

Exploring how intellectual capital channels the effect of multiple directorships on firm performance

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Abstract

Purpose – Drawing upon the absorptive capacity and dynamic capabilities framework, this study explores how multiple directorships shape firm performance through their influence on intellectual capital efficiency.

Design/methodology/approach – Based on a sample of 975 firm-year observations of Spanish listed companies over the period 2008–2020, and following previous literature, this study elucidates the role of multiple directorships in corporate governance. The analysis focuses not so much on multiple directorships as controllers but rather as coordinators, creators and disseminators of knowledge among agents by improving intellectual capital efficiency.

Findings – The impact of multiple directorships on firm performance is moderated partially by the efficient use of external intellectual capital resources in internal decision-making and management.

Research limitations/implications – The findings provide empirical support for the assumptions of the dynamic capabilities and absorptive capacity frameworks, confirming that enhancing intellectual capital efficiency is a key mechanism through which organizations leverage multiple directorships to improve performance outcomes.

Practical implications – Firms should develop processes and resources relating to human, structural and relational capital that enable them to capitalize on the knowledge, experience and networks of multiple directorships.

Originality/value – This study contributes to understanding how multiple directorships' abilities and capabilities to generate, assimilate and disseminate knowledge influence firm performance.

Keywords Multiple directorships, Intellectual capital efficiency, Firm performance, Listed companies, Spain

Paper type Research article

1. Introduction

Corporate governance research has debated the role of multiple directorships, referring to individuals who hold the role of director on more than one board. The agency perspective highlights potential drawbacks, such as overcommitment and reduced monitoring effectiveness (e.g. Ferris *et al.*, 2003; Fich and Shivdasani, 2006). In contrast, the resource-

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based perspective points out that their presence on the board of directors enhances the creation of firm value and competitiveness. Multiple directorships improve the ability of the board of directors to provide strategic guidance and enhance performance through their skills, experience and knowledge, as well as open opportunities to benefit from enhanced communication channels and expanded networking opportunities (Di Pietra *et al.*, 2008; Larcker *et al.*, 2013; Lei and Deng, 2014; Perry and Peyer, 2005; Sarkar and Sarkar, 2009). The predominant focus of research has been on the direct effect of multiple directorships on monitoring effectiveness and firm performance, often emphasizing their potential drawbacks from the first perspective. As such, considerably less attention has been paid to their role as a strategic resource that can generate value for the firm. Based on the arguments of the resource-based view, we conceptualize multiple directorships as a potential source of knowledge-based advantages and firm performance improvement.

Amid the increasingly dynamic and competitive nature of economic environments, experts are fostering a growing interest in understanding the role of multiple directorships as a resource for accumulating valuable firm-specific and industry-level knowledge, experience and relational capital that are difficult to imitate and transfer (Chen *et al.*, 2016). These resources enhance a firm's ability to access, integrate and leverage external knowledge contributing to strengthening managerial processes, enhancing organizational capabilities and fostering internal skill development (Acero and Alcalde, 2014). Because these knowledge-related mechanisms are often proposed as the channels through which multiple directorships can affect organizational outcomes, the conditions under which these mechanisms operate effectively must be identified. To address the ongoing debate on the role of multiple directorships as such a resource, researchers have increasingly incorporated contextual and institutional factors to identify when and under which conditions multiple directorships affect firm performance. For instance, Lee and Lok (2020) demonstrated that the performance implications of multiple directorships vary across a firm's life cycle stage, with growing firms benefiting more owing to their greater need for novel resources and external networks. Chen *et al.* (2015) showed that stricter regulatory frameworks governing directors' workload and responsibility, such as the Sarbanes–Oxley Act in the USA, limit directors' participation in multiple boards, thereby constraining the transfer of human capital and resources across firms. Despite their contribution to the field of corporate governance, these previous studies remain largely silent on the underlying mechanism through which multiple directorships create value, failing to explain how multiple directorships' abilities and capabilities to generate, assimilate and disseminate knowledge influence firm performance.

Our study aims to bridge this gap by extending the absorptive capacity and dynamic capabilities framework to elucidate how multiple directorships shape firm performance through their influence on intellectual capital efficiency. Using a sample of 975 firm-year observations of Spanish listed companies over the period 2008–2020, and building on prior literature, we conduct a comprehensive review of the role of multiple directorships in corporate governance. Specifically, we focus on their function as a source of dynamic and knowledge-based capabilities, whereby directors act as coordinators, creators and disseminators of knowledge among agents (López and Morros, 2014; Van Ees *et al.*, 2009), ultimately enhancing intellectual capital efficiency.

From an intellectual capital perspective, the board plays a central role in shaping a firm's ability to transform its human, structural and relational resources into productive outcomes (Berezinets *et al.*, 2016). Directors holding multiple appointments can contribute to the efficiency of this process by introducing externally acquired knowledge, enhancing cognitive diversity and strengthening the firm's relational capital through broader interorganizational ties (Le *et al.*, 2023; Reguera-Alvarado and Bravo-Urquiza, 2022). When effectively coordinated, these inflows of expertise expand the firm's intellectual capital and improve the mechanism through which knowledge is codified, shared and employed across units (Geletkanycz and Hambrick, 1997; Simoni and Caiazza, 2012). Within this view, multiple directorships can function as catalysts for intellectual capital efficiency, particularly by reinforcing the firm's

dynamic capabilities, that is, its ability to sense opportunities, integrate and recombine knowledge and reconfigure resources on time. Based on the external knowledge and networks they provide, these directors act as a mechanism for transforming internal processes of learning, adaptation and reconfiguration, resulting in greater efficiency of intellectual capital and, ultimately, greater firm performance. Therefore, we aim to empirically test the extent to which intellectual capital efficiency mediates the relation between multiple directorships and firm performance. We also seek to ascertain how this mediation affects firm performance.

In this regard, the Spanish board system provides a unique opportunity for several reasons. Firstly, in Spain, independent directors frequently hold multiple board appointments across listed companies because the country has no regulatory cap on the number of directorships they may concurrently occupy [1] ([Comisión Nacional del Mercado de Valores, 2020](#)). Holding multiple directorships may enrich independent directors' knowledge base and strategic capabilities, as exposure to diverse boards allows them to accumulate broader industry insights, governance expertise and experience in complex decision-making environments. Such multiple appointments can also enhance their ability to identify best practices, transfer across firms and provide more informed oversight ([Ferris et al., 2020](#); [Le et al., 2023](#); [Reguera-Alvarado and Bravo-Urquiza, 2022](#)).

Secondly, in contexts characterized by concentrated ownership structures, common in many continental European countries, including Spain, as well as in several Asian economies such as Japan, resource allocation and strategic decision making are more strongly shaped by relational ties and embedded networks, than in those characterized by dispersed ownership. In these settings, multiple directorships are particularly relevant as mechanisms to enable the effective integration and coordination of knowledge-based resources across firms, foster experiential learning and enhance the strategic value of intellectual capital. As such, Spain is a special context to understand the influence of governance mechanisms on firm performance in a contextualized approach that accounts for the absence of regulatory limits on appointment, concentrated ownership structures and networks shaping multiple directorship appointments.

Our results show that the impact of multiple directorships on firm performance is positive and partially mediated by the firms' ability to efficiently leverage external intellectual capital resources in internal decision-making and managerial processes. This finding indicates that the performance implications of multiple directorships extend beyond their direct influence on firm outcomes and depend on how firms orchestrate and exploit the knowledge, experience and network embedded in their directors.

Building on this evidence, this study makes several contributions to the corporate governance literature. First, it provides empirical support for the view that directors holding multiple board positions contribute valuable human and relational capital, such as expertise, experience and interorganizational networks, that enhance managerial decision making and opportunity recognition. Our results show that these directors improve intellectual capital efficiency by facilitating more informed evaluations of managerial proposals, identifying strategic opportunities and enabling access to relevant information and resources through their professional networks. In doing so, multiple directorships influence firm performance by fostering a more effective use of intellectual capital.

Second, this study advances prior research by explicitly uncovering the mechanism through which multiple directorships affect firm performance. The present study responds to recent calls in the literature (e.g. [Fayad et al., 2025](#)) to examine mediating processes that explain the direct effects of multiple directorships. Drawing on the dynamic capabilities and absorptive capacity frameworks, we aimed to demonstrate that intellectual capital efficiency acts as a key mediating channel linking multiple directorships to firm performance. Dynamic capabilities theory focuses on a firm's ability to purposefully create, extend and modify its resource base in response to changing environments ([Teece et al., 1997](#)). Absorptive capacity refers to a firm's ability to recognize the value of new external knowledge, assimilate it and apply it to the firm ([Cohen and Levinthal, 1990](#); [Zahra and George, 2002](#)). Specifically, we sought to show that external knowledge, skills, experience and network access associated with multiple

directorships contribute to superior performance only when firms possess the capability to integrate, reconfigure and deploy these resources effectively. In this sense, multiple directorships enhance firms' capabilities and create greater absorptive capacity, enabling firms to transform externally sourced knowledge into value and create strategic outcomes.

The rest of the paper is organized as follows. [Section 2](#) presents the relevant literature and research question. [Section 3](#) describes the methodology (sample, variables and econometric model). The results are presented in [Section 4](#), and finally, the conclusions are presented in [Section 5](#).

2. Theoretical framework: implications of multiple directorships for intellectual capital efficiency and firm performance

The literature has extensively examined how multiple directorships (hereafter, MDs) influences firm performance (hereafter, FP) ([Di Pietra et al., 2008](#); [Larcker et al., 2013](#); [Lei and Deng, 2014](#); [Perry and Peyer, 2005](#); [Sarkar and Sarkar, 2009](#)), drawing primarily on agency theory or resource dependency theory. Research on the role of MDs in mitigating managerial opportunism and ensuring alignment with shareholders' interests has been largely divided between the quality hypothesis ([Fama and Jensen, 1983](#)), which emphasizes directors' superior expertise, experience and networks in improving governance ([Wang et al., 2021](#)) and the business hypothesis, which highlights overcommitment and its negative effects on monitoring effectiveness ([Falato et al., 2014](#); [Fich and Shivdasani, 2006](#); [Jiraporn et al., 2009](#)) and, consequently, on performance. However, this narrow attention on monitoring responsibilities tends to overlook alternative mechanisms through which MDs may shape FP, particularly their potential value as a source of knowledge and strategic resources. We adopt this perspective, suggesting that MDs improve FP indirectly by enhancing intellectual capital efficiency. This positioning guides our empirical analysis and underpins our expectation that MDs can be associated with superior FP under specific organizational conditions.

As business organizations pursue greater performance and sustainability in the long term, they depend on their strategic position in the market in which they operate. In this context, the classical resource-based view (hereafter, RBV) ([Barney, 1991](#); [Grant, 1996](#); [Nelson, 1991](#)) maintains that the attainment of competitive advantages is contingent upon the quality and distinctive attributes of the resources and capabilities that the organization possesses or is able to deploy ([Nelson, 1991](#)). Resources refer to the assets or factors that a firm owns and can control, whereas capabilities are the skills and competencies that the firm applies to carry out its activity in a suitable manner ([Barney, 1991](#)). Despite the valuable insights offered by this approach, the RBV has been criticized as outdated in today's dynamic and highly competitive markets. Its predominantly static orientation limits its ability to explain how some firms sustain competitive advantages in environments characterized by continuous and dynamic changes ([Chang et al., 2015](#); [Chatterji and Patro, 2014](#); [Eisenhardt and Martin, 2000](#); [Priem and Butler, 2001](#); [Teece et al., 1997](#)). Thus, to address these limitations, scholars have proposed the theory of dynamic capabilities as an extension of the RBV ([Teece et al., 1997](#); [Teece and Pisano, 1994](#)), drawing attention to the adaptation ability of the firm or dynamic capability as a resource to maintain its competitive advantages even while operating in changing environments. As dynamic capabilities are related to the capability of strategic management in "appropriately adapting, integrating and reconfiguring internal and external organizational skills, resources and functional competences to match the requirements of a changing environment" ([Teece et al., 1997](#), p. 515), the theory of dynamic capabilities is expected to offer an explanation for why and how some firms achieve greater competitiveness and performance, even when they possess similar resources to their competitors ([Cavusgil and Deligonul, 2025](#); [Marco-Lajara et al., 2022](#)).

This logic has also been applied to the role of MDs in corporate governance literature. From the theoretical standpoint of RBV, directors enhance organizational capacity by contributing their expertise, knowledge, skills and external networks to corporate governance decisions ([Le et al., 2023](#); [Reguera-Alvarado and Bravo-Urquiza, 2022](#)). Moreover, MDs are often regarded

as high-quality members (Vafeas, 1999) who can enhance organizational effectiveness by contributing diverse expertise (Ferris *et al.*, 2003), advanced knowledge (Di Pietra *et al.*, 2008; Perry and Peyer, 2005), extensive professional networks (Booth and Deli, 1996) and valuable sector-specific insights (Ferris *et al.*, 2020). Such directors also serve as conduits of institutional knowledge (Hernández-Lara and Gonzales-Bustos, 2019), disseminate best practices and contextual intelligence (Geletkanycz and Hambrick, 1997; Simoni and Caiazza, 2012) and strengthen the board's strategic decision-making processes (Jiraporn *et al.*, 2008). Moreover, their incentive to maintain a strong professional reputation encourages diligent engagement, thereby increasing their perceived value and likelihood of future board appointments (López and Morros, 2014).

However, the resources and capabilities provided by the board of directors, in general, and MDs in particular, are insufficient to achieve greater performance in the current markets, which are characterized as highly dynamic and competitive. That is, these directors' access to external knowledge, perspectives and ideas does not guarantee their effective application or assimilation within the organization (Lu *et al.*, 2021) because MDs "only generate benefits when the resources they provide (contact, influence, knowledge, skills, etc.) are strategically useful" (Blanco-Alcántara *et al.*, 2019, p. 5). This argument is grounded in the dynamic capabilities and absorptive capacity frameworks, which conceptualize firm success as dependent on the ability "to build, integrate and reconfigure internal and external resources to address rapidly changing environments" (Teece *et al.*, 1997). Accordingly, performance improvements arise only when firms can mobilize and integrate such knowledge efficiently.

The development of dynamic capabilities (sensing, seizing and reconfiguring) is shaped by intellectual capital (Awward, 2025; Eisenhardt and Martin, 2000; Singh and Rao, 2016; Teece *et al.*, 1997). Indeed, sensing (identifying opportunities and threats), seizing (taking advantage of opportunities) and reconfiguring activities (continuous improvement, renewal and protection of resources and capabilities) depend on the availability of specialized knowledge, organizational systems that support it and external relationships that amplify it (Singh and Rao, 2016). In addition, organizational human capital is considered a dynamic contributor (Bruni and Verona, 2009) that provides knowledge, skills and experiences that are necessary for organizations to understand the environment, identify opportunities and threats (sensing) (Awward, 2025), generate new knowledge and foster alliances (Kale and Singh, 2009). Individual knowledge gains real-world organizational value only when the structural capital (processes, routines, databases, information systems and organizational culture) provides the mechanisms to capture, share and institutionalize it, which in turn generates learning and facilitates the acquisition of new resources (Youndt *et al.*, 2004). All of this will improve the firm's dynamic capabilities to capitalize on opportunities and allocate resources (seizing) (Singh and Rao, 2016). Finally, external knowledge, strategic alliances and professional networks (relational capital) allow firms to maintain relationships with stakeholders, which can give them access to information about opportunities and help them learn new skills (Ambrosini and Bowman, 2009; Meles *et al.*, 2016; Sardo and Serrasqueiro, 2018). Therefore, relational capital constitutes an important factor for the development of a firm's dynamic capabilities (Zollo and Winter, 2002).

At the micro-organizational level, different components or dimensions of the dynamic capabilities construct have been identified, including absorptive capacity, innovation, adaptation, integration and acquisition capacity (Garzón, 2015; Lin *et al.*, 2016; Wang and Ahmed, 2007). As posited by the absorptive capacity framework, based on the work of Zahra and George (2002), the efficiency of intellectual capital can be understood as a direct reflection of a firm's underlying capabilities (acquisition, assimilation, transformation and exploitation), which constitute the mechanisms enabling the conversion of external knowledge into value-creating intellectual assets. Efficient acquisition enhances a firm's ability to identify and obtain strategically relevant knowledge. Effective assimilation ensures that such knowledge is systematically processed and embedded within existing cognitive structures. Transformation capabilities enable the recombination of newly acquired insights with the firm's stock of human, structural and relational capital, thereby generating novel perspectives and

strengthening the adaptability of intellectual resources. Finally, exploitation improvements and superior FP may take place. In this sense, intellectual capital efficiency represents the observable manifestation of how proficiently a firm mobilizes its absorptive capacity to transform external knowledge into productive and strategically meaningful output.

Following both dynamic capabilities and absorptive capacity frameworks, and their interconnection with intellectual capital, we propose that the efficient use of intellectual capital may represent a catalyst through which MDs exert their influence on FP. The efficient use of intellectual capital captures a firm’s ability to leverage and convert the knowledge, networks and experiences brought by directors holding multiple board positions. The efficiency of intellectual capital can be interpreted as a quantitative expression of a firm’s capacity to transform knowledge, skills and structural assets into added value. Consequently, higher levels of intellectual capital efficiency suggest that the firm has more effective mechanisms for absorbing knowledge, assimilating information from its environment and applying it to processes of innovation, strategic alignment and continuous improvement, which lie at the core of the dynamic capabilities framework.

Although no empirical study has examined whether the efficiency of intellectual capital mediates the relation between MDs and FP, prior research has shown its relevance as a mediating mechanism in other governance and knowledge-intensive contexts. Evidence from [Aslam and Haron \(2021\)](#) and [Scafarto et al. \(2021\)](#) demonstrate that intellectual capital is a necessary bridge for different governance mechanisms to produce greater performance for firms. Building on this logic, the performance benefits of MDs depend on a firm’s ability to absorb and leverage diverse knowledge and strategic connections; only firms with efficient intellectual capital systems can convert such input into superior strategic and operational outcomes. Intending to fill this gap in research and complement the work done so far, which has only focused on when and under what conditions that relation occurs, we propose to explore how MDs influence FP, putting forward the following research question:

RQ. To what extent does intellectual capital efficiency mediate the relation between multiple directorships and firm performance, and how does this mediation affect firm performance?

Building on this theoretical logic, we construct a stepwise analytical framework designed to assess the presence and significance of the mediating effect of the efficiency of intellectual capital in the relation between MDs and FP. The framework for the research question is summarized in [Figure 1](#).

3. Methodology

3.1 Sample and data sources

For the empirical study, we collected all Spanish listed firms’ data over the period 2008–2020. To gather complete panel data, we excluded those firms that were out of the Spanish continuous market for one or more years in the study period (41 firms). We also excluded

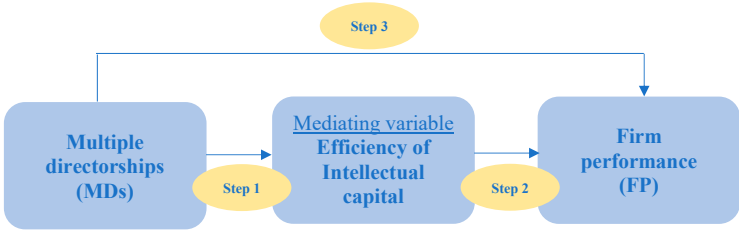


Figure 1. Research framework of the efficiency of intellectual capital mediation on the relationship between multiple directorships (MDs) and firm performance (FP)

banks, which follow different regulatory requirements, accounting standards and compliance rules, from the sample. Consequently, we worked with a final sample of 75 firms. We manually collected the information on financial data from the Annual Accounts, and the information on corporate governance from the Corporate Governance Annual Report. Information on the directors who simultaneously held positions on the boards of different firms was collected from the Corporate Governance Report. In Spain, firms must provide information in that report on board members who also serve as directors on the boards of other firms. These data allowed us to account for their representativeness on the board and, consequently, their weight and significance.

Accounts and Corporate Governance Annual Reports of each firm are available on the website of the National Stock Exchange Commission (CNMV, Spain). We obtained a balanced panel dataset of 975 observations (75 companies over 13 years), which allowed us to capture the firms' specific characteristics. The description of the sample is presented in [Table 1](#).

3.2 Measurement of variables

[Table 2](#) provides a detailed definition of all the variables used in the models. The variable firm performance (FP) is proxied by return on assets (ROA), calculated as operating income (EBIT) over total assets, following previous literature ([Clarke et al., 2011](#); [Shahzad et al., 2020](#)). Operating income is obtained directly from the firms' income statement and total assets correspond to the book value of assets reported on the balance sheet.

We use the proportion of directors who hold two or more seats on different boards to the total number of directors on the board as a proxy of MDs (MD). Our definition is consistent with previous empirical studies ([Haniffa and Hudaib, 2006](#); [Hashim et al., 2011](#); [Manna et al., 2020](#)), which also used this measure to capture the proportionality of MDs on the board.

We used the efficiency of intellectual capital as a mediator variable. To operationalize the variable, we followed the methodology proposed by [Pulic \(1998, 2000, 2004\)](#) by using the Value-Added Intellectual Coefficient (VAICTM). Pulic's proposal is based on the use of the value added as an indicator of the value generated by intellectual labor (knowledge workers). The central idea of Pulic is that traditional accounting tools (centered on the Value-Added Income Statement), if properly interpreted and used, allow the productivity of knowledge workers and efficiency of intellectual capital to be measured. In other words, VAICTM measures the efficiency of intellectual capital in the creation of value by firms through the use of their economic resources ([Pulic, 2004](#)). The calculation method is shown in [Table 2](#). This variable relies on publicly available and reliable data from financial statements,

Table 1. Population and sample analysis

	Listed companies on the Spanish continuous market (December 31, 2020)		Sample	
	N	%	N	%
1. Oil and energy	11	9.48	7	9.33
2. Basic materials, manufacturing and construction	34	29.31	25	33.33
3. Consumer goods	26	22.41	21	28.00
4. Consumer services	18	15.52	9	12.00
5. Financial services and real state (except banks)	19	16.38	9	12.00
6. Technology and telecommunications	8	6.90	4	5.34
	116	100.00	75	100.00

Note(s): This table reports the number of firms in each sector for the population of listed companies on the Spanish Continuous Market and for the sample used in this study

Table 2. Description of variables

Variables	Definition
<i>Dependent variable</i>	
Firm performance (FP)	ROA Return on assets, ratio of operating income to net assets
<i>Independent variables</i>	
Multiple directorship (MDs)	The proportion of directors on the board with directorships in other listed companies to the total number of directors on the board of the company
<i>Mediating variable</i>	
Efficiency of capital intellectual = VAIC	Measured as VAIC (Value Added Intellectual Coefficient) Model proposed by Pulic (1998, 2000, 2004) $VAIC = CEE + HCE + SCE$ The first step is calculating the value added (VA), and following the Scafarto et al. (2021) definition, this variable is calculated $VA = OP + EC + D + A$ OP: operating positive profits EC: total cost for employees D: depreciation A: amortization Capital employed efficiency (CEE) Human capital efficiency (HCE) Structural employed efficiency (SCE)
	Capital employed efficiency coefficient for the firm, where $CEE = VA/CE$ and CE = book value of the net assets for the firm
	Amount of value added generated per monetary unit invested in human resources (employees), where $HCE = VA/HC$ and HC = total salaries and wages ^a
	Value added efficiency of the structural capital of the firm, where $SCE = SC/VA$ and $SC = VA - HC$ ^b
<i>Control variables</i>	
<i>Board characteristics</i>	
BI	Number of independent directors to total number of directors on the board
BS	The total board of members on the board of directors
DUALITY	Dummy variable which takes value of 1 when CEO is also the chair of the board and 0 when they are not
<i>Firm characteristics</i>	
AGE	Number of years from the firm's foundation
LEV	Total debt divided by total shareholders' equity (Ho and Williams, 2003)
Firm size	Logarithm of sales
Note(s): ^a Human capital efficiency (HCE) would be analyzed by measuring the level of human capital, defined as salaries and wages at a point in time (Pulic, 1998). The justification was that higher wages would be afforded to staff with greater skills who would add more value to the firm than staff on lower wage rates (Pulic, 2000), ^b Consistent with views of other leading intellectual researchers (Edvisson and Malone, 1997 ; Sveiby, 1997), Pulic (1998) argues that a firm's total value added, less its human capital, is an appropriate proxy of a firm's structural capital	

thereby offering three key advantages. First, it minimizes the potential subjectivity with other non-accountant data ([Sardo and Serrasqueiro, 2018](#)). Second, it aligns with the approaches of numerous scholars ([Ginesti et al., 2018](#); [Moghadam et al., 2023](#); [Mooneeapen et al., 2022](#); [Nimtrakoon, 2015](#); [Shahzad et al., 2020](#); [Ting et al., 2023](#); [Tiwari, 2022](#)), capturing the new value created by a firm's investment in intellectual resources. Finally, it is recognized as a standardized, integrated metric that allows for comparison across different study contexts ([Ramírez et al., 2021](#)).

Finally, we also controlled for some variables that affect FP, such as firm size, firm leverage (LEV) and firm age (AGE). We measured firm size as the logarithm of sales, as this proxy can

capture a firm's current operational scale, given that higher sales are generally associated with superior performance (Dang *et al.*, 2018). The model also includes leverage and firm age as control variables, as prior literature consistently highlights their relevance to FP, with leverage capturing a firm's financial structure and risk exposure and firm age reflecting accumulated experience, reputation and potential life-cycle effects (Bedeir, 2024; Sardo and Serrasqueiro, 2017; Scafarto *et al.*, 2021; Shahzad *et al.*, 2020). In addition, we also included the control variables of board structure. In particular, we included board independence (BI), board size (BS), the square of board size (BS²) and CEO duality (DUALITY) in the model, all of which have been widely used in previous studies on corporate governance, FP and intellectual capital (Ho and Williams, 2003; Makki and Lodhi, 2014).

3.3 Mediation analysis

To test the research question, we carried out a mediation analysis following the framework established by Baron and Kenny (1986). Specifically, we formulated three equations according to the steps of mediation proposed by the authors.

Step 1. Test the effect of MD on VAIC.

$$\begin{aligned} \text{VAIC}_{i,t} = & \alpha_0 + \delta_1 \text{VAIC}_{i,t-1} + \alpha_1 \text{MD}_{i,t} + \beta_1 \text{BI}_{i,t} + \beta_2 \text{BS}_{i,t} + \beta_3 \text{BS}_{i,t}^2 + \beta_4 \text{DUALITY}_{i,t} \\ & + \beta_5 \text{AGE}_{i,t} + \beta_6 \text{LEV}_{i,t} + \beta_7 \text{Firm Size}_{i,t} + \eta_i + \varepsilon_{it,t=2008-2020} \end{aligned} \quad (1)$$

Step 2. Test the effect of VAIC on FP.

$$\begin{aligned} \text{FP}_{i,t} = & \alpha_0 + \delta_1 \text{FP}_{i,t-1} + \gamma_1 \text{VAIC}_{i,t} + \beta_1 \text{BI}_{i,t} + \beta_2 \text{BS}_{i,t} + \beta_3 \text{BS}_{i,t}^2 + \beta_4 \text{DUALITY}_{i,t} + \beta_5 \text{AGE}_{i,t} \\ & + \beta_6 \text{LEV}_{i,t} + \beta_7 \text{Firm Size}_{i,t} + \eta_i + \varepsilon_{it,t=2008-2020} \end{aligned} \quad (2)$$

Step 3. Test the effect of MD on FP.

$$\begin{aligned} \text{FP}_{i,t} = & \alpha_0 + \delta_1 \text{FP}_{i,t-1} + \alpha_1 \text{MD}_{i,t} + \beta_1 \text{BI}_{i,t} + \beta_2 \text{BS}_{i,t} + \beta_3 \text{BS}_{i,t}^2 + \beta_4 \text{DUALITY}_{i,t} + \beta_5 \text{AGE}_{i,t} \\ & + \beta_6 \text{LEV}_{i,t} + \beta_7 \text{Firm Size}_{i,t} + \eta_i + \varepsilon_{it,t=2008-2020} \end{aligned} \quad (3)$$

Accordingly, we first regressed MDs on VAIC (Eq. 1). In the second step, we regressed VAIC on FP. We then used the third step to test the effect of MDs on FP. If the previous steps determine the existence of mediation, the last model determines whether this mediation is partial or full. Full mediation occurs when MDs affect FP exclusively through the mediator, such that the coefficient of MDs in step 3 is non-significant. In contrast, partial mediation is present when the coefficient of MDs is significant, indicating that the direct effect coexists with the indirect effect transmitted through the mediator.

As the composition of VAIC can vary by year, we analyzed the sample data by firm year (75 firms for 13 years). In addition, we considered negative VAIC as “problematic” (Chu *et al.*, 2011) and replaced with 0. Firms that were unable to generate value added were not expected to transfer efficiency to FP.

We used dynamic panel data regression to test the mediating effect of VAIC on the relation between MDs and FP. The models are estimated using a two-stage generalized method of moments (GMM) estimator (Arellano and Bover, 1995; Blundell and Bond, 1998). This helped us avoid problems related to the unobservable and constant heterogeneity of firms. The

lagged explanatory variable FP_{t-1} is correlated with the error term. In addition, the GMM estimator allowed us to deal with possible endogeneity. Notably, some regressors may be correlated with the past and current values of the idiosyncratic component of the disturbances. Finally, VAIC may influence FP and FP may influence VAIC; this reverse causality could be controlled by using a GMM estimation method.

We also included year and industry dummy variables in all models to capture the potential impact of FP on any specific characteristics of the firms. Thus, to avoid endogeneity or specification problems with the panel data, we used a two-stage system GMM estimator with lag variables (in levels and differences) as instruments for potentially endogenous variables. This method allowed the use of the dynamic dimensions of FP to check the response process over time. We also tested the validity of the specifications by testing the AR_1 and AR_2 statistics measures of the first- and second-order degree of serial correlation, the Hansen/Sargan test of over-identification restrictions and by checking that the number of instruments is less than that of the number of groups. We also calculated the F -test for joint significance of the independent variables.

We included a lagged dependent variable to account for the dynamic nature of FP and intellectual capital efficiency and to control for persistence effects over time. Including the lagged dependent variable allowed us to control for unobserved heterogeneity and reduce potential omitted variable bias, a common approach in corporate governance and performance research. In accordance with the objective of our study, different models have been estimated based on the above equations (see [Table 5](#)).

4. Results

4.1 Descriptive statistics

[Table 3](#) reports the descriptive statistics for the variables. With respect to board composition, the average percentage of MDs is 23.1% of total board members, a figure that closely matches the 23% reported by [Aguiar-Díaz et al. \(2024\)](#), suggesting a high degree of consistency with prior evidence. The mean board size is approximately 10 directors, which is in line with prior evidence for Spanish firms, where reported values typically range between 9.87 and 11 members ([Formigoni et al., 2020](#); [Medina-Salgado et al., 2020](#); [Safiullah et al., 2022](#)). Regarding board independence, independent directors represent 37.8% of the board, a figure slightly above the 35.86% documented by [Saona et al. \(2020\)](#), suggesting a comparable, albeit

Table 3. Descriptive statistics

Continuous variables	Sample (75 firms/975 observations)				
	Mean	Median	25%	75%	Std. dev.
Firm performance (FP)	0.020	0.026	−0.007	0.079	0.242
VAIC	6.007	2.485	1.480	5.987	10.424
Multiple directorships (MDs)	0.231	0.200	0.083	0.364	0.192
Board independence (BI)	0.378	0.357	0.273	0.500	0.163
Board size (BS)	10.535	10.000	8.000	13.000	3.405
Firm's age (AGE)	50.200	46.000	27.000	70.000	28.731
Leverage (LEV)	2.866	1.129	0.484	2.221	26.469
Firm size	11.492	11.656	9.909	13.236	2.366
<i>Dummy variables</i>					
CEO duality (DUALITY)	Duality		Non-Duality		
	<i>N</i>	%	<i>N</i>	%	
	564	57.85	411	42.15	
Multiple directorships (dummy ≥ 0.2)	MD < 0.2		MD ≥ 0.2		
	<i>N</i>	%	<i>N</i>	%	
	521	53.44	454	46.56	

somewhat stronger, presence of independent oversight in our sample. Finally, CEO duality is observed in more than 57% of the firms, which closely aligns with previous findings for Spain, such as [Sánchez-Marín et al. \(2022\)](#), who reported a proportion of 0.58. Overall, these statistics indicate that the characteristics of our sample are broadly consistent with those reported in the literature, thereby supporting the representativeness and external validity of our data.

Analysis of the correlation matrix (see [Table 4](#)) did not reveal any bivariate correlations between the independent variables greater than 0.382, suggesting that multicollinearity does not appear to be a serious problem in the models. Furthermore, the variance inflation factor (VIF) values do not exceed level 2, which is well below the critical value of 10.00 ([Hair et al., 1998](#); [Netter et al., 1989](#)). In addition, the bivariate correlations showed good convergence and discriminant validity of the independent variable.

4.2 Dynamic panel data analyses on the mediating role of efficiency of intellectual capital (two-step system GMM)

We report the regression results of the system estimator in [Table 5](#). In Model 1, in [Table 5](#), we regressed VAIC on MDs ([equation \(1\)](#), model 1). The coefficient for MDs is positive and statistically significant ($\alpha_1 = 5.634$, $p < 0.05$). This result indicates that the efficiency of intellectual capital is higher (about six times higher) in firms with more MDs. Thus, the first condition of [Baron and Kenny's \(1986\)](#) mediation requirement is met.

Therefore, the second condition of the mediation analysis implies that the efficiency of intellectual capital must be significantly related to FP. In Model 2, in [Table 5](#), we regressed FP on VAIC ([equation \(2\)](#), model 2). The results show that VAIC has a positive and significant impact on FP ($\alpha_1 = 0.009$, $p < 0.01$). This result indicates that FP is approximately 0.9% higher in firms with higher levels of VAIC. Consequently, our results are consistent with the view that the development of efficient intellectual capital constitutes a key driver in reducing corporate production costs and in enabling product differentiation, which strengthens a firm's competitive position ([Sydler et al., 2014](#)), and that it is a fundamental capability that enables organizations to navigate ongoing environmental changes (dynamic capabilities) ([Meles et al., 2016](#); [Sardo and Serrasqueiro, 2017](#)). Both aspects ultimately translate into an improvement in FP. As the direct effect is not sufficient to confirm the mediation effect, we used the Sobel, Aroian and Goodman tests to evaluate the indirect effect significance. The coefficient indicates that VAIC exerts a significant indirect effect on the relation between MDs and FP. The Sobel, Aroian and Goodman tests show z-values ranging from 2.49 to 2.53 ($p < 0.05$), which statistically confirms the presence of mediation.

Finally, to determine whether the mediation is partial or full, we tested the relation between MDs and FP ([equation 3](#)). Full mediation implies that MDs influence FP exclusively through the mediator, whereas partial mediation indicates that both indirect and direct effects coexist. The results show that the coefficient of MDs is positive and significant ($\alpha_1 = 0.104$, $p < 0.01$). Thus, the effect of MDs on FP is produced through the partial mediation of the VAIC variable. In our sample, we observed both a direct effect of MDs on FP and an indirect effect, through VAIC. For the control variables, included in all regressions, the expected sign is generally presented according to the literature and across all specifications.

4.3 Robustness check

We conducted additional analyses to assess the robustness of the results presented in the previous sections. First, the regulatory changes introduced by Law 5/2021 modified the disclosure requirements concerning directors' external appointments, requiring firms to report not only positions held in other listed companies but also those in unlisted firms. This reform broadens the definition of MDs, providing a more comprehensive measure of directors' external commitments. To account for this change in the operationalization of the MDs variable, we extended our sample to include the period 2021–2023 and used it as a robustness

Table 4. Correlation matrix

	1	2	3	4	5	6	7	8	9
1. Firm performance									
2. VAIC	0.371***								
3. Multiple directorships	0.123***	0.216***							
4. Board independence	0.009	0.139***	0.140***						
5. Board size	0.137***	0.245***	0.382***	−0.155***					
6. CEO duality	0.002	0.044	−0.155***	0.164***	−0.066**				
7. Firm's age	−0.007	−0.018	−0.052	−0.094***	0.077**	0.009			
8. Leverage	−0.004	−0.020	−0.012	0.002	−0.011	0.006	−0.021		
9. Firm's size	0.264***	0.239***	0.303***	0.017	0.511***	−0.039	0.166***	0.033	
VIFs	1.21	1.27	1.32	1.17	1.59	1.07	1.05	1.00	1.51

Table 5. Mediation of VAIC in multiple directorships and firm performance relationship. Two-step system GMM^a

Dependent variable		Model 1 VAIC _t	Model 2 FP _t	Model 3 FP _t
<i>Independent variable</i>				
FP _{t-1} (δ_1)			0.212*** (0.008)	0.224*** (0.009)
MDs (α_1)		5.634** (2.152)		0.104*** (0.026)
Multiple directorships (dummy variable ≥ 0.2) (α_{11})				
<i>Mediator variable</i>				
VAIC _{t-1} (δ_1)		0.056*** (0.011)		
VAIC _t (γ_1)			0.009*** (0.001)	
<i>Controls</i>				
Board characteristics	BI (β_1)	8.197*** (2.414)	-0.064 (0.042)	-0.065 (0.041)
	BS (β_2)	-5.459*** (1.245)	0.015 (0.014)	0.011 (0.008)
	BS ² (β_3)	0.220*** (0.051)	-0.0001 (0.001)	-0.001*** (0.001)
	DUALITY (β_4)	2.885*** (0.719)	-0.026* (0.016)	-0.044*** (0.008)
Firm characteristics	AGE (β_5)	-0.212*** (0.041)	-0.002** (0.001)	-0.001 (0.001)
	LEV (β_6)	0.001 (0.001)	0.001 (0.001)	-0.001 (0.001)
	Firm Size (β_7)	2.297*** (0.364)	0.034*** (0.001)	0.011*** (0.003)
Constant and time effects and industry effects		Yes	Yes	Yes
<i>F tests</i>		73.67*** [29, 74]	2239.92*** [26, 74]	1332.08*** [29, 74]
Hansen test of over identification		37.10 (63)	46.76 (54)	52.02 (71)
AR1 (<i>p</i> -value)		-1.88**	-1.94**	-2.10**
AR2 (<i>p</i> -value)		-1.24	-0.29	-0.40
Number of firms		75	75	75
Number of observations		975	975	975
No. Instruments		93	93	93
<i>Mediating testing^b</i>				
Sobel test			2.514** (0.020)	Partial
Aroian test			2.499** (0.020)	Partial
Goodman test			2.528** (0.020)	Partial

Note(s): ^aIn this table, we report results from dynamic panel-data estimation with two-step system GMM of the model. Variables are described in Table 2. The results are based on a sample of 75 firms and the covered period is 2008–2020. Standard error is reported in parentheses. *, **, ***, respectively, indicating significance levels at 10%, 5% and 1%. In italic, significant coefficients. AR(1) and AR(2) are tests for first and second-order correlation in the first-differenced residuals (under the null of no serial correlation). The Hansen test of over identification is under the null hypothesis of zero correlation between the instruments and the error term. That is rejection of the null casts doubt on the validity instruments. The instrument used in the two-step system GMM estimation are lags of independent and dependent variables for 5 years. We use the option collapse to reduce the number of instruments as much as possible, ^bCreated with interactive mediation test (<https://quantpsy.org/sobel/sobel.htm>) [19/03/2026]

SAR check. This implies a shift in the measurement of MDs compared with the baseline specification, allowing us to test the stability of our findings under a more encompassing definition of directors' external engagements. The results remain qualitatively unchanged, supporting the stability of our findings and reinforcing the validity of our main conclusions (models 4, 5 and 6 in Table 6).

Table 6. Robustness checks. Sample and MDs criteria

Dependent variable		Model 4 VAIC _t	Model 5 FP _t	Model 6 FP _t	Model 7 VAIC _t	Model 8 FP _t
<i>Independent variable</i>						
FP _{t-1} (δ_1)			-0.355*** (0.034)	-0.259*** (0.031)		0.245*** (0.008)
MDs (α_1)		0.098 (5.376)		0.320 (0.287)	-1.374 (4.093)	
Multiple directorship (dummy variable ≥ 0.2) (α_{11})					2.301* (1.255)	-0.014 (0.020)
<i>Mediator variable</i>						
VAIC _{t-1} (δ_1)		0.655*** (0.002)			0.078*** (0.012)	
VAIC _t (γ_1)			0.001* (0.001)			0.009*** (0.001)
<i>Controls</i>						
Board characteristics	BI (β_1)	-17.021 (10.504)	1.123*** (0.238)	0.719** (0.366)	-0.064 (0.042)	-0.049 (0.045)
	BS (β_2)	-5.609** (2.604)	-0.029 (0.059)	-0.134 (0.104)	0.015 (0.014)	0.014 (0.014)
	BS ² (β_3)	0.289*** (0.097)	0.002 (0.002)	0.006 (0.004)	-0.0001 (0.001)	-0.001 (0.001)
	DUALITY (β_4)	5.119** (2.466)	0.076 (0.042)	0.106* (0.063)	-0.026* (0.016)	-0.025 (0.016)
Firm characteristics	AGE (β_5)	0.274** (0.129)	-0.002 (0.005)	-0.001 (0.004)	-0.002** (0.001)	-0.002* (0.001)
	LEV (β_6)	0.002 (0.014)	-0.002 (0.002)	-0.001 (0.001)	0.001 (0.001)	0.001 (0.001)
	Firm Size (β_7)	2.531** (1.134)	0.070*** (0.017)	0.082*** (0.030)	0.034*** (0.001)	0.036*** (0.004)
Constant and time effects and industry effects		Yes	Yes	Yes	Yes	Yes
<i>F tests</i>		4604.77*** [32,65]	72.36*** [29,65]	93.97*** [32, 65]	63.06*** [30,74]	3790.10*** [27,74]
Hansen test of over identification		26.20 (60)	21.22 (56)	17.90 (68)	36.06 (62)	46.76 (53)
AR1 (<i>p</i> -value)		-1.07	-1.06	-1.05	-1.90*	-1.95**
AR2 (<i>p</i> -value)		1.03	0.68	-0.38	-0.98	-0.24
Number of firms		68	68	68	75	75
Number of observations		1,056	1,056	1,056	975	975
No. Instruments		86	86	86	93	93

Note(s): In this table, we report results from dynamic panel-data estimation with two-step system GMM of the model. Variables are described in Table 2. The results are based on a sample of 68 firms, and the covered period is 2008–2023. Standard error is reported in parentheses. *, **, ***, respectively, indicating significance levels at 10%, 5% and 1%. In italic, significant coefficients. AR(1) and AR(2) are tests for first- and second-order correlation in the first-differenced residuals (under the null of no serial correlation). The Hansen test of over identification is under the null hypothesis of zero correlation between the instruments and the error term. That is rejection of the null casts doubt on the validity instruments. The instrument used in the two-step system GMM estimation are lags of independent and dependent variables for 5 years. We use the option collapse to reduce the number of instruments as much as possible

Second, we also checked for the busyness focus. According to [Fich and Shivdasani \(2006\)](#), busyness can be problematic when it reaches a “critical mass” of busy directors. We incorporated a dummy variable to control whether the level of the MDs exceeds the median, to capture its influence on the mediating effect. Accordingly, the dummy variable captured this phenomenon by classifying boards as busy with a code of 1 if the percentage of MDs exceeded 20% and 0, otherwise. Models 7 and 8 ([Table 6](#)) present the statistical estimates of the regression model testing for this effect. Firstly, the results show a negative albeit insignificant impact of MDs on VAIC when we incorporate the control variable representing MDs greater than 20% (model 7, $\alpha_1 = -1.374$, $\rho > 0.10$) and a positive and significant impact of the MDs dummy greater than 20% (model 7, $\alpha_{11} = 2.301$, $\rho < 0.10$). Thus, the relation is especially significant when MDs represent more than 20% on the board. Secondly, we found significant positive results for the VAIC on FP when controlling for busyness (model 8, $\delta_1 = 0.245$, $\rho < 0.01$). Both tests are consistent with our results.

Finally, as an alternative measure of FP, we used stock return ([Falato et al., 2014](#); [Fich and Shivdasani, 2006](#); [Larcker et al., 2013](#)), which provides a forward-looking, market-based measure of firm performance that captures how investors value the effectiveness of corporate governance structures. As such, stock returns are particularly suitable for assessing the economic impact of good governance practices ([Gompers et al., 2003](#)). We replaced ROA with stock return in the statistical models to test for stability. The results from all models (see models 9, 10 and 11 in [Table 7](#)) are qualitatively consistent with those reported in [Table 5](#), being positive although not significant.

5. Discussion and conclusions

The results indicate that intellectual capital efficiency exerts a positive and partial mediating effect in the relation between MDs and FP. This finding directly addresses our research question by showing not only the extent of the mediation but also how it operates. That is, MDs enhance FP in part through their position influence on intellectual capital efficiency. In this sense, the results support the theoretical proposition that MDs act not only as effective monitors but also as strategic advisors whose skills, capabilities and network access contribute to improving firms’ internal human capital efficiency, thereby strengthening overall FP. By doing so, this study contributes to prior literature through an approach that explains how MDs influence performance.

Specifically, our analysis suggests that MDs improve intellectual capital efficiency, acting as a catalyst of internal intellectual capital efficiency. This aligns with dynamic capabilities theory ([Teece et al., 1997](#)), which holds that competitiveness in volatile environments depends on a firm’s ability to effectively integrate, adapt and reconfigure internal and external skills, resources and functional capabilities. In this regard, MDs incorporate external sources of knowledge, cognitive diversity and relational capital ([Booth and Deli, 1996](#); [Le et al., 2023](#); [Reguera-Alvarado and Bravo-Urquiza, 2022](#)), thereby integrating, developing and reshaping both internal and external competencies. Through these processes, they enhance the utilization and management of intellectual capital. This is also consistent with the absorptive capacity perspective ([Cohen and Levinthal, 1990](#)). The improvement of intellectual capital efficiency generated by MDs can be interpreted as an outcome of enhanced absorptive capacity, insofar as they facilitate the acquisition, integration and effective deployment of novel knowledge.

The theoretical contributions of this study unfold along three main lines. Firstly, we offer empirical evidence that substantiates prior research assertions regarding the benefits derived from the efficient interaction of multiple actors with a firm’s intellectual capital. Some researchers assert that MDs provide substantial human and social capital to the board ([Hillman and Dalziel, 2003](#); [Kor and Sundaramurthy, 2009](#)), bringing crucial intangible resources (knowledge, skills, connections and experience) ([Reguera-Alvarado and Bravo-Urquiza, 2022](#)) that enhance the board’s ability to make informed decisions and identify effective solutions ([Ferris et al., 2003](#)). Additionally, others have stated that the presence of such directors increases the efficiency of intellectual capital, as their broader expertise enables them

Table 7. Robustness checks. Performance measured stock return

Dependent variable		Stock return Model 9 VAIC _t	Model 10 FP _t	Model 11 FP _t
<i>Independent variable</i>				
FP _{t-1} (δ_1)			−0.127*** (0.019)	0.001*** (0.001)
MDs (α_1)		5.634** (2.148)		16.139*** (2.778)
Multiple directorship (dummy variable ≥ 0.2) (α_{11})				
<i>Mediator variable</i>				
VAIC _{t-1} (δ_1)		0.057*** (0.011)	0.009 (0.125)	
<i>Controls</i>				
Board characteristics	BI (β_1)	8.197*** (2.410)	1.683 (1.685)	−6.685*** (1.618)
	BS (β_2)	−5.459*** (1.242)	−2.872*** (0.607)	−11.371*** (0.590)
	BS ² (β_3)	0.220*** (0.051)	0.119*** (0.028)	0.452*** (0.029)
	DUALITY (β_4)	2.885*** (0.718)	−0.169 (0.552)	−3.494*** (1.118)
Firm characteristics	AGE (β_5)	−0.212*** (0.041)	−0.004 (0.025)	0.018 (0.047)
	LEV (β_6)	0.001 (0.001)	−0.012*** (0.002)	0.010*** (0.001)
	Firm Size (β_7)	2.297*** (0.364)	0.897*** (0.147)	1.996*** (0.205)
Constant and time effects and industry effects		Yes	Yes	Yes
<i>F tests</i>		368.08 [26,74]	758.35*** [26,74]	9680.06*** [29, 74]
Hansen test of over-identification		37.10 (66)	29.46 (47)	39.96 (71)
AR1 (<i>p</i> -value)		−1.88*	−2.62***	−1.06
AR2 (<i>p</i> -value)		−1.24	0.18	1.02
Number of firms		75	75	75
Number of observations		975	975	975
No. Instruments		93	93	93

Note(s): In this table, we report results from dynamic panel-data estimation with two-step system GMM of the model. Variables are described in Table 2. The results are based on a sample of 75 firms and the covered period is 2008–2020. Standard error is reported in parentheses. *, **, ***, respectively, indicating significance levels at 10%, 5% and 1%. In italic, significant coefficients. AR(1) and AR(2) are tests for first- and second-order correlation in the first-differenced residuals (under the null of no serial correlation). The Hansen test of over identification is under the null hypothesis of zero correlation between the instruments and the error term. That is rejection of the null casts doubt on the validity instruments. The instrument used in the two-step system GMM estimation are lags of independent and dependent variables for 5 years. We use the option collapse to reduce the number of instruments as much as possible

to recognize market opportunities and critically evaluate managerial proposals (Castanias and Helfat, 2001). Similarly, several researchers have maintained that directors who serve on multiple boards cultivate extensive networks with fellow directors and senior managers, granting them quick access to ideas, information and a variety of strategic resources that can enhance the efficiency with which intellectual capital is deployed (Kor and Sundaramurthy, 2009; Oh *et al.*, 2006). Along the same lines, other researchers have suggested that the relationships that MDs develop with suppliers, distributors and customers constitute

additional sources of value (Cooper *et al.*, 1994) as these connections may facilitate the establishment of stable, long-term partnerships that would be difficult to achieve otherwise (Barroso-Castro *et al.*, 2016). Finally, the research in this area indicates that the regularity with which meetings across different boards occur creates opportunities and incentives for information exchange, thereby promoting knowledge sharing and the diffusion of effective managerial practices and successful strategic approaches among firms (Kor and Sundaramurthy, 2009; Shipilov *et al.*, 2010). Taken together, these mechanisms suggest that MDs shape managerial decision-making processes and, in doing so, contribute to a more efficient utilization of intellectual capital.

Secondly, to the best of our knowledge, this research constitutes the first empirical examination of the mediating role of intellectual capital efficiency in the relation between MDs and FP. Therefore, this study extends the existing literature by shedding light on how MDs can shape corporate value creation. Finally, the findings provide empirical support for the assumptions of the dynamic capabilities and absorptive capacity frameworks, confirming that enhancing intellectual capital efficiency is a key mechanism through which organizations leverage MDs to improve performance outcomes.

The study also offers several practical implications for executives, managers and policymakers involved in shaping corporate governance and managing intellectual capital efficiency. For firms seeking to enhance performance, our findings suggest that shareholders should consider appointing directors with MDs, while ensuring that the intellectual capital efficiency associated with these directors is effectively leveraged to generate performance improvements. In this regard, firms may need to develop the processes and resources that enable it to capitalize on the knowledge, experience and networks of MDs (Youndt *et al.*, 2004). Furthermore, senior management could implement formal mechanisms to facilitate the absorption of the knowledge contributed by MDs, such as mentoring from the board or the organization of workshops.

Moreover, the results provide policymakers with valuable insights into the critical importance of fostering intellectual capital efficiency through sustained investment, as a means of fostering long-term growth and improving FP in today's knowledge-based economy. We also highlight that limiting the number of MDs may not always be beneficial when firms exhibit high intellectual capital efficiency, as these directors could contribute positively to strategic knowledge integration and value creation.

Despite the contributions of this empirical research, this study has several limitations that could be addressed in future research. First, it analyses the relation between directors with MDs, FP and efficiency of intellectual capital within the unique social, economic and political context of Spain. Although the findings could be applied to other contexts exhibiting similar features commonly found internationally, future research could explore cross-national comparisons across European countries to gain more nuanced insights into this relation. Second, this study overlooks other dimensions of financial performance, such as productivity and market valuation, which warrant further investigation. Third, the study uses the VAIC as a proxy for the efficiency of intellectual capital. We acknowledge that the VAIC has several limitations, as mentioned by Stähle *et al.* (2011) and Iazzolino and Laise (2013), primarily because the information it incorporates cannot be entirely attributed to the efficiency of intellectual capital (e.g. employee costs, which are considered an investment). However, Meles *et al.* (2016) argued that VAIC captures a performance dimension not addressed by traditional measures, specifically the value created by intellectual capital. Measuring intellectual capital efficiency is a complex issue and remains a subject of ongoing debate.

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1. In Spain, the Good Governance Code of Listed Companies (CBGSC) (2020), in its recommendation 35, states that “The nomination committee should ensure that non-executive directors have sufficient time available to discharge their responsibilities effectively. The board of directors’ regulations should lay down the maximum number of company boards on which directors can serve”.

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Further reading

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