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Alliances with frenemies: capability-building mechanisms linking coopetition to firm performance

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ABSTRACT

Coopetition functions as a double-edged sword, offering both benefits and costs. Drawing on the capability-building perspective, we examine the intermediate mechanism through which coopetition gives rise to superior performance. We explore two interrelated yet seemingly paradoxical learning capabilities, namely absorptive capacity (AC) and unlearning, which serve as mediating mechanisms that link coopetition to financial and non-financial performance. Our findings from a sample of 190 Iranian SMEs confirm that AC mediates the effect of coopetition on both financial and non-financial performance, whereas unlearning did not directly mediate any of these relationships. However, we found that unlearning serves as an important catalyst for the development of AC, which in turn affects performance. This study contributes to the literature by examining the bridging mechanism underlying the performance impact of coopetition and contributes to the debate on the development of capabilities in coopetition partnerships.

1. Introduction

Coopetition, the simultaneous pursuit of cooperative and competitive interactions with rivals for mutual benefit (Bengtsson & Kock, 2000), is often described as a double-edged sword, yielding both advantages and risks (Rai et al., 2023). While the cooperative dimension facilitates knowledge sharing and resource pooling, the competitive dimension drives firms to protect critical assets and maintain strategic advantage. This inherent tension can yield benefits but also poses significant risks if not managed effectively (Bouncken et al., 2015). Although the benefits of coopetition are well-documented (Xie et al., 2023), this strategy is not a one-size-fits-all solution and its contribution to performance is neither uniform nor guaranteed. More than half of coopetitive relationships result in either underperformance or outright failure (Bengtsson et al., 2016), due to challenges such as learning races and opportunistic behaviour among partners (Ritala & Hurmelinna-Laukkanen, 2009). The challenges of coopetition might be even more pronounced for SMEs (Klimczak et al., 2023). Although collaboration potentially yields greater returns for SMEs (Audretsch et al., 2023), they face distinct risks that heighten the likelihood of failure (Chiambaretto et al., 2020; Gernsheimer et al., 2024). Limited resources and managerial experience often leave SMEs ill-equipped to navigate the complexities of coopetitive relationships (Chiambaretto et al., 2020). Moreover, they are particularly vulnerable to the loss of critical resources through opportunistic partners, potentially eroding their competitive advantage (Lechner et al., 2016; Xie et al., 2023).

Since Hoffmann et al.'s (2018) agenda-setting article, scholars have increasingly taken up their call for examining the relationship between coopetition and business performance. However, much of this research has centred on the question of '*when*' firms benefit from coopetition, focusing on performance contingencies (for a review, see Xie et al., 2023). This study aims to extend this body of literature by shifting the focus to underlying mediating mechanisms, addressing '*how*' coopetition enhances performance. As highlighted by Ketchen Jr et al. (2004, p. 787), "coopetition potentially can lead to competitive advantages if it is designed in such a way that its negatives are minimized." Despite promising scholarly developments, the question of how firms can overcome the challenges of coopetition and minimise its negative consequences, and harness its performance opportunities remains insufficiently addressed. Moreover, existing studies have produced mixed and inconclusive results (for a recent review, see Xie et al., 2023). This research is motivated by these gaps.

We posit that the conflicting findings in the literature may be partly due to an unexplored bridging process or the "black box" mediating the

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performance outcomes of inter-firm coopetition. This gap is compounded by insufficient examination of how coopetition might distinctly affect different types of performance outcomes. Our investigation contributes to this debate by offering an explanatory mechanism through which SMEs can realise the financial and non-financial performance benefits of coopetition. Drawing on the capability-building perspective (Eisenhardt & Martin, 2000; Teece et al., 1997) as our theoretical lens, we examine the learning mechanism that translates coopetition into various performance outcomes among SMEs. The capability-building perspective suggests that exposure to higher degrees of environmental dynamism and task heterogeneity triggers effective learning and capability-building mechanisms (Lundan & Li, 2019; Zollo & Winter, 2002). Consequently, our overarching argument is that coopetition stimulates the process of capability development by exposing firms to diverse business environments and enabling SMEs to translate improved capabilities into enhanced performance.

We propose that the success of coopetition depends on two interrelated yet seemingly paradoxical capabilities: absorptive capacity (AC) and unlearning. Coupled together, these capabilities may empower firms to better leverage learning opportunities presented by coopetition, leading to enhanced financial and non-financial performance. Firstly, AC is instrumental in realising the benefits of coopetition. It enables firms to recognise the value of external knowledge, learn from their partners, merge the newly obtained knowledge with their existing knowledge base, and ultimately transfer this knowledge back into the organisation (Lewin et al., 2011). The role of AC in the success of coopetition has remained an open debate. In their systematic review of the coopetition literature, Dorn et al. (2016) called for further investigating the role of AC in the success of coopetition.

We propose unlearning capability as the second mediator in the coopetition-performance relationship. In coopetition, newly acquired knowledge can clash with established organisational routines which impedes learning and hinder the development of new practices (Klammer & Gueldenberg, 2019; Zahra et al., 2011). To fully realise the learning advantages of coopetition, firms must discard redundant or outdated practices to create space for acquiring and integrating new knowledge. This concept aligns with organisational unlearning capability, defined as the deliberate process of questioning, identifying, and eliminating outdated knowledge, routines, or practices to adopt new knowledge and behaviours (Sharma & Lenka, 2021). We further suggest that unlearning is a prerequisite for organisational learning as it paves the way for absorbing and implementing new knowledge and facilitating organisational change (Becker, 2008; de Holan & Phillips, 2004; Wang et al., 2013). Thus, we concur with Markóczy (1994, p. 6) that "organizational learning includes not only the development of new routines but the unlearning of the old ones as a parallel activity." Despite scholarly recognition of unlearning as a facilitator of organisational learning (Starbuck, 2017), there is limited empirical study concerning its function, particularly in the context of coopetition.

This article makes three significant contributions. Firstly, our primary contribution lies in unravelling the coopetition-performance relationship and elucidating how firms can enhance both financial and non-financial performance through coopetition. This study addresses the call for a deeper exploration of the dynamics and the mechanisms underpinning coopetitive relationships (Bengtsson & Kock, 2014; Gnyawali & Ryan Charleton, 2018). Secondly, this paper enriches the capability-building perspective by concurrently incorporating two learning capabilities, i.e., unlearning and AC. By doing so, we address the call by Czakon et al. (2020) to examine the organisational capabilities developed and used in the process of coopetition. Particularly, we shed light on how the parallel learning-unlearning process shapes the coopetition-performance relationship. In doing so, we also respond to calls for an examination of the interplay between organisational learning and unlearning (Klammer & Gueldenberg, 2019). Thirdly, prior research on the coopetition-performance relationship has predominantly focused on large firms from developed countries (e.g., Gernsheimer et al., 2021; Kraus et al., 2019). This casts doubt on the generalisability of previous findings to resource-constrained SMEs operating in emerging markets (Chiambaretto et al., 2020; Corbo et al., 2023; Gernsheimer et al., 2024). This study enhances our understanding of coopetition's impact on SMEs in Iran, an emerging country with a unique commercial landscape.

2. Theory and hypotheses

This study adopts the capability-building perspective (Eisenhardt & Martin, 2000; Teece et al., 1997) with a focus on organisational learning capabilities to examine the mechanism underpinning the coopetition-performance relationship. According to the capability-building perspective, 'wrestling with heterogeneous stakeholders' (Lundan & Li, 2019, p. 42) and "path-breaking resource commitments" (Li & Fleury, 2020, p. 29) stimulate the development of more robust firm capabilities. These unique path-dependent capabilities empower firms to enhance their resource efficiency and fully exploit their potential (Lin & Wu, 2014; Lu et al., 2010). Consistent with this perspective, Amit and Schoemaker (1993, p. 35) characterise firm-specific capabilities as 'intermediate goods' generated by firms, which facilitate the transformation of their resources into performance results.

Building upon this theoretical foundation, we argue that the development of organisational capabilities related to learning and unlearning, facilitated by coopetition, serves as a bridging mechanism for realising performance outcomes of coopetition. It is well established that the acquisition of knowledge alone is insufficient for fostering organisational learning (Grant, 1996; March 1991). Knowledge is a tacit and intricate resource that is not readily transferable or tradable through conventional market channels. Consequently, firms need to allocate resources to in-house knowledge management and coordination systems to systematically assimilate and internalise new knowledge (Sun & Anderson, 2010). In line with this logic, this study proposes that two interrelated organisational learning capabilities, namely AC and unlearning, collectively form a parallel mechanism that plays a pivotal role in translating the advantages of coopetition into enhanced performance for SMEs. Our conceptual framework is displayed in Fig. 1.

Our theoretical contribution explicitly contrasts the impacts of coopetition with those arising from cooperation with non-competitors, highlighting how rivalry-induced tensions uniquely shape SMEs' learning and capability development processes. Pure cooperation primarily involves knowledge sharing, complementary resource exchange, and mutual value creation without direct competitive threats, so governance mechanisms centre on coordination. In pure competition, firms face intense rivalry without the information-rich interface that intentional knowledge exchange provides (Khanna et al., 1998). However, in coopetition, the proximity of market and resource similarity compels firms to manage dual, often conflicting goals of value co-creation and value appropriation (Ritala & Hurmelinna-Laukkanen, 2013). This tension is absent in pure cooperation with non-competitors, where collaborative objectives dominate, and in pure competition, where the interaction is limited primarily to market rivalry without intentional knowledge sharing (Bengtsson & Kock, 2000; Khanna et al., 1998). Coopetition is distinctive because it juxtaposes high learning potential with high appropriation risk in the same relationship. Thus, coopetition uniquely stimulates both proactive knowledge management practices, such as targeted unlearning of outdated routines, and AC through intensified exposure to rival-specific knowledge.

The proposed mechanism is particularly relevant for resource-deficient SMEs in emerging markets. Research shows that firm-specific capabilities play a more critical role for SMEs operating in uncertain and highly volatile environments (Buccieri et al., 2021). In stable environments with limited uncertainty, capability investments might yield fewer benefits or even be counterproductive (Winter, 2003). However, in dynamic markets where opportunities are fleeting, existing capabilities quickly lose value, providing only temporary competitive

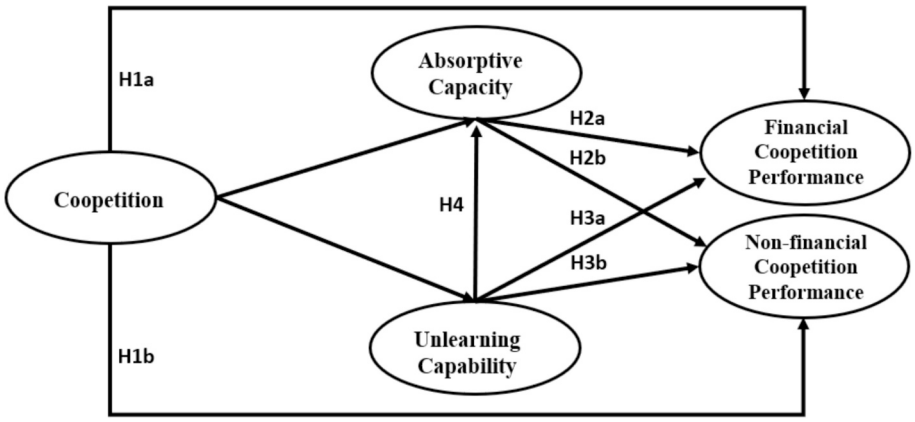

Fig. 1. Conceptual framework.

advantages. This necessitates continuous investment in developing new capabilities and creating situation-specific knowledge (D'Aveni et al., 2010; Frank et al., 2017; Li & Liu, 2014). Thus, for SMEs in emerging markets, where external conditions are often turbulent, the ability to build and sustain dynamic capabilities is essential for survival and success.

2.1. Coopetition and performance

The existing literature reveals mixed and inconclusive findings regarding the performance effects of coopetition, ranging from positive and negative to an inverted U-shaped correlation (see Xie et al. (2023), for a recent review). Previous studies have studied different financial outcomes of coopetition such as sales, profitability, revenue, cash flow, and goal attainment (Crick & Crick, 2021b; Luo et al., 2006; Rajala & Tidström, 2022). In addition, coopetition also offers firms various non-financial benefits such as improved innovation, product development, technological advancement, customer satisfaction, network relationships, marketing strategies, and logistical operations (e.g., Guo et al., 2023; Kraus et al., 2019; Ricciardi et al., 2022). However, it is important to note that there is often a trade-off between pursuing financial and non-financial goals, with one potentially coming at the expense of the other (Sadeghi et al., 2021; Walker & Brown, 2004). The trade-off between financial and non-financial outcomes in coopetition occurs because firms must balance immediate, intangible benefits with long-term, tangible gains. Non-financial performance outcomes in a coopetitive context tend to be realised more quickly, driven by knowledge sharing, trust-building, and collaborative problem-solving. These benefits stem from mutual goals like expanding market reach, improving service quality, or strengthening brands. In contrast, financial performance takes longer to materialise, influenced by complex processes such as resource allocation, operational efficiency, and protecting critical assets. Consequently, direct financial benefits from coopetition are slower to emerge, as applying insights effectively and generating returns takes time.

Coopetition has been viewed as a value-creating mechanism (Ritala, 2012) that enables firms to gain performance advantages and achieve their goals more efficiently and effectively than they could in isolation. Unlike pure cooperation, coopetition uniquely enables firms to balance the dual mechanisms of value co-creation and competitive appropriation. While pure cooperation predominantly emphasises mutual resource integration, coopetition incorporates simultaneous integration and competition, increasing urgency for proactive resource recombination and capability development (Ritala & Hurmelinna-Laukkanen, 2013). This duality provides distinctive performance benefits unavailable through purely collaborative or competitive interactions. Pure competition, on the other hand, restricts firms to operating in isolation without deliberate knowledge-sharing mechanisms, thereby limiting opportunities for co-creating mutual advantages (Bengtsson & Kock, 2000).

In their literature review, Xie et al. (2023) identified three main ways through which firms can benefit from coopetition: value co-creation with partners through integrating complementary resources, learning from partners resources to improve organisational knowledge base, and creating new internal resources beyond the boundaries of the partnership. In a coopetitive context, organisations can allocate resources more efficiently and share risks, which enhances cost management and improves financial performance (Ritala, 2012; Xie et al., 2023). Unlike pure competition, which forces firms to operate in isolation, coopetition allows firms to build reciprocal advantages (Luo, 2005). The synergy created through knowledge exchange and joint problem-solving results in stronger market positioning and long-term sustainability (Bouncken & Fredrich, 2012).

Coopetition distinctively shapes firm performance through its intertwined cooperative and competitive elements. Cooperative interactions foster mutual learning, capability enhancement, and resource sharing, while competitive pressures ensure strategic vigilance, rigorous cost control, and continuous improvement (Bouncken et al., 2015; Xie et al., 2023). Pure cooperation lacks the direct competitive intensity necessary for stimulating strategic vigilance, whereas pure competition lacks structured mechanisms for deliberate capability development and resource-sharing. Consequently, coopetition uniquely allows SME managers to strengthen their competitive capabilities through targeted improvements in operational efficiency and asset protection, while simultaneously leveraging collaborative knowledge exchanges (Crick, 2020a; Kraus et al., 2019; Luo et al., 2006; Ricciardi et al., 2022).

Coopetition emerges as especially compelling for SMEs, which typically lack internal resources and knowledge-development capabilities, making them heavily reliant on external learning through collaborations (Zahra et al., 2006). Pure cooperation often lacks the pressure needed to push SMEs to quickly apply new knowledge for market gain. Coopetition addresses this by simultaneously exposing SMEs to new knowledge and applying competitive pressure to drive rapid knowledge assimilation and capability building (Chiambaretto et al., 2020; Gnyawali & Park, 2009). Unlike pure competition, coopetition serves as a means for SMEs to access valuable knowledge that would otherwise remain beyond their reach to mitigate their liability of smallness and scarce internal resources (Bengtsson & Johansson, 2014; Kraus et al., 2019).

In addition to their many advantages, previous studies have consistently documented the 'dark side' of coopetition, highlighting potential challenges such as tensions, exploitation, and opportunistic behaviour, and knowledge leakage (Bouncken et al., 2015; Crick & Crick, 2021a; Xie et al., 2023). While these negative aspects are indeed present in pure cooperative relationships, their salience and complexity are profoundly magnified when partners are simultaneously rivals. Knowledge shared

cooperatively can be strategically leveraged against a firm in the competitive arena, creating paradoxical tensions between value creation and value appropriation, and knowledge sharing and protection (Park et al., 2014; Raza-Ullah, 2021). This can lead to "learning races" or "intentional misappropriation" (Park et al., 2014). These heightened risks necessitate highly sophisticated management capabilities that differentiate coopetition from pure cooperation, particularly for SMEs who may be more vulnerable due to power asymmetry. Researchers view this delicate duality as 'walking a tightrope,' necessitating a continuous and precise balance of coopetition's benefits and risks (Park et al., 2014). Thus, we propose that:

Hypothesis 1 *There is a positive relationship between coopetition and SMEs' (a) financial and (b) non-financial performance.*

2.2. The mediating role of absorptive capacity (AC)

Coopetition enables firms to gain a competitive edge by accessing valuable external knowledge. However, performance gains occur only if this knowledge is effectively assimilated, transformed, and exploited (Khan et al., 2019). Despite accessing the same knowledge, firms vary significantly in their ability to comprehend and leverage it for value creation (Bouguerra et al., 2022; Schmidt, 2010). Aligned with dynamic capabilities theory, we conceptualise AC as a set of sensing–seizing–transforming routines that enable the reconfiguration of a firm's knowledge base (Teece, 2007). Cooperation broadens sensing via problem-proximate knowledge, while rivalry sharpens seizing through vigilance and appropriation safeguards; together they compel transforming as firms recombine routines to integrate external insights while limiting leakage, making AC a repeatable reconfiguration capability rather than a static stock. We argue that coopetition fosters AC, leading to SME performance improvements. AC is driven by external knowledge accessibility and its relevance (Vega-Jurado et al., 2008). In the following, we explain how coopetition provides an ideal platform for both.

First, coopetition fosters AC by enhancing firms' ability to sense opportunities in their environment. Cooperative and competitive forces within coopetition drive AC development through distinct mechanisms. Cooperation fosters AC by building trust, enabling information exchange, and establishing shared learning routines, enhancing firms' ability to access and integrate external knowledge (Lane et al., 2006; Volberda et al., 2010). Firms engage in coopetition to acquire, create, and transfer knowledge (Bengtsson & Kock, 2014; Ghobadi & D'Ambra, 2012), developing formal and informal ties that facilitate mutual learning through complementary capabilities. This collaboration enriches knowledge flow, exposing firms to diverse information sources that enhance AC (Aliasghar et al., 2023; Schildt et al., 2012). The rivalry context sharpens environmental scanning and problemistic search, heightening managerial attention to threat–opportunity cues that pure cooperation may not trigger.

Second, the knowledge diversity generated through coopetition is a key determinant of AC (Arndt et al., 2023; Cohen & Levinthal, 1990). Aliasghar et al. (2023) confirmed the positive impact of external collaboration on AC development. Conversely, competition instils urgency, compelling firms to refine knowledge-processing capabilities to maintain a competitive edge (Schilke, 2014). Rivals safeguard their knowledge, forcing partners to enhance scanning and interpretation skills to absorb tacit knowledge (Devarakonda & Reuer, 2018; Ritala & Hurmelinna-Laukkanen, 2013). Competitive pressure ensures active rather than passive knowledge acquisition, reinforcing AC (Ferreras-Méndez et al., 2019). Thus, cooperation facilitates knowledge access, while competition sharpens AC by making firms more selective, adaptive, and proactive in learning. In dynamic capabilities terms, coopetition not only exposes SMEs to valuable knowledge but also compels disciplined appropriation and safeguarding choices when "seizing" that knowledge for private benefit.

Third, coopetition enhances AC by providing access to relevant and applicable knowledge. Since coopetition occurs between rivals facing similar challenges, partners develop mechanisms to share resources and establish a shared knowledge base (Chiambaretto et al., 2020; Ritala & Hurmelinna-Laukkanen, 2009). This ensures knowledge transfer is highly relevant (Kim & Parkhe, 2009). Applicability influences knowledge flows, or what Cohen and Levinthal (1989) term 'ease of learning.' Related knowledge is easier to recognise, acquire, and exploit (Bouncken et al., 2020). The pre-existing knowledge overlap between coopeting partners facilitates this flow, promoting AC (Estrada et al., 2016; Vega-Jurado et al., 2008). Coopetition thus fosters mechanisms for superior knowledge absorption, assimilation, and application, directly strengthening AC. As rivals and collaborators, firms must reconfigure internal routines to absorb new knowledge while limiting leakage, highlighting AC's transformation/exploitation dimension. This aligns with Schilke (2014), who finds that coopeting firms learn faster and more effectively than independent ones.

Overall, coopetition enhances an SME's AC in ways that transcend what pure cooperation or pure competition alone could achieve. Unlike cooperation with non-competitors, coopetition intensifies managerial vigilance and triggers problemistic search due to imminent competitive threats, resulting in greater depth and strategic alignment in knowledge absorption (Arndt et al., 2023). The risk of opportunistic appropriation inherent in coopetition necessitates enhanced governance structures and stronger internal routines for protecting and recombining knowledge compared to cooperative engagements with non-rivals (Devarakonda & Reuer, 2018). This competitive impetus forces firms to refine their knowledge-processing capabilities to maintain a competitive edge against the same partners in the market, thereby maximising the focal firm's private gains from the alliance (Park et al., 2014). Thus, building on the dynamic capabilities perspective, we argue that coopetition fosters AC, by exposing firms to diverse knowledge sources, enabling them to sense opportunities and threats, seize valuable external knowledge, and transform it into actionable resources.

AC development through coopetition is crucial for leveraging inter-firm partnerships and shaping outcomes. Empirical evidence confirms that AC facilitates knowledge creation, transfer, and spillovers (Bouncken & Fredrich, 2016; Meier, 2011). Fredrich et al. (2019, p. 862) describe AC as "a necessary condition of inter-firm learning." As sensing–seizing–transforming routines, enhanced AC enables SMEs to recognise rival-proximate knowledge, capture and disseminate it, and recombine it with existing routines, converting it into actionable learning (Estrada et al., 2016; Lane et al., 2006; Volberda et al., 2010). AC allows a firm to quickly adapt to changing market conditions, reconfigure its resource base, enable morphing and adaptation, and ultimately achieve an edge over competitors (Fosfuri & Tribó, 2008). These capabilities are essential for realising non-financial gains such as faster product and process innovation, improved service quality and responsiveness, and the accumulation of reputational capital and network legitimacy (Estrada et al., 2016; Stettler et al., 2025; Volberda et al., 2010). It also supports commercial exploitation by scaling improved designs and processes, shortening development cycles, lowering unit costs and defects, and improving market selection and timing, which deliver revenue growth, market share, and profitability (Fosfuri & Tribó, 2008; Lin et al., 2012; Ritala & Hurmelinna-Laukkanen, 2013). Thus, AC turns exposure into execution, sequentially building intangible advantages and monetising them while limiting leakage and strengthening appropriation. We therefore hypothesise that AC mediates the effect of coopetition on SMEs' financial performance and non-financial performance.

Hypothesis 2 *Absorptive capacity mediates the impact of coopetition on SMEs' (a) financial and (b) non-financial performance.*

2.3. The mediating role of unlearning

Fredrich et al. (2019) found that AC is necessary but insufficient for inter-firm learning. We argue that, beyond AC, coopetition fosters

unlearning capability, essential for leveraging learning opportunities. Integrating new external knowledge into organisational processes is vital for SMEs in dynamic environments (Yu et al., 2013). However, firms struggle to decode, assimilate, and integrate external knowledge with existing capabilities (Holmqvist, 2004). To address this, firms must adjust both incoming and existing knowledge to allow the blending of knowledge sources and realise the synergy (Harrison et al., 2001). This process requires discarding or unlearning deeply embedded knowledge and routines that may hinder the effective new knowledge absorption (Klammer & Gueldenberg, 2019). Yet, unlearning is constrained by entrenched routines, path dependencies, and cognitive biases, challenges more pronounced in SMEs due to limited managerial bandwidth and resource constraints (Klammer & Gueldenberg, 2019). Coopetition disrupts this inertia by exposing firms to knowledge asymmetries, compelling them to critically evaluate and selectively replace outdated routines (Klammer et al., 2023), thereby fostering unlearning capabilities.

Coopetition drives unlearning through cooperative exchanges that expose firms to new knowledge structures and competitive pressures that demand rapid adaptation. Cooperation helps firms recognise obsolete routines through knowledge exchange, prompting the removal of outdated processes (Becker, 2008; Sharma & Lenka, 2021). Access to novel insights reveals inefficiencies, motivating transformation (Klammer et al., 2023). Meanwhile, competition forces firms to discard rigidities that hinder responsiveness (Cegarra-Navarro et al., 2011). The risk of falling behind the competitor intensifies the need to abandon obsolete strategies, reinforcing unlearning's role in sustaining advantage. In other words, while cooperation triggers reassessment, competition ensures swift action, making unlearning essential for firms to maximise coopetitive benefits. This unique parallel mechanism motivates SMEs to continuously transform and reinvent themselves by actively integrating new knowledge while shedding inhibiting legacy systems, thereby enabling them to secure advantages that cannot be achieved through mere collaboration or competition.

Furthermore, while opportunistic behaviour and knowledge leakage are risks in any alliance (Devarakonda & Reuer, 2018), they are magnified in coopetitive relationships due to the partners being rivals (Gnyawali & Park, 2009), making the ability to shed counterproductive routines crucial for mitigating these heightened risks and maintaining focus. Unlike pure cooperation with non-competitors, coopetition demands continuous scrutiny of closely aligned competitor processes, amplifying cognitive tensions regarding existing routines. The simultaneous need to manage knowledge leakage risks and competitive benchmarking motivates swift identification and elimination of redundant or inferior routines, enhancing proactive unlearning.

Enhanced unlearning capabilities improve the value firms derive from coopetition by shaping both financial and non-financial performance. Unlearning prompts firms to dismantle obsolete organisational routines and knowledge that are path-dependent and resistant to transfer, exhibiting what Teece (2014) terms the "stickiness" of dynamic capabilities. As Leonard-Barton (1992) argues, deeply embedded capabilities, once advantageous, can become rigidities that hinder adaptability. Such rigidities obstruct effective knowledge transfer and block the synergistic potential of coopetition (Klammer & Gueldenberg, 2019). Deliberate unlearning of outdated practices enables firms to integrate external knowledge acquired through coopetition and to create synergies from resource combinations (Klammer et al., 2023). It enables firms to seek beyond conventional processes, fostering proactive knowledge acquisition and assimilation (de Holan & Phillips, 2004; Wang et al., 2017), which is crucial for maximising the value of coopetition. The impact of this unlearning can be delineated across performance dimensions. On the financial side, unlearning mitigates organisational inertia, a common hurdle for SMEs attempting to benefit from coopetition (Bengtsson & Johansson, 2014; Estrada & Dong, 2020). By discarding obsolete knowledge, firms achieve a more effective balance between exploration and exploitation, enhancing adaptability and organisational re-orientation (Cegarra-Navarro et al., 2011; Dixon et al., 2010). The result is sharper resource allocation, improved cost efficiency, and accelerated time to market. On the non-financial side, unlearning strengthens internal processes and adaptive capacity. Acting as a catalyst for strategic renewal, it improves the capability to refresh competencies and implement strategy, thereby bolstering organisational adaptability and market relevance, which are key indicators of long-term success (Dixon et al., 2010; Wang & Ahmed, 2007). Thus, we hypothesise:

Hypothesis 3 *Unlearning capability mediates the impact of coopetition on SMEs' (a) financial and (b) non-financial performance.*

2.4. Relationship between unlearning and AC

As Sharma and Lenka (2021, p. 66) argue, "any debate on organisational unlearning is incomplete without deliberating on its relationship to organisational learning". Organisational learning literature suggests that unlearning is a key prerequisite for the acquisition and integration of new knowledge (Klammer & Gueldenberg, 2019). We argue that in inter-firm coopetition, unlearning facilitates AC.

AC depends on an organisation's pre-existing knowledge base and organisational routines (Lane & Lubatkin, 1998; Zahra & George, 2002); however, its impact on knowledge absorption remains debated. The traditional view holds that knowledge transfer requires overlapping knowledge bases, as unrelated knowledge lacks a shared interpretive framework (Brockhoff et al., 1991; Nielsen, 2005). More specifically, the compatibility between the new knowledge and the existing knowledge base determines how much the new knowledge can be synthesised and applied. In the context of coopetition, some studies found that AC is a function of the partner firms' pre-alliance knowledge overlap (Dyer & Singh, 1998; Lane & Lubatkin, 1998). However, excessive overlap may limit exposure to new knowledge and hinder learning (Harrison et al., 2001). Hill and Hellriegel (1994, p. 595) argue that complementarity arises when partners bring distinct, non-overlapping competencies. Supporting this, research finds an inverted U-shaped relationship between knowledge overlap and transfer effectiveness (Nooteboom et al., 2007; Sampson, 2007). These findings suggest that coopeting firms need sufficient similarity for mutual understanding while maintaining enough dissimilarity to stimulate learning.

The role of prior knowledge highlights the importance of unlearning in developing AC among coopeting firms. Beyond prior knowledge, AC also depends on a firm's knowledge management capabilities and routines (Schildt et al., 2012). Absorbing and utilising complex, incompatible knowledge from partners requires deliberate unlearning of outdated routines. Unlearning is a firm-specific capability that not only facilitates knowledge transfer but also transforms tacit knowledge into explicit knowledge. Thus, sustaining and enhancing AC necessitates continuous investment in unlearning. Tsang and Zahra (2008, p. 3) define unlearning as "discarding old routines to make room for new ones, if any," highlighting its role in overcoming inertia and facilitating learning. Without effective unlearning, firms may recognise and acquire knowledge but struggle to integrate it into existing repositories and exploit it for operational improvements (Volberda et al., 2010).

Coopetition also introduces stickiness in knowledge transfer, namely frictions that slow, distort, or block the movement and integration of knowledge across organisational boundaries (Levy et al., 2003; Szulanski, 1996). Such stickiness intensifies when entrenched routines retain legitimacy, creating recipient reluctance to accept and enact new practices (Tsang, 2008). We contend that unlearning is the primary mechanism for reducing stickiness. By loosening or discarding obsolete routines and interpretive filters, firms reduce internal stickiness and open cognitive and procedural space for the acquisition, assimilation, transformation, and exploitation components of AC. In this view, unlearning is a distinct, antecedent process that precedes and enables absorptive capacity. By cleansing obsolete elements from organisational memory, unlearning reduces rigidity and creates cognitive space for new

learning. Accordingly, SMEs that invest in purposeful unlearning strengthen their AC.

Taken together, AC builds up the knowledge base, whereas unlearning carves out space in the knowledge base. Without unlearning, a firm with high AC might simply accumulate additional knowledge on top of legacy routines, potentially leading to cognitive overload or inertia. Thus, we posit that organisational unlearning acts as a catalyst for learning and positively influences AC. We thereby hypothesise:

Hypothesis 4 *A positive relationship exists between SMEs' unlearning capability and absorptive capacity.*

3. Research methodology

3.1. Context of Iran

This study focuses on coopetition among Iranian SMEs, a rarely examined and insightful context for this research. The imposition of major international sanctions over the past four decades had a destructive effect on Iran's economic structures resulting in soaring unemployment, hyperinflation, and dramatic depreciation of the value of Iran's currency (Ghasseminejad & Jahan-Parvar, 2021; Kelishomi & Nisticò, 2022). These long-term international sanctions, coupled with Iran's chronically weak economy, have taken a toll on the operation of businesses in Iran and made conditions unfavourable for doing business. These pressures have resulted in the isolation of Iran from global markets and have forced Iran to become increasingly inward-looking and protectionist (Ghasseminejad & Jahan-Parvar, 2021). For SMEs that operate in an economy facing major constraints and in the absence of external resources, joining forces with local competitors in order to pursue common goals has become one of the few remaining viable options for Iranian SMEs to overcome their lack of resources. Collaboration with their competitor enables Iranian SMEs to cope with economic hardship and mitigate their financial and technical limitations. These peculiarities make Iran a unique context for studying coopetition among SMEs.

3.2. Sample and data collection

We targeted Iranian SMEs with fewer than 250 employees that were actively engaged in coopetition. We collected data from both manufacturing and service SMEs in low- and high-tech sectors. This approach increases response coverage, enhances variation, and improves the generalisability of our results (Morgan et al., 2004). The questionnaire was initially crafted in English and double-back-translated by two bilingual researchers to ensure accuracy and translation equivalence (Watkins, 2010). To ensure content and face validity, the survey instrument was assessed by a number of academics and pretested by managers, which led to minor modifications in wording, design, and order of some of the items.

The data collection was conducted through an email survey between January 2019 and August 2019. The study's data were sourced from the ISIPO (Iran Small Industries and Industrial Parks Organisation) database, a developmental body under Iran's Ministry of Industry, Mine, and Trade. After identifying the SMEs in this database, we adopted a random sampling procedure and emailed the questionnaire to the managers of 1600 SMEs. We invited the senior managers to complete the survey as they are most likely to have valid and in-depth information about the operations of the company and tend to be responsible for making decisions regarding the firm's collaboration with the industry competitors (Crick, 2020b). Following email and telephone follow-ups, and excluding incomplete responses or firms not engaged in coopetition, we obtained a usable sample of 190 SMEs involved in coopetition. We ensured SMEs had engaged in coopetition by including a screening survey question confirming their active cooperation with competitors. Nonresponse bias was evaluated by comparing key demographics, such as firm size, industry, and year of establishment, between respondents and non-respondents. We found no statistical differences between responding and nonresponding firms, indicating that nonresponse bias is unlikely to affect our results.

The mean age of firms in our sample was 9.63 years. 26 (or 13.7%) of firms had fewer than 20 employees, 47 (or 24.7%) had between 20 and 49 employees, 74 (or 38.8%) had between 50 and 99 employees, and 43 (or 22.6%) had more than 100 employees. Some representative industries in our sample include retail (21%), food and beverages (12%), electronics and computer (10%), and construction (7%).

3.3. Measures

In this study, whenever possible, we adopted existing measures to improve the validity of the results. For all the questions we used a seven-point Likert scale (1 totally disagree to 7 totally agree). Measurement items for all constructs and their factor loadings are presented in Appendix A1.

Independent variable. We measured the propensity of coopetition activities using 6 items adopted from Bouncken and Kraus (2013) and Luo et al. (2006). These questions assess managers' perceptions of the importance of coopetition, including knowledge, technology, and resource sharing with rivals.

Mediating variables. We measured absorptive capacity by 7 items adapted from Ho and Wang (2015) and Solís-Molina et al. (2018). This is a particularly suitable scale for this study, as it measures AC based on knowledge transfer and learning in the context of cooperative relationships. This scale measures cooperative AC by assessing the clarity of understanding of the mutual coopetitive responsibilities and objectives, learning flexibility, knowledge infrastructure effectiveness, and ability to identify and acquire new knowledge, combine it with the existing knowledge base, and apply it to commercial ends.

Building on previous studies (Casillas et al., 2010; Wang et al., 2017), unlearning was measured with 5 items related to a firm's willingness to accept new knowledge or technologies and to remove outdated routines and beliefs, which provide a context for changing routines, readiness to change, and risk-taking with new problem-solving approaches.

Dependent variables. Inspired by Sadeghi et al. (2020), we define coopetition performance as the manager's perception of the degree to which the firm's financial and non-financial goals are attained in a coopetitive relationship. In accordance with this definition, we adopted the 'simplified performance' measure proposed by Sadeghi et al. (2020). This approach relies on a subjective approach to performance measurement, based on two distinct dimensions of financial and non-financial performance. Subjective performance measures have been utilised extensively, and there is evidence that such measures provide reliable and consistent results (Sadeghi et al., 2022; Singh et al., 2016; Vij & Bedi, 2016). Subjective measures are often favoured for evaluating performance of smaller firms due to challenges in obtaining objective data, such as the lack of publicly available data and managers' reluctance to report accurate performance figures (Singh et al., 2016). Subjective performance measurement is particularly suitable for measuring the performance of SMEs where decision-making is highly centralised and the manager's perception plays a significant role in the strategic direction and decision-making of the firm (Elbanna et al., 2020; Sadeghi et al., 2021).

The simplified performance measure assesses performance based on 'weighted satisfaction'. This measure accounts for two key aspects that determine subjective performance i.e., (a) the managers' perceived degree of importance of different indicators of performance, and (b) the level of manager's satisfaction with the firm's performance achievement based on each of these indicators. The 'weighted satisfaction' based on each indicator can then be calculated by multiplying a and b for the respective indicator. We measured financial performance by four indicators related to the rate of profit and revenue growth, market share, and operations cost reductions. Non-financial measures include enhancing strategic positioning, improving reputation, attracting new

customers, establishing network connections, and improving the quality of offerings. All these questions were specifically asked with regards to the performance outcomes of coopetition. We also conducted a validity check for our performance measures using objective data from a subsample of 105 firms. We observed significant correlations between objective and subjective measures: profit growth ($r = 0.60$, $p < 0.05$) and revenue growth ($r = 0.62$, $p < 0.05$) were each strongly correlated with respondents' subjective assessments of these outcomes.

Control variables. We incorporated six control variables that could potentially influence the results and, hence, need to be systematically accounted for. We controlled for firm age (number of years since establishment) as older firms may have more established routines and industry knowledge, affecting their ability to benefit from coopetition (Crick et al., 2024). We included firm size (number of employees), as larger firms typically have greater resources and flexibility, influencing coopetition outcomes (Bengtsson & Johansson, 2014). Industry sector was controlled using a manufacturing dummy variable, as different industries face varying technological and competitive dynamics (Bengtsson & Raza-Ullah, 2016). We controlled for managerial experience, measured by years of executive responsibility, because experienced managers may have stronger networks and strategic foresight, impacting performance gains from coopetition (Runge et al., 2022). We also included two important environmental factors that can shape the effectiveness of coopetition (Telg et al., 2023): market growth, defined as the growth rate of market demand and sales in an industry (3 variables adopted from Shu et al. (2017)), and environmental dynamism measuring changes in technology, competition and customers (six variables adopted from Atuahene-Gima (2005)).

Given our cross-sectional research design and the fact that all variables are sourced from a single questionnaire and respondent per firm, there is a potential for common-method bias (CMB) (Podsakoff et al., 2003). Although the potential for CMB cannot be completely ruled out, our assessments (reported in Appendix A2) indicate that we can safely assume that it is unlikely to pose a significant risk.

To address endogeneity concerns, we utilised the Gaussian copula method as recommended by Hult et al. (2018). This technique is a widely accepted, instrumental-variable-free approach to address endogeneity, allowing direct modelling of the relationship between an endogenous variable and the regression error term using a copula. It is especially useful when no established instrumental variable is available. Also, this technique is more suitable for handling complex models with multiple endogenous regressors compared to traditional instrumental variable approaches (Eckert & Hohberger, 2023). The Gaussian copula method requires the endogenous constructs to be non-normally distributed (Rutz & Watson, 2019). The Kolmogorov-Smirnov test with Lilliefors correction confirmed that our explanatory variables are non-normally distributed (p-value < 0.05). We ran separate models in SmartPLS, using bootstrapping with 5,000 samples and testing all possible Gaussian copula combinations. The results indicated that none of the Gaussian copulas in various model configurations were significant ($p > 0.05$), suggesting endogeneity is not a major concern in our study.

Furthermore, we conducted an additional endogeneity test with a two-stage least squares (2SLS) estimation using an instrumental variable We used geographical distance from the coopetitor as an instrumental variable which is highly correlated with coopetition but is not directly associated with performance, suggesting that it is a valid instrument for our research. According to 2SLS, we regressed coopetition on controls and the instrumental variable, then used the predicted value of this regression in our hypothesised model (Zaefarian et al., 2017). The results for the first stage suggest a significant relationship between the instrumental variable and coopetition ($\beta = 0.830$, $p < 0.001$). The second-stage results confirmed our initial findings, demonstrating that after controlling for endogeneity, coopetition still has a significant effect on non-financial performance ($\beta = 2.394$, $p < 0.01$), and a non-significant effect on financial performance (-1.39, $p > 0.1$), indicating that endogeneity is not a problem for our research.

4. Empirical results

Following Hair et al. (2023), we conducted a two-step analysis. First, we examined the reliability and validity of the measurement model. Second, we assessed the structural model to test the hypotheses. In the following, we outline these two steps.

4.1. Assessment of the measurement model

The descriptive statistics and correlation matrix are presented in Table 1. Prior to hypothesis testing, we assessed the constructs' validity, reliability, and psychometric attributes through confirmatory factor analysis (CFA) employing the maximum likelihood estimation technique in AMOS 28, in line with the guidelines recommended by Hair et al. (2009). The final estimated model aligns well with the data, as all the model fit indices satisfy the recommended thresholds ($\chi^2(267) = 1.467$; CFI = 0.977, RMSEA = 0.050, AGFI = 0.831, SRMR = 0.0659).

As evident in Table 1, the findings indicate that the composite reliability (CR) scores exceed the advised 0.70 threshold for all constructs. Also, all the factor loadings were acceptable which indicate a high degree of reliability (Hair et al., 2009). The average variance extracted (AVE) scores for all constructs are greater than 0.5 indicating a high degree of convergent validity. The large individual item factor loadings (greater than 0.7) on their respective construct provided further evidence for convergent validity.

We also performed discriminant validity analysis as recommended by Fornell and Larcker (1981). As reported in Table 1, the square roots of the AVE values (bold figures on the diagonal) exceed the off-diagonal correlations in their respective rows and columns, signifying that all the constructs meet acceptable discriminant validity.

To further assess discriminant validity beyond the Fornell–Larcker criterion, we conducted multiple complementary tests. First, the Heterotrait–Monotrait (HTMT) ratios and their 95% bias-corrected confidence intervals were examined (Hair et al., 2023). All HTMT values were below the recommended threshold of 0.90, and none of the intervals included 1.00, indicating that the constructs are empirically distinct. For example, the HTMT value between Coopetition and Unlearning was 0.750, with a 95% CI of [0.631, 0.854], which satisfies acceptable discriminant validity standards. We also applied the Maximum Shared Variance (MSV) and Average Shared Variance (ASV) diagnostics (Hair et al., 2009). For all constructs, MSV and ASV values were lower than their corresponding AVEs, reinforcing that each construct shares more variance with its own indicators than with other constructs. Finally, to assess potential multicollinearity, we examined the inner Variance Inflation Factor (VIF) values (Sarstedt et al., 2021). All VIFs were well below the conservative threshold of 3.3 (maximum VIF = 2.095), indicating no risk of multicollinearity affecting the structural estimates. Collectively, these results support both the discriminant validity and statistical independence of the constructs in the model.

4.2. Assessment of the structural model and testing the hypotheses

Our assessment of the structural model consists of two steps. First, we tested the direct relationship hypotheses by performing structural equation modelling (SEM) with the maximum likelihood method in AMOS 28. The structural model revealed acceptable goodness-of-fit indices ($\chi^2(368) = 2.009$; CFI = 0.93, RMSEA = 0.073, AGFI = 0.759, SRMR = 0.051). Also, the variance explained (R2) of the dependent variables (0.23 and 0.36 for financial and non-financial performance respectively) are acceptable by behavioural research standards (Hair et al., 2023), showing satisfactory explanatory power for the structural model. The results of our analysis are presented in Fig. 2. The only control variable exhibiting a significant effect was the firm's size, which demonstrated a positive relationship with both financial ($b = 0.143$, $p < 0.05$) and non-financial performance ($b = 0.127$, $p < 0.05$).

We next examined the structural model using SEM to test the direct

Table 1
Descriptive statistics, correlation matrix, and discriminant validity.

	1	2	3	4	5	6	7	8	9	10
1 Coopetition	**0.812**[a]									
(AVE = 0.66, CR = 0.92)										
2 Unlearning	0.704**	**0.761**								
(AVE = 0.58, CR = 0.87)										
3 AC	0.473**	0.468**	**0.774**							
(AVE = 0.60, CR = 0.91)										
4 Financial	0.229**	0.188**	0.482**	**0.818**						
(AVE = 0.67, CR = 0.89)										
5 Non-Financial (NF)	0.349**	0.302**	0.519**	0.308**	**0.854**					
(AVE = 0.73, CR = 0.93)										
6 Age	−0.057	0.011	−0.015	−0.067	0.028					
7 Size	−0.054	0.077	−0.001	0.134	0.116	0.080				
8 Experience	−0.072	−0.044	−0.013	0.019	0.035	0.036	0.106			
9- Market Growth	−0.091	−0.131	0.019	−0.054	0.020	0.048	−0.096	0.010		
10- Environmental dynamism	−0.024	0.012	0.185*	−0.023	0.102	−0.055	−0.036	−0.022	0.202**	
Mean	4.37	4.43	4.49	28.87	28.15	9.63	2.92	9.46	4.64	4.31
SD	1.52	1.41	1.26	10.26	12.49	8.64	1.34	6.70	1.44	1.45

[b] industry type was measured by dummy variables and is not included in the table.
[a] The square root of the AVE (average variance extracted) values.
** Correlation is significant at the 0.01 level (2-tailed).

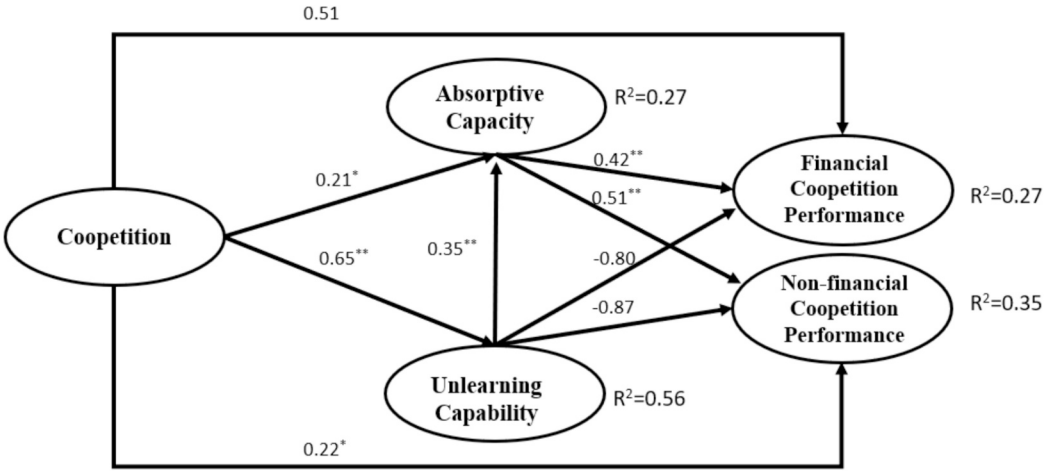

Fig. 2. Final model. * $p < 0.05$, ** $p < 0.01$; Values represent standardised parameter estimates; Results for control variables are omitted for conciseness.

effects hypotheses. Contrary to our anticipations, there was no evidence to suggest a significant link between coopetition and financial performance (b = 0.510, p < 0.10). Thus, H1a is not supported. In contrast, our data fully support a positive relationship between coopetition and non-financial performance (b = 0.220, p < 0.05) which supports H1b. Finally, consistent with our prediction in H4, we found evidence of a positive relationship between unlearning and AC (b = 0.315, p < 0.01).[1]

In the second step, we tested the multiple mediation hypotheses by investigating the specific indirect effects using the bootstrapping procedures suggested by Preacher and Hayes (2008). This approach provides more accurate results compared to the traditional approaches for conducting mediating analysis such as Baron and Kenny (1986) and the Sobel test. These traditional approaches have been heavily criticised on the basis of having low statistical power in uncovering genuine mediation effect, not being able to test the indirect mediation, failing to quantify the strength of the mediation effect, having unnecessary and questionable distributional assumptions, and being susceptible to type-I error (Hayes, 2009). In their review of the mediation testing methods, Dastgeer et al. (2020, p. 95) conclude that although Baron and Kenny's method is simple and intuitive and is currently the most commonly used method of testing mediation, it should only be used with 'great caution'.

Preacher and Hayes's approach, which is based on bootstrapping technique, is particularly useful for testing mediation in more complicated models –such as the one in this study– that include latent variables, and have multiple mediations and dependent variables. This approach empirically quantifies the specific indirect effects attributed to each mediator in the presence of the other mediators. As Preacher and Hayes's approach cannot be performed in AMOS, data were analysed using the SmartPLS 4. We obtained estimates for the mediating effect by performing bootstrapping procedure with 5000 samples and 95% bias-corrected confidence intervals.

The specific indirect effects reported in Table 2 offer evidence for AC's mediating influence between coopetition and both types of performance (p < 0.05), corroborating H2a and H2b. However, contrary to our expectations, our data do not support the predicted mediation effect of unlearning for either financial or non-financial performance (p > 0.10). Therefore, H3a and H3b are rejected.

[1] Mediation analysis can be conducted regardless of whether the direct relationship between IV and DV is significant. The argument for requiring a significant direct effect to establish mediation, initially proposed by Baron and Kenny (1986) but been refuted by Hayes and Scharkow (2013). Similarly, Zhao et al., (2010) showed that the assumption of the need for "effect to be mediated" is wrong and emphasized that "Reviewers should not point to the unexplained negative direct path to deter publishing findings of a positive indirect path" (p. 200).

Table 2
Specific indirect effects and variance accounted for (VAF) values for the mediation effects.

Path	Specific indirect effect (beta coefficient)	t-value	VAF
Coopetition → AC → Financial	0.157*	1.990	0.623
Coopetition → AC → Non-Fin	0.139*	1.989	0.376
Coopetition → Unlearning → Financial	−0.086	0.818	−0.341
Coopetition → Unlearning → Non-Fin	−0.023	0.252	−0.062
Unlearning → AC → Financial	0.162*	2.054	0.643
Unlearning → AC → Non-Fin	0.143*	1.957	0.386
Coopetition → Unlearning → AC → Financial	0.121*	1.989	0.480
Coopetition → Unlearning → AC → Non-Fin	0.107†	1.904	0.289

N = 190, † $p < 0.1$; * $p < 0.05$; ** $p < 0.01$.

We also tested for the potential mediation effect of AC between unlearning and performance. We found that AC mediates the relationship between unlearning and both types of performance ($p < 0.05$). Finally, we examined the significance of the serial mediation model with both unlearning and AC. The estimated specific indirect effect estimates in the last two rows of Table 2 provide strong support for the Coopetition → Unlearning → AC → Financial relationship ($p < 0.05$). However, we only found weak support for the serial mediation model for non-financial performance ($p < 0.1$). Finally, to identify the type of mediation, we calculated the variance accounted for (VAF) value which shows the size of the indirect effects to the total effect. According to Hair et al. (2017), a VAF value between 0.20 and 0.80 (as in our case), suggests the presence of a partial mediation impact.

SEM requires researchers to test competing models to rule out plausible alternatives and ensure validity (Weston & Gore Jr, 2006). To meet this, we analysed a rival model, showing our theorised model had a significantly better fit. It could be argued that unlearning and AC capabilities determine the coopetition capabilities of the firms and in turn affect financial and non-financial performance. To eliminate this alternative explanation, we estimated a rival model with an altered order of constructs in which unlearning and AC (as antecedent variables) affect coopetition (as a mediator) and finally lead to financial and non-financial performance (dependent variables). The model showed very poor goodness-of-fit indices compared to the original model ($\chi^2(409) = 3.054$; CFI = 0.848, RMSEA = 0.104, AGFI = 0.640, SRMR = 0.102). The chi-square difference test indicates that the original model fits the data better than the alternative model ($\Delta\chi$ 2 = 509.893, Δdf = 41, p < 0.001). We also assessed the robustness of our findings by conducting an additional path analysis using objective financial performance data (profit growth and revenue growth) from the subsample of 105 firms. The results closely aligned with our original model, reinforcing the validity of our approach and confirming that subjective performance measures provide a reliable representation of financial performance. These results are available from the authors upon request.

5. Discussion

This study examines the missing link in the coopetition-performance relationship among SMEs in an emerging economy, focusing on absorptive capacity and unlearning as paradoxical capabilities. Addressing calls to explore how coopetition generates advantages (Park et al., 2014), our results challenge the assumption that coopetition uniformly enhances performance. While coopetition positively influences non-financial performance, we found no significant relationship with financial performance, contradicting prevailing literature (e.g., Crick & Crick, 2021a; Rajala & Tidström, 2022). Coopetition's paradox lies in balancing value creation and appropriation, where benefits such as reputation, strategic positioning, and network ties often materialise faster than financial gains. A plausible explanation is that coopetition imposes hidden costs—coordination, knowledge governance, and proprietary asset protection (Ritala & Hurmelinna-Laukkanen, 2009). These costs may offset short-term financial benefits despite improvements in non-financial performance. This counterintuitive outcome may be context-driven, given Iran's highly unstable and uncertain business environment. In such turbulence, firms may struggle to assimilate and apply knowledge from coopeting partners, delaying financial benefits (Massari & Giannoccaro, 2021). While financial gains take longer to materialise, non-financial benefits often emerge more quickly. This finding aligns with Keen et al. (2022), who suggest that in volatile contexts, coopetition alone may not significantly enhance SMEs' financial performance.

The findings reveal that AC mediates the relationship between coopetition and both financial and non-financial performance, underscoring its role in transforming learning opportunities into performance gains. While coopetition lacks a direct link to financial performance, it enables AC, which indirectly enhances financial outcomes. Unlike AC, unlearning does not directly mediate the coopetition-performance relationship. Our results provide support for the view that "the unlearning context makes no sense if the main purpose is not to incorporate new knowledge and routines that substitute them" (Casillas et al., 2010, p. 165). However, interestingly, we discovered that unlearning indirectly affects the outcomes of coopetition. In other words, unlearning plays a crucial role in catalysing the development of AC, which subsequently affects both financial and non-financial performance. Thus, unlearning and AC complement each other in a coopetitive partnership to drive performance.

5.1. Theoretical contributions

Our findings provide several important theoretical contributions. First, we advance the literature by articulating the learning mechanisms that enable SMEs to unlock the benefits of coopetition, arguing that their success in leveraging its advantages and overcoming its inherent challenges depends on AC and unlearning as complementary learning capabilities. Existing research has typically examined AC in isolation within coopetition studies, often overlooking its interaction with unlearning (Fredrich et al., 2019; Ritala & Hurmelinna-Laukkanen, 2013). The dual process of collaboration and competition exerts distinct but interrelated influences on firm learning, shaping capability development and adaptability. Collaboration fosters mutual knowledge exchange and capability building through mechanisms such as knowledge-sharing routines and complementary resource combinations, generating relational rents that enhance efficiency and innovation while embedding acquired knowledge (Dyer & Singh, 1998; Gnyawali & Ryan Charleton, 2018; Hamel, 1991). However, excessive collaboration can create relational inertia, where trust and repeated interactions reduce adaptability to external changes, undermining long-term competitiveness (Dyer et al., 2018). In contrast, competition introduces a counterforce, compelling firms to refine knowledge and decide what to unlearn. In competitive environments, traditional knowledge, processes, and practices often become inadequate, necessitating adaptation to avoid being locked into obsolete routines (Lyu et al., 2022). This underscores why the joint development of AC and unlearning capability is vital for maximising coopetition's benefits. As West and Bogers (2014, p. 821) argue, "identifying and acquiring innovations from external sources is only half the battle". Effective learning from competitors requires not only acquiring new knowledge but also unlearning outdated practices. AC allows firms to capture and apply external knowledge, while unlearning mitigates rigidity and inefficiency, enabling them to balance cooperation and competition without being constrained by legacy systems.

Second, this study advances understanding of capability development in interfirm relationships by clarifying the dual function of unlearning in coopetition. First, unlearning acts as a catalyst for AC, enabling firms to discard outdated knowledge and create space for new

learning from partners. Second, it indirectly shapes coopetition outcomes by facilitating AC, which then enhances financial and non-financial performance. In doing so, this study addresses calls to investigate the potential implications of knowledge decay and obsolescence for the development of AC (Arndt et al., 2023). Our findings show that unlearning alone does not guarantee improved performance; its value depends on replacing obsolete knowledge with strategically useful insights (Becker, 2008). This underscores unlearning's role as an enabler rather than a direct driver of firm outcomes, reinforcing the need for deliberate learning strategies that align with firms' competitive imperatives (Cegarra-Navarro et al., 2011). Unlearning enables firms to overcome inertia, or what Teece (2014) described as the "stickiness" of established routines, which can hinder external knowledge absorption. Actively discarding ineffective practices reduces reliance on past successes and opens opportunities to integrate new knowledge. In short, unlearning opens pathways to inter-organisational learning in a coopetitive relationship. As such, we agree with the conclusion of Surdu and Narula (2021, p. 13) that 'learning and unlearning are two faces of the same coin'.

Third, this study highlights the critical role of AC in managing coopetition tensions—balancing knowledge sharing and protection, handling simultaneous value creation and capture, and leveraging external knowledge to enhance performance outcomes (Riquelme-Medina et al., 2022). Developing AC enables SMEs to internalise external knowledge, strengthening innovation, product development, customer satisfaction, and market positioning—key aspects of value creation. At the same time, AC helps firms optimise these capabilities to capture value, translating them into tangible outcomes. Thus, the mediating role of AC not only links coopetition to performance but also underscores the dual process of creating and capturing value in cooperative engagements with competitors.

Fourth, our findings offer a more granular understanding of the outcomes of coopetition by distinguishing between financial and non-financial outcomes and investigating them independently. Earlier studies often ignored the non-financial dimension or treated all outcomes as a single construct, overlooking that different performance dimensions may be conceptually distinct and shaped by different mechanisms. This research addresses that gap. Our findings confirm that financial and non-financial outcomes are idiosyncratic and the same set of factors may affect them differently (Gerschewski et al., 2015; Sadeghi et al., 2018). Hence, success in one does not guarantee success in the other. This challenges the assumption of uniform benefits from coopetition and underscores the need for a nuanced conceptualisation of performance, advocating separate measurement of distinct dimensions (Sadeghi et al., 2022). Thus, this study responds to calls for investigating "potential for multiple outcomes from coopetition and to examine key conditions that lead to variation in outcomes" (Gnyawali & Ryan Charleton, 2018, p. 2530).

Fifth, we extend the capability-building perspective (Czakon et al., 2020) by showing how coopetition fosters the co-evolution of AC and unlearning, enabling firms to reinvent themselves by integrating new knowledge while discarding outdated routines. Our findings highlight that successful coopetition hinges on balancing knowledge retention and renewal, reinforcing the capability orchestration perspective (Helfat & Peteraf, 2003). By increasing receptivity to external knowledge and prompting reassessment of internal routines, coopetition acts as a catalyst for dynamic capability development, keeping firms agile in shifting markets (Jacobides & Winter, 2005; Zollo & Winter, 2002). This underscores that dynamic capabilities are adaptive processes, shaped by firms' ability to leverage external collaboration while refining internal mechanisms. This also aligns with Teece (2014, p. 20), who emphasises that "dynamic capabilities are undergirded by processes (routines) and resources (positions)." Thus, coopetition fuels SMEs' learning and unlearning capabilities, enabling them to secure performance gains while remaining adaptive to changing market dynamics.

Sixth, our findings advance emerging-market SME research by explaining how resource-constrained firms extract value from coopetitive partnerships. In contexts marked by institutional voids and weak infrastructure, coopetition functions as a survival-oriented learning device that grants access to otherwise unattainable knowledge and capabilities (Monticelli et al., 2022; Zulu-Chisanga et al., 2025). AC is the pivotal mechanism that converts external learning into performance, especially where internal R&D is limited and external knowledge is scarce. The distinction between financial and non-financial performance outcomes is especially relevant for emerging market SMEs, as non-financial outcomes such as legitimacy, reputation, and network embeddedness often precede financial returns (Adomako et al., 2023). Furthermore, our identification of unlearning as a catalyst for absorptive capacity offers a novel perspective on how SMEs in emerging markets can overcome the inertia of legacy practices. This is especially crucial in developing countries, where outdated routines often persist due to limited exposure to external best practices and managerial inexperience.

5.2. Managerial implications

This study offers important insights for SME managers, particularly those operating in resource-constrained and institutionally weak environments typical of emerging countries. First, the study highlights that simply participating in coopetition does not guarantee financial success. Firms must develop AC to internalise and apply external knowledge. AC can be achieved by fostering a culture of continuous learning, investing in knowledge management systems, and encouraging cross-functional collaboration within the organisation. Without these, firms risk engaging in partnerships without capturing their full value. Second, since unlearning is foundational for AC to function, managers should proactively dismantle outdated operational routines and nurture a flexible organisational mindset. In emerging markets, where business practices may be deeply embedded in tradition or constrained by limited managerial expertise, deliberate unlearning becomes a strategic imperative rather than a background process. Managers can facilitate this by instituting regular reviews of standard operating procedures, conducting knowledge audits, and implementing retraining initiatives that encourage openness to novel, contextually relevant knowledge and behaviours. Third, the interplay between AC and unlearning must be strategically managed to maximise performance outcomes. Our results show that unlearning serves as a catalyst for AC development, affirming that these should not be treated as isolated capabilities. Instead, firms should adopt a dual approach that emphasises both structured knowledge acquisition and the elimination of counterproductive routines. This strategic duality enables resource-constrained firms to harness the benefits of coopetition while mitigating risks such as knowledge leakage and opportunistic behaviour, particularly in less regulated, fast-changing markets.

5.3. Limitations and future research

This research has limitations that future studies might address. Focusing on a single country with unique conditions, such as Iran, may limit the generalisability of our findings. Iran's long-term economic sanctions have isolated it from the global economy, affecting SMEs' tendencies to collaborate under external pressure. As Meier (2011, p. 19) noted, "turbulent market environment provides the impetus for allying." Coopetition outcomes are likely context-specific (Bouncken et al., 2015), so our findings may not apply to countries with different conditions. However, this unique context offers valuable insights into coopetition's value in less-studied settings. Most coopetition research focuses on large firms in developed countries (Gernsheimer et al., 2021; Kraus et al., 2019), with less known about its effects on resource-deficient SMEs in emerging markets. This study sheds light on the value of coopetition for firms in turbulent environments, especially those under international sanctions like Russia, Cuba, Belarus, and some African countries.

The second limitation is the use of static, cross-sectional data. Cooperative relationships are dynamic, evolving throughout their lifecycle (Inkpen, 2000; Meena et al., 2023). Both AC and unlearning capabilities develop over time (Schildt et al., 2012; Volberda et al., 2010). The rate of inter-firm knowledge transfer may slow after the initial phase, making further knowledge extraction more complex (Meier, 2011). A static study may not fully capture these dynamics. Future research should use a longitudinal approach to explore how AC and unlearning capabilities fluctuate during coopetition. Investigating the learning curve effect is also essential to understand how these capabilities impact coopetition outcomes over time, providing a holistic view of their interplay.

Third, future research could refine our framework by distinguishing the effects of cooperation and competition on learning. While collaboration fosters knowledge exchange and capability building, competition drives innovation, knowledge refinement, and unlearning (Gernsheimer et al., 2024). Competitive pressures may accelerate AC and unlearning, ensuring external knowledge strengthens rather than undermines a firm's position. Future studies could compare learning in coopetition versus purely collaborative partnerships and assess how firms' cooperative orientation influences AC and unlearning. It is important to consider whether a firm's willingness to learn from partners is driven by a broader cooperative tendency rather than being intrinsically linked to coopetition. Additionally, research could explore when competition enhances or constrains learning, examining how firms balance knowledge absorption with leakage risks or how unlearning interacts with inertia. Further, studies should consider how the intent behind coopetition shapes financial and non-financial outcomes, depending on whether firms prioritise value capture or creation. These insights would clarify the unique learning dynamics in simultaneous competition and collaboration.

CRediT authorship contribution statement

Arash Sadeghi: Writing – review & editing, Writing – original draft, Validation, Supervision, Software, Resources, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Omid Aliasghar:** Writing – review & editing, Writing – original draft, Software, Investigation, Data curation, Conceptualization. **Vahid Jafari-Sadeghi:** Writing – review & editing, Writing – original draft, Software, Resources, Conceptualization.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jbusres.2026.116076.

Data availability

The data that has been used is confidential.

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