005; Prashantham & Young, 2011). The findings suggest that AMC enables SMEs to achieve co-innovation ambidexterity by concurrently pursuing radical and incremental co-innovation. We also found that co-innovation ambidexterity promotes SME post-entry internationalization speed. More importantly, our results suggest that co-innovation ambidexterity mediates the relationship between AMC and post-entry

internationalization speed. These findings have important implications for both theory and practice, as discussed below.

6.1. Theoretical implications

Our study contributes to the literature in several ways. First, our study provides new insights into the intricate overlap between the post-entry internationalization speed, international entrepreneurship, and network capability streams of research (Prashantham et al., 2019; Prashantham & Young, 2011). In specific, we conceptualize and validate the role of AMC in driving the post-entry internationalization speed of SMEs when these firms engage in international R&D strategic alliances. While previous research has highlighted the importance of international R&D strategic alliances in triggering SMEs' internationalization process and reducing their liability of foreignness (Child & Hsieh, 2014; Menzies et al., 2020), these studies have overlooked the changeable nature of such alliances including the difficulties of rapidly identifying suitable partners with complementary R&D knowledge and effectively managing relational tensions that can quickly evolve in the aftermath of new market entry. Therefore, our study addressed this limitation by explaining how AMC (as the capability needed to proactively identify international R&D partners, learn from them, transform international R&D alliances, and coordinate mutual R&D activities) can enable SMEs to accumulate new stocks of market and technological knowledge, which is vital for their rapid expansion into international markets (Prashantham et al., 2019).

Second, while the existing global strategy literature has hitherto overlooked the path through which AMC can promote SMEs' post-entry internationalization speed (Freixanet & Renart, 2020), we address this gap by theoretically establishing co-innovation ambidexterity as a critical underlying mechanism that links AMC and SME post-entry internationalization speed. More specifically, we found that those firms that employ their AMC to manage international R&D alliances can better deal with concurrent radical and incremental co-innovation due to their ability to simultaneously and efficiently explore and exploit knowledge for achieving international growth (Kauppila, 2015). In this regard, our results imply that co-innovation ambidexterity mediates the

AMC–post-entry internationalization speed relationship. This finding is consistent with the RBV contention that lower-order capabilities are needed to capitalize on higher-order capabilities for competitive advantage (Barney, 1991; Collis, 1994). Specifically, co-innovation ambidexterity (i.e., a lower-order capability) channels the linkage between AMC (i.e., a higher-order capability) and post-entry internationalization speed (i.e., a competitive advantage).

Finally, our study makes a significant theoretical contribution to the internationalization literature by focusing on the intermediate stage and its associated complexities when firms engage in strategic alliances (Hashai & Zahra, 2022; Prashantham & Young, 2011). Our conceptual logic and empirical evidence complement the understanding of the ambidexterity construct in the alliance setting by focusing on "co-innovation ambidexterity" (Ardito et al., 2019), as well as of the post-entry phase of internationalization where the firm has managed its transition and needs to stabilize its presence in the given foreign market it has entered (Breuillot et al., 2022). More specifically, while the extant literature offers a detailed account of the factors that can be used to enact a dual exploitation-exploration strategy (Lin et al., 2013; Martin et al., 2017), its insights have hitherto remained limited to internal innovation ambidexterity. Our study advances the empirical investigation of the factors that produce ambidexterity in alliances—i.e., co-innovation ambidexterity (Kauppila, 2010). We show that through AMC, SMEs can reduce tensions stemming from the radical/incremental co-innovation paradox by temporally separating these activities. Therefore, our research provides a more nuanced understanding of the specific relational capabilities that contribute to SMEs' rapid international growth, as well as offers a detailed view of the mechanisms involved. This, in turn, extends prior research by highlighting the importance of the post-entry phase and its potential implications for SMEs' engagement with international strategic alliances.

Overall, we advance much-needed strategic perspectives on SMEs' post-internationalization speed by identifying AMC as an important capability that enhances the post-entry internationalization speed of SMEs via co-innovation ambidexterity. Such strategic

perspectives are relatively underexplored in the extant scholarship on post-entry internationalization speed, which has predominately focused on learning perspectives (cf. Prashantham & Young, 2011; Puthusserry et al., 2020).

6.2. Practical implications

Our findings have important implications for managers and policymakers. First, we found that AMC is vital to SME post-entry internationalization speed. Although SMEs benefit from international R&D strategic alliances (Musteen et al., 2014; Puthusserry, Khan, et al., 2020), they often struggle to find suitable alliance partners or get stuck in relationships that do not yield the required resources (Lin et al., 2020). In this regard, AMC, as a unique networking capability, enables SMEs to strategically select new partners and leverage their knowledge to pursue new opportunities (Walter et al., 2006). Thus, SMEs should deliberately strategize AMC as an important accelerator of post-entry internationalization speed. They should provide training to and develop the competencies of their managers to enable them to develop and manage international alliances to rapidly expand into international markets.

Second, our study points to the importance of co-innovation ambidexterity in driving SMEs' international expansion. Thus, SME managers may benefit by simultaneously pursuing radical and incremental co-innovation with their international R&D alliance partners. In other words, the outcome of the success of such pursuit—i.e., co-innovation ambidexterity—represents a key mechanism through which SMEs need to engage in leveraging their alliance capabilities. Co-innovation ambidexterity, together with AMC, may provide managers with better opportunities to realize their SMEs' rapid post-entry internationalization. Managers endowed with AMC can take advantage of international R&D strategic alliances by unpacking actionable tasks—such as the development of new products and/or the refinement of existing ones—to increase post-entry internationalization speed. Indeed, co-innovation ambidexterity plays a key role in bridging the gap between AMC and post-entry internationalization speed. Therefore, the key message for managers

is to invest in AMC and become involved in co-innovation ambidexterity in order to enhance their SMEs' post-entry internationalization speed.

Finally, our study offers new insights into institutional policymaking. Specifically, our theoretical and empirical evidence suggests that policymakers should devise new mechanisms suited to stimulate the post-entry internationalization speed of SMEs. While the current mechanisms are predominately built upon advancing SME access to finance, facilitating patent development, and developing various technical capabilities (Azar & Ciabuschi, 2017; Bagheri et al., 2019), our study provides new insights that point to the need to enact specific policies and schemes focused on fostering SME endeavors aimed at building international alliances as key enablers of post-entry internationalization speed. As such, and consistent with those produced by a few emerging studies (Franco et al., 2020; Zahoor & Al-Tabbaa, 2021; Zahoor et al., 2023), our findings highlight the role played by AMC, thus directing policymakers to consider building this capability as a core theme when developing/updating the policies aimed at strengthening their SMEs' internationalization strategies.

5.3. Limitations and future research avenues

Despite its contributions, our study has potential limitations that signal opportunities for future research. First, our study's empirical context was limited to UK SMEs. Given the unique characteristics of SMEs, such as the small size and limited resources that distinguish them from their larger counterparts, future studies could test our study model in the context of both small and large firms across various markets. Large firms are endowed with better resources and capabilities, such as those related to absorptive and alliance portfolio management, and are more experienced in managing alliances; it would therefore be interesting to test our model in the context of large firms setting up alliances across various markets to see whether the basic premise of our model holds or if there are other variables—such as top management team characteristics, alliance portfolio capability (cf. Degener et al., 2018; Hoffmann, 2007), or firm structure—that may enable them to derive more value from their partners for subsequent market entry and innovation.

Second, our study variables (e.g., firm size, post-entry internationalization speed) were measured through self-reported data due to our inability to collect enough objective performance data from our sample. This is a major problem in the SME context, in which objective data are difficult to access (Zahoor et al., 2020). Future studies could thus strive to obtain objective data from different sources, such as industry associations, annual reports, etc. In a similar vein, future research should focus on capturing the varying speeds of internationalization during the post-entry phase. This could be achieved through the use of more objective data and by factoring in other influencing factors. For example, the examination of the impact of cultural differences and institutional factors on the relationship between AMC and post-entry internationalization at various speeds could provide valuable insights for firms seeking to expand internationally. Such a study could also provide a basis for comparison of the performance of firms operating in different cultural and institutional contexts.

Third, there may be "sweet spot" levels of both the radical and incremental dimensions of co-innovation ambidexterity. Radical co-innovation may turn out to be more important than incremental co-innovation, or vice versa, in different SME internationalization phases. Therefore, future studies could investigate the impact of both co-innovation types during different phases of international expansion. Another related area of research could involve examining the impact of AMC during the different stages of an alliance's lifecycle for both radical and incremental co-innovation.

Fourth, due to the limited scholarly research hitherto conducted in this area, our study was focused on the determinants of post-entry internationalization speed. Future studies could consider factors that may drive the internationalization process at different stages; for example, pre- and post-entry internationalization speed, post-entry commitment speed, and post-entry growth (Puthusserry, Child, et al., 2020). Last, firms engage with different types of alliance partners, and the nature of these alliances is also changing from equity- to non-equity based; it would thus be

interesting to examine the role played by AMC across both equity and non-equity alliances and in relation to SME post-entry internationalization speed.

6. Conclusion

While the topic of post-entry internationalization speed of SMEs is gaining prominence in the global strategy literature, research regarding its antecedents remained relatively limited. By drawing upon the theoretical perspective of the RBV and leveraging the existing body of literature on international R&D strategic alliances, we developed and validated a theoretical framework that explains the effect of AMC in boosting SMEs' post-entry internationalization speed and highlights the vital role of co-innovation ambidexterity as a critical mediator that links AMC with speed. Our study also points out directions for future research concerning the AMC and post-entry internationalization speed relationship, including the context of both SMEs and large organizations in different markets, contingency factors (e.g., cultural differences and institutional factors) that influence the AMC- post-entry internationalization speed relationship, and different determinants of internationalization process at different stages (e.g., pre- and post-entry internationalization speed). It is our hope that this study will propel further research on the crucial topic of post-entry internationalization speed given the challenges SMEs face as they internationalize into foreign markets.

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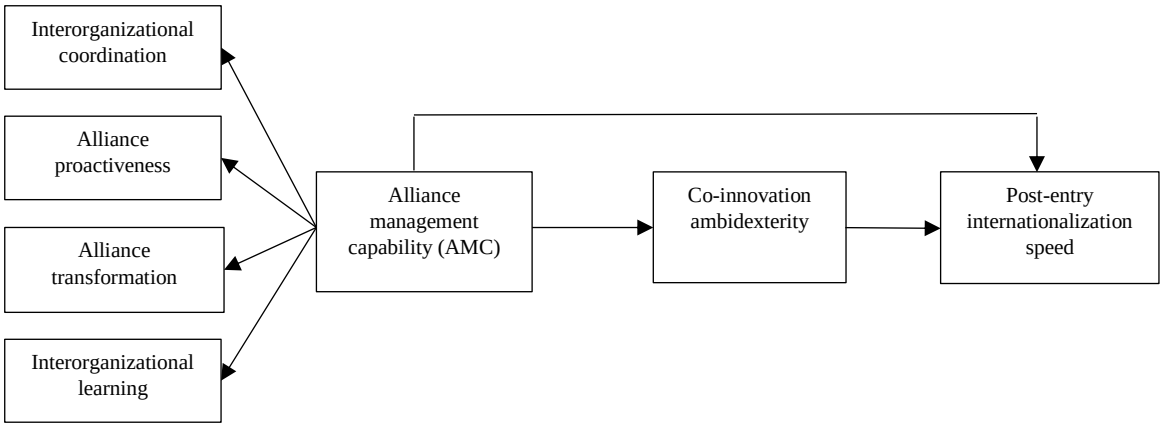
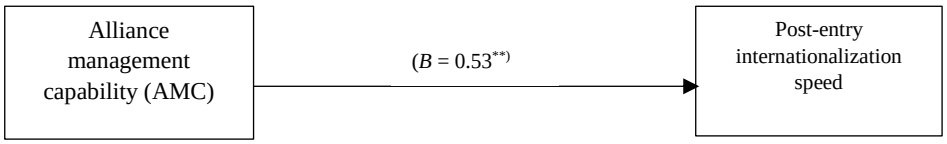
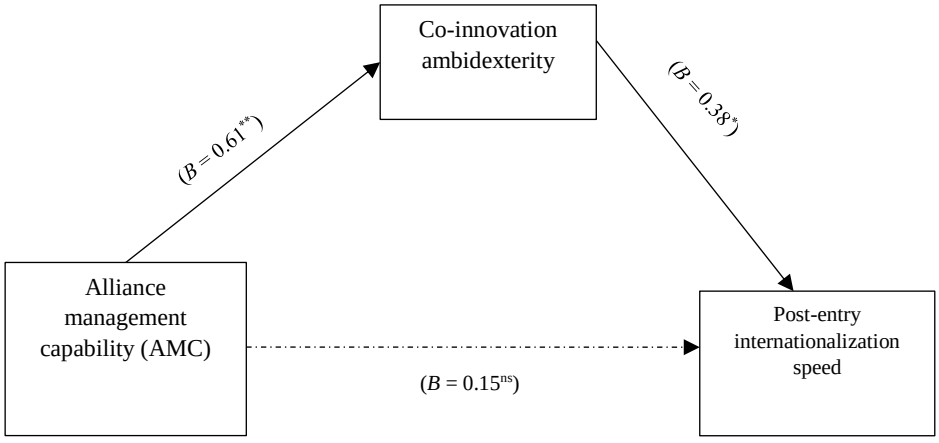


Figure 1. The theoretical framework.



(a) The direct relationship between AMC and post-entry speed



(b) The indirect effect of AMC on post-entry speed through co-innovation ambidexterity

Notes: ***p* < .001; **p* < .01; ns = not significant.

Figure 2. Results for the mediation effect.

Table 1. Sample characteristics.

Description	Number	%
Managerial experience (in years)		
1–5	54	19.4
6–10	100	36.0
11 and over	124	44.6
Firm size (in number of employees)		
1–49	90	32.4
50–99	60	21.9
100–250	127	45.7
Firm age (in years)		
1–15	140	50.4
16–30	110	39.6
31–45	15	5.4
45 and over	13	4.7
Industry		
High-technology (chemicals, pharmaceuticals, weapons and ammunition, electrical equipment, computers, machinery and equipment, motor vehicles, medical instruments)	132	47.5
Medium-technology (rubber and plastic products, other non-metallic mineral products, basic metals, ships and boats, repair and installation of machinery and equipment)	88	31.7
Low-technology (food products, beverages, tobacco products, textiles, wearing apparel, leather and related products, wood products, paper products, printing and reproduction of recorded media, petroleum products, fabricated metal products, furniture)	58	20.9
International experience (in years)		
1–5	142	51.1
6–10	58	20.9
11–15	50	18.0
16 and over	28	10.1
International scope (number of countries)		
1–3	183	65.8
4–6	57	20.5
7–9	12	4.3
10 and over	26	9.4
Alliance experience (number of alliances)		
1	111	39.9
2	82	29.5
3	51	18.3
4–6	34	12.3

Table 2. Measures and measurement model.

Details of measures, and results of reliability tests for multi-item constructs	Standardized factor loadings
Interorganizational coordination (α = .82; CR = 0.84; AVE = .63)	
Please indicate the level of agreement for interorganizational coordination in terms of the following:	
Our activities with our partners are well coordinated.	0.77
We ensure that our work is synchronized with the work of our partners.	0.88
There is a great deal of interaction with our partners on most decisions.	0.72
Alliance proactiveness (α = .83; CR = 0.85; AVE = .59)	
Please indicate the level of agreement for alliance proactiveness in terms of the following:	

We strive to thwart our competition by entering into alliance opportunities.	0.77
We often take the initiative in approaching firms with alliance proposals.	0.77
Compared to our competitors, we are proactive and responsive in finding and "going after" partnerships.	0.80
We actively monitor our environment to identify alliance opportunities.	0.72
Alliance transformation (α = .81; CR = 0.82; AVE = .59)	
Please indicate the level of agreement for alliance learning in terms of the following:	
We are willing to put aside contractual terms to improve the outcome of our alliances.	0.76
When an unexpected situation arises, we would rather modify an alliance contract than insist on the original terms.	0.80
Flexibility in response to a request for change is characteristic of our alliance management process.	0.75
Interorganizational learning (α = .89; CR = 0.88; AVE = .67)	
Please indicate the level of agreement for interorganizational learning in terms of the following:	
We have the skills to learn successfully from our partners.	0.90
We have the managerial competencies to absorb new knowledge from our partners.	0.88
We have effective routines to analyze the information obtained from our partners.	0.72
We can successfully integrate our existing knowledge with new information acquired from our partners.	0.73
Radical co-innovation (α = .80; CR = 0.80; AVE = .57)	
Please indicate your level of agreement with these statements on your perception of radical innovation with alliance partners:	
The important driver of our alliance is to use new, breakthrough technologies.	0.79
The intent of our alliance is to create radical new ideas or ways of doing things.	0.77
Our alliance helps us to come up with creative ideas that challenge conventional ones.	0.70
Incremental co-innovation (α = .76; CR = 0.76; AVE = .51)	
Please indicate your level of agreement with these statements on your perception of incremental innovation with alliance partners:	
The aim of our alliance is to improve efficiency.	0.70
We can rationalize our business operations within our alliance.	0.79
Our alliance facilitates the improved quality of existing innovations.	0.68
Post-entry internationalization speed (α = .96; CR = 0.95; AVE = .78)	
Please indicate your level of satisfaction with the pace of achieving objectives in the first two years of entry in a specific foreign market:	
International sales growth	0.92
International profitability	0.90
Return on investment from international business	0.90
Market share in international market	0.89
International reputation of the firm	0.91
Firm size	
Number of full-time employees	NA
Firm age	
Number of years since the firm was founded	NA
Industry	
1 = high-technology; 2 = medium-technology; 3 = low-technology	NA
R&D intensity	
Ratio of number of full-time employees and R&D employees	NA
International experience	
The number of years since the firm first exported	NA
Alliance experience	
Number of alliances formed during the last three years	NA

Notes: Fit indices: $\chi 2$ (DF) = 485.22 (366); NFI = .92; CFI = .98; GFI = 0.91; RMSEA = 0.03; SRMR = 0.04

Table 3. Descriptive statistics and inter-construct correlations.

Variables	Mean	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Interorganizational coordination	5.43	1.01	**0.79**												
2. Alliance proactiveness	5.44	1.03	0.59***	**0.77**											
3. Alliance transformation	5.31	0.97	0.54***	0.52***	**0.77**										
4. Interorganizational learning	5.34	0.92	0.52***	0.46***	0.50***	**0.81**									
5. Radical co-innovation	5.38	0.96	0.48***	0.40***	0.51***	0.45***	**0.75**								
6. Incremental co-innovation	5.23	0.95	0.44***	0.34***	0.38***	0.33***	0.41***	**0.72**							
7. Post-entry internationalization speed	5.10	1.34	0.17**	0.20**	0.15*	0.20**	0.13*	0.37***	**0.88**						
8. Firm size‡	1.84	0.39	0.05	0.04	0.07	0.16**	0.14*	0.10	0.14*	1.00					
9. Firm age‡	1.10	0.36	0.05	0.10†	0.07	0.08	0.07	0.13*	0.07	0.15*	1.00				
10. Industry#	1.73	0.78	-0.03	-0.02	0.05	0.03	0.05	0.11	0.15*	0.04	-0.04	1.00			
11. R&D intensity	0.33	0.44	-0.08	-0.03	-0.11†	-0.11†	-0.10†	-0.09	-0.09	-0.24**	-0.01	-0.11†	1.00		
12. International experience‡	0.59	0.46	0.14*	0.14*	0.08	0.08	0.10	0.13*	0.01	0.10†	0.64***	0.00	-0.02	1.00	
13. Alliance experience	2.08	1.14	0.00	0.05	-0.07	-0.08	-0.01	-0.01	0.14*	0.00	0.04	-0.15*	0.11†	0.04	1.00

Notes: The square roots of the average variance extracted are reported along the diagonal; ‡ = natural logarithm transformation of the original values; *SD* = standard deviation; # = dummy variables; ***$p < .001$; **$p < .01$; *$p < .05$; †$p < .10$.

Table 4. Structural model results.

Independent variables	**Dependent variables**					
	Co-innovation ambidexterity		***Post-entry internationalization speed***			
	Model 1	***Model 2***	***Model 3***	***Model 4***	***Model 5***	***Model 6***
Control paths						
Firm size	0.15† (1.87)	0.08 (1.35)	0.13* (2.19)	0.10 (1.67)	0.06 (1.05)	0.09 (1.49)
Firm age	0.07 (0.67)	0.07 (0.087)	0.09 (1.20)	0.09 (1.21)	0.06 (0.74)	0.08 (1.05)
Industry	0.12 (1.46)	0.11† (1.71)	0.19** (3.08)	0.17** (2.93)	0.12† (2.01)	0.16* (2.64)
R&D intensity	-0.04 (-0.56)	0.02 (0.25)	-0.04 (-0.70)	-0.02 (-0.035)	-0.02 (-0.38)	-0.03 (-0.43)
International experience	0.12 (1.19)	-0.02 (-0.26)	-0.07 (-0.93)	-0.11 (-1.43)	-0.11 (-1.49)	-0.10 (-1.34)
Alliance experience	-0.00 (0.01)	0.02 (0.40)	0.18** (3.02)	0.17** (2.95)	0.17** (2.81)	0.17** (2.93)
Hypothesized paths						
AMC		0.87*** (6.84)		0.26*** (3.76)		-0.16 (-0.96)
Co-innovation ambidexterity					0.42*** (4.76)	0.49** (2.82)
Goodness of fit statistics						
χ^2/D.F.	38.65/37	120.99/110	32.57/30	110.481/96	106.761/96	136.18/110
RMSEA	0.01	0.02	0.02	0.02	0.02	0.03
SRMR	0.03	0.03	0.03	0.03	0.03	0.04
NFI	.95	.93	.98	.95	.96	.94
CFI	.99	.99	.99	.99	.99	.99

Notes: ***p < .001; **p < .01; *p < .05; †p < .10; Critical t-values for hypothesized paths are in parentheses.