









Revealing the moderating impact of spatial context on the relationship between intellectual capital efficiency and the sustained success of family SMEs

Revelando el impacto moderador del contexto espacial en la relación entre la eficiencia del capital intelectual y el éxito sostenido de las PYMES familiares

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Abstract

This study investigates the behavioral patterns of Small and Medium-Sized Family Firms (SMFFs) in terms of translating intellectual capital efficiency into economic performance while considering their geographical location. The findings underscore the paramount importance of effective intellectual capital management in driving business performance, particularly for SMFFs, drawing upon the knowledge-based perspective. In line with behavioral theory, this study also provides empirical evidence demonstrating that SMFFs located in rural areas adeptly navigate locational challenges by effectively translating their Added Value Intellectual Coefficient (VAIC) into sustainable performance, thereby outperforming their urban counterparts. This phenomenon, referred to as SMFF heterogeneity, can be attributed to their profound emotional connection and deep-rooted bonds with their local communities, intensifying their commitment to the regional milieu. Consequently, their success becomes intricately linked with the spatial context they inhabit. In this regard, this research offers significant practical and theoretical contributions to the understanding of SMFFs, shedding light on the interplay between intellectual capital, geographic location, and sustainable performance in the intricate landscape of family firms

Keywords: intellectual capital; performance; family firms; context; location; regional development

JEL Classification: D22; L25; M11; M14; O12; O18; O34; O44; R11

Resumen

Este estudio investiga los patrones de comportamiento de las Pequeñas y Medianas Empresas Familiares (PYMEF) en términos de traducir la eficiencia en la gestión del capital intelectual en rendimiento económico teniendo en cuenta su ubicación geográfica. Los hallazgos subrayan la importancia de una gestión eficaz del capital intelectual para impulsar el rendimiento empresarial, en particular para las PYMEF, basándose en una perspectiva basada en el conocimiento. En línea con la teoría del comportamiento, este estudio también proporciona evidencia empírica que demuestra que las PYMEF ubicadas en áreas rurales superan hábilmente los desafíos locales al traducir su eficiencia en la gestión del capital intelectual (VAIC) en rendimiento sostenido, superando así a sus contrapartes urbanas. Este fenómeno, denominado heterogeneidad de la PYMEF, puede atribuirse a su profunda conexión emocional y los vínculos de arraigo con sus comunidades locales, intensificando su compromiso con la región. En consecuencia, su éxito queda estrechamente vinculado con el contexto espacial en el que se localiza. En este sentido, esta investigación ofrece importantes contribuciones prácticas y teóricas para la comprensión de las PYMEF, arrojando luz sobre la interacción entre el capital intelectual, la ubicación geográfica y el rendimiento

Palabras clave: capital intelectual; rendimiento; empresa familiar; localización; desarrollo regional

Clasificación JEL: D22; L25; M11; M14; O12; O18; O34; O44; R11

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1. Introduction

The significance of small and medium-sized family firms (hereafter referred to as SMFFs) in the global economy, particularly within the Spanish context, has been substantiated by numerous studies and reports (see, among others, Family Business Institute, 2015; Family Business Institute, 2018). Prolific research conducted in recent years within the academic sphere reaffirms this importance. Within this field, family businesses are recognized as a distinctive form of organization, noteworthy for their contributions to both regional and global development (Basco, 2015; Karlsson, 2018), as evidenced by their impact on GDP and employment growth (Massis et al., 2018). The presence of family members within these enterprises constitutes a unique resource capable of influencing organizational objectives, incentives, and decision-making processes (Habbershon & Williams, 1999). Additionally, research indicates that the success of family SMEs is influenced by their geographical location; in other words, the context in which a company operates can significantly impact its outcomes (Astrachan, 1988). This phenomenon was termed "regional familiness" by Basco (2015), and previous studies have demonstrated the profound effect that the location of a family business can have on its performance (Backman & Palmberg, 2015; Brewton et al., 2010).

One of the factors potentially explaining this behavior is the varying use of intangible resources among family firms. In today's knowledge-driven society, intangible resources, such as intellectual capital, play a pivotal role in economic development in general and business success (Ruiz et al., 2011). Specifically, at the company level, intellectual capital (hereafter referred to as IC) is indispensable for value creation, contributing to the generation of sustainable and inimitable competitive advantages, fostering long-term, sustainable growth (Manzanque et al., 2016). However, a firm's interaction with its environment, contingent upon the factors provided by the local geographic context, influences how family businesses generate and transmit knowledge, skills, and abilities, ultimately influencing performance (Dicken & Malmberg, 2001).

In response to the call from authors interested in understanding the heterogeneous behavior of family businesses (Chua et al., 2012; Jaskiewicz & Dyer, 2017), this study aims to provide empirical evidence on the impact of intangible asset management efficiency within family businesses and their ability to generate sustained medium-term returns, while accounting for the factor of location. To achieve this, we distinguish between urban and rural areas, positing that location can significantly influence the interaction of family businesses with their surrounding environment. This study contributes to the existing literature by identifying the underlying reasons and nature of the heterogeneous behavior observed among family firms. Essentially, our research investigates whether contextual social factors influence how SMFFs transform their IC into economic performance. In this regard, this study addresses the following questions: Does IC efficiency have a positive impact on the sustainable performance of SMFFs? Is there a moderating effect of geographical location on the relationship between IC efficiency and the sustainable performance of SMFFs?

Empirical evidence supporting the focus of this study was obtained through an analysis of a dataset comprising small and medium-sized Spanish family firms, sourced from the SABI database. To identify family firms, the classification criteria proposed by Rojo et al. (2011) were applied. Economic and financial data covering the period 2008-2018 were extracted from these firms' financial statements. The variables used in the study were derived from this financial data, and intellectual capital was assessed using the Value Added Intellectual Coefficient (VAIC). Additionally, location variables, as per Karlsson's methodology (2018), were incorporated to differentiate between urban and rural settings, allowing for the examination of behavioral differences among companies within these contexts. Finally, a Generalized Least Squares (GLS) random effects model was applied to panel data to empirically test the statistical models explaining relationships between the variables, thereby addressing limitations present in time series or cross-sectional models.

The findings indicate that SMFFs achieving higher efficiency in managing intellectual capital demonstrate sustained medium-term performance. Intellectual capital emerges as a crucial source of competitive advantage, ensuring their long-term survival. Furthermore, our study confirms a positive relationship between companies located in rural areas and their ability to achieve sustained medium-term performance by increasing IC efficiency, substantiating the notion that the environment in which SMFFs are located significantly conditions economic growth in rural areas. These results support the argument that rural settings serve as catalysts for generating these returns.

Thus, by shifting the focus from a knowledge-based perspective and adopting a novel approach to variable definitions and selection, this study reinforces the significance of practices aimed at increasing IC efficiency to promote economic sustainability in SMFFs. Simultaneously, drawing on behavioral theory, the research offers fresh insights that reveal the diversity among SMFFs in their capacity to translate IC efficiency into sustainable performance based on geographical location. In this way, the contributions of this research significantly advance the discourse on the interplay between SMFFs and their context from a microeconomic perspective. As a result, significant advancements are introduced to the SMFF literature. While previous studies have explored this topic from a macroeconomic viewpoint, our aim is to contribute to the development of a theoretical model elucidating SMFF behavior. This model aims to explain the interaction between these types of firms and the surrounding environment. The practical implications of the study are substantial. Public

policies should be tailored to address the constraints of rural areas, but also to leverage their potential, stimulating the transfer of the Value Added Intellectual Coefficient (VAIC) of SMFFs located in urban areas, thereby enhancing the efficiency of SMFFs. Improving VAIC can potentially boost the sustainability of SMFFs, while also fostering entrepreneurship and job opportunities that contribute to overall sustainability challenges.

The article begins with a concise exploration of the theoretical link between IC efficiency and the performance of SMEs. Subsequently, it delves into the creation and practical examination of the hypotheses. To conclude, the article discusses both the theoretical and practical consequences of the research, and offers suggestions for potential avenues of future research.

2. Theoretical framework

2.1 Intellectual capital efficiency and SME performance

The knowledge-based perspective of companies centers on managing rare, inimitable, valuable, and non-substitutable resources (Barney, 1991; Kogut & Zander, 1992). Knowledge, perfected, shared, and normalized within a company, establishes sustainable competitive advantages. In this vein, Intellectual Capital (IC) emerges as a critical factor in a company's performance, particularly for Small and Medium Enterprises (SMEs) and SMFFs, which usually face limitations in accessing resources, making efficient IC management essential for their competitiveness (Patel & Jayaram, 2014; Wales et al., 2013).

IC is broadly categorized into three dimensions: Human Capital (HC), Structural Capital (SC), and Relational Capital (EC) (Choong, 2008; Gallego & Rodríguez, 2005; Steenkamp & Kashyap, 2010). HC encompasses the skills, knowledge, and experiences of employees. SC includes organizational structures, procedures, and intangible assets, and remains within the company even after employees leave, making it a vital form of IC (Youndt & Snell, 2004). EC, or relational capital, involves external relationships, creating value through communication and the assimilation of knowledge.

Understanding these components is crucial for SMFFs. In these firms, the familial context influences knowledge transmission, fostering commitment and affecting outcomes (Azoury et al., 2013). Additionally, family businesses rely on tacit exchanges, making skill development unique but sometimes challenging to convey (Sirmon & Hitt, 2003). SMFFs, being dynamic, optimize their processes, enhancing productivity and competitiveness (Ceja-Barba, 2014; Pearson et al., 2014; Williams & Schubert, 2011). The unique culture of family businesses contributes to better integration and efficient utilization of structural capital (Grimaldi et al., 2016). In addition, SMFFs often optimize their relational capital by collaborating with stakeholders, enhancing profitability and financial sustainability (Binz et al., 2013; Parker et al., 2014; Zellweger et al., 2012). Collaborative relationships provide access to resources, skills, and international contexts, crucial for the growth and survival of SMFFs (Habbershon et al., 2003; Hoffmann & Schlosser, 2001).

As IC efficiency enhances returns on assets, income growth, and the productivity of a firm's collaborators (Phusavat et al. 2011), and is often combined with other resources, such as an innovative culture, it significantly contributes to enhancing SME performance (Khan & Terziowski, 2014). Empirical studies confirm a significant relationship between IC efficiency and business performance, emphasizing the need for continuous interaction among its components within an SME environment (Bacin & Turra, 2015; Cleary & Quinn, 2016; Cohen & Kaimenakis, 2007; Daou et al., 2016; Grimaldi et al., 2016; McDowell et al., 2018; Pilková et al., 2013; Shahzad, 2020).

Building upon these perspectives, we propose the following research hypothesis:

H1: *Those SMFFs that manage their IC more efficiently achieve higher levels of sustained medium-term performance.*

2.2 Intellectual capital efficiency and performance of SMFFs in a local context

To examine the relationship between intellectual capital (IC) efficiency and performance within a local context and understand how location influences these variables, it is crucial to grasp the essence and nature of family businesses within the territory and their interactions with regional dimensions (Basco, 2015). Essentially, a company's growth and long-term survival are influenced by its interactions with the environment and its reliance on factors within the local geographic context (Dicken & Malmberg, 2001).

Building on Basco's (2015) "regional familiness" model, it is argued that the spatial context plays a crucial role in understanding when and how various characteristics of family business management influence the transformation of intellectual capital efficiency into sustained medium-term performance. We posit that the various dimensions of regional proximity can influence when SMFFs integrate into the economic, social, and productive contexts of their local area. These dimensions impact the utilization of available tangible and intangible resources, thereby affecting their economic returns. Given that family businesses are both economic

and social actors, the unequal distribution of factors, such as labor, capital, information, and financial resources, can impact their growth. Previous literature recognizes that family businesses interact differently with their environment. Additionally, SMFF management exhibit various positive and negative aspects of proximity due to their local integration and the interactions of family members with other local agents (Basco, 2015; Crescenzi et al., 2013).

According to Backman and Palmberg (2015), the delineation of the regional context can be approached in various ways, such as geographical distance, factor distribution, or as a proxy for the economic environment. In this study, the proximity approach (geographical distance) will be followed. The environment is defined by physical proximity (Boschma, 2005), not only among economic actors but also as the distance between factors and actors. One of the critical consequences influencing economic activity in a spatial context is the unequal distribution of resources and economic agents (Backman & Palmberg, 2015). Spatial proximity is fundamental for social interactions, learning, and information exchange (Basco, 2015). At close spatial distances (Boschma, 2005), social capital can enhance business results by facilitating the flow of information and knowledge (Boschma, 2005). The distinction between urban and rural areas highlights differences in the spatial distribution of agents and resources (Backman & Palmberg, 2015). Urban areas, characterized by abundant resources and factors, offer advantages such as diverse service providers, regional information systems, and a large labor market (Norton, 1992). This abundance reduces business costs and facilitates growth, especially for SMEs, whose access to resources is typically limited and heavily reliant on their surroundings (Menzel, 2005). Accordingly, urban firms are more likely to achieve greater performance than rural firms.

However, according to behavioral theory, family firms, which encompass a mix of both family-oriented and business-oriented goals (Mahto et al., 2010), exhibit unique characteristics that influence their interrelationship with the environment and how resources are organized and deployed (Sirmon & Hitt, 2003). Thus, the rural environment is a unique context in which SMFFs are involved. Rural environments can help SMEs overcome financing challenges through local sources (Meccheri & Pelloni, 2006). Moreover, rural areas facilitate swift knowledge dissemination through face-to-face interactions, fostering efficient IC and sustained company growth. In this context, family management fosters trust-based social relationships, enhancing economic and social interactions (Basco, 2015). Geographical proximity simplifies economic transactions and reduces the need to invest in controlling behaviors, leading to cost reduction (Ding & Wu, 2014). It also enhances competitiveness by improving information and resource flows (Menzel, 2005). Family businesses, anchored in the region due to their familial origins (Basco, 2015), tend to exhibit higher levels of social integration within their local communities (Bird & Wennberg, 2014). Consequently, SMFFs capitalize on personal relationships more effectively, enhancing relational capital development (Carney, 2005). SMFFs in rural areas, due to their proximity to environmental factors, depend heavily on accessible human capital and local social connections for their performance. Thus, the identification and utilization of available economic resources are crucial in these contexts (Backman & Palmberg, 2015). Backman and Palmberg (2015) found that family businesses in rural areas efficiently leverage their social networks to attract human and financial resources, facilitating their growth. Accordingly, rural SMFFs appear to be more efficient in achieving higher performance from their specific intangible resources (Ramírez et al., 2021). Hence, connections with the immediate environment are pivotal.

Based on these premises, the following hypothesis is proposed:

H2: *Geographical location in rural areas positively moderates the relationship between intellectual capital efficiency and sustained medium-term performance in family SMEs.*

3. Methodology

3.1 Sample and database

The research methodology employed to achieve the study's objectives is outlined below.

First, a selection of family businesses from various regions across Spain was made, adhering to the criteria outlined by Rojo et al. (2011). These businesses met the SME criteria set by the European Commission's recommendation on May 6, 2003. Data covering the entire research period from 2008 to 2018 was available for these companies. Only companies structured as public limited companies or limited companies were included, as per the criteria of Rojo et al. (2011). Non-capitalist legal forms were excluded, as they did not align with the family business sphere. The sample was further refined by excluding companies with missing or omitted data, as well as those with extreme or anomalous values (outliers). Anomalies were defined as values exceeding 2.5 times the standard deviation, following the approach outlined by López et al. (1998). This meticulous process led to a final sample size of 5,191 Small and Medium-Sized Family Firms (SMFFs).

Second, to delineate the social and geographical context within which these companies operated, relevant geographic and demographic data, such as the area size and the population count of the locations where these businesses were situated, were obtained. These details were sourced from databases maintained by the

General Directorate of the National Geographic Institute, the National Institute of Statistics (INE), and the Registry of Local Entities.

3.2 Variables

To address the previously defined research question, the model supporting this study includes not only the dependent and independent variables but also moderator and control variables, namely:

Dependent variable: Performance. In the model, economic profitability is introduced as a dependent variable and serves as a proxy for business performance, calculated as the ratio of the company's profit before interest and taxes to its investment relative to total assets ($ROA = (BAII / AT) * 100$). This performance measure is widely utilized in the literature on SMFFs, as well as in studies linking business performance to IC, due to its objectivity and comparability (Baccin & Turra, 2015; Backman & Palmberg, 2015; Pardo-Cueva et al, 2018; Pilková et al, 2013; Shahzad et al, 2020; Shahzad et al, 2022; Villegas et al, 2017). It reflects the efficiency of a company's management in utilizing its assets to generate results (Martins et al, 2013). To capture its capacity to generate medium-term profitability, we employ the variable "sustained performance", which is measured as the average performance obtained by the company in the current year and the following two years. This variable tracks the evolution of medium-term profitability and is expressed as a percentage.

Independent variable: Intellectual capital efficiency VAIC model (Value Added Intellectual Coefficient Model). The VAIC model, initially developed by Public in 1998, serves as our framework for measuring IC efficiency. This model is rooted in the concept of assessing how a company's human, structural, and physical resources contribute to added value. By leveraging accounting and financial data, the VAIC model provides easily comparable values, facilitating the calculation of IC efficiency. This, in turn, aids the decision-making process for company management and enables stakeholders to analyze the company's intangible assets. Several prior studies have employed VAIC as a variable for measuring IC (Baccin & Turra, 2015; Pardo-Cueva et al, 2018; Pilková et al, 2013; Shahzad et al, 2020; Shahzad et al, 2022). The VAIC calculation involves various steps, outlined as follows:

Step 1: Calculate the added value (VA), which is determined by $VA = OUT - IN$. This formula captures the disparity between inputs or total sales made in the market and outputs representing the company's management costs, such as the cost of material, component, and service expenses, excluding labor costs, which are considered investments in this context. This data can be calculated using solely accounting records by taking the profit before interest and taxes, and adding the amortization, depreciation, and employee costs:

Added value = EBIT + Amortization + Depreciation + Cost of employees

Step 2: Calculate the IC efficiency of a company (ICE). To do this, human capital efficiency (HCE) and structural capital efficiency (SCE) must first be calculated. ICE is equal to the sum of HCE and SCE ($ICE = HCE + SCE$).

HCE is calculated as follows: $HCE = VA / HC$, where HC represents human capital, which includes the annual wages and salaries of employees, determining the contribution of the human resource to the added value.

SCE is calculated as follows: $SCE = SC / VA$, where SC represents the structural capital of the company, encompassing material assets, intangible assets, hardware and software, trademarks, patents, licenses, and all other elements that can enhance or positively impact employee productivity. SC is calculated by subtracting HC from VA: $SC = VA - HC$.

Step 3: Calculate the efficiency of use of the physical or relational capital of the company, known as the efficiency of capital employed (CEE), using the formula $CEE = VA / CE$, representing the relationship between the added value (VA) and the net assets of the company. The capital employed (CE) is the capital already invested in a company, essentially its liquid assets.

Finally, VAIC is calculated, which is the sum of the efficiency of intellectual capital (ICE) and the efficiency of capital employed (CEE): $VAIC = ICE + CEE$. Alternatively, it can be expressed as $VAIC = HCE + SCE + CEE$.

Moderating variable: Location. Classifying population units into urban or rural categories can be a complex task, as various studies use diverse criteria, including geographical, demographic, and sociological factors. For instance, in 2018, the National Institute of Statistics (INE) and the Ministry of Public Works employed different criteria based on population size, which can be considered insufficient as they do not account for other geographic or socio-economic factors, such as the area in which the population is distributed. To address these ambiguities, some organizations, such as the European Union and the Organization for Economic Cooperation and Development (OECD) use the population density criterion.

Additionally, in 2007, the Ministry of Agriculture enacted Law 45/2007 on Sustainable Development of the Rural Environment, which introduced criteria that combine demographic size with population density. Therefore, to ensure consistency in our research classification, we have defined distinct categories for different population types based on density indexes and demographic size, as described in the theory section of this document. Consequently, a dichotomous variable has been established, with values as described in the following table.

Table 1. Classification zones

Value	Classification	Hab/Km ²	Inhabitants
0	urban	>100	> 10,000
1	rural	<100	< 10,000

Source: Own elaboration

Control variables: age, size, and debt. To assess the impact of IC on firm performance (ROA), this study has incorporated control variables, including the company's age at the end of each year (Age = End date n - date of incorporation), the company's size within the SME category (Size = Ln Total Assets), and the company's debt expressed as a percentage (Debt = P/PN). This approach is consistent with previous studies, such as Shahzad et al, (2020); Pilková et al, (2013) and Shahzad et al, (2022).

4. Analysis of results

4.1 Descriptive statistics

Table 2 presents the primary descriptive statistics for the variables used in the statistical models aiming to test the previously formulated hypotheses. The companies in the sample exhibit an average sustained return of 2.47% during the study period. These are long-established companies, with an average age of approximately 25 years, and an average debt of approximately 30%. In terms of sectoral distribution, companies in sector 4 are the most prevalent, followed by those in sector 2.

Table 2. Descriptive statistics

Continuous variables	Mean	Median	25%	75%	Tip. Dev.
Sustained performance	2.475	2.148	-0.078	5.123	4.528
VAIC	1.953	1.778	1.446	2.205	5.519
Age	25.010	24.010	18.500	29.980	10.291
Size	7.357	7.368	6.562	8.156	1.198
Debt	29.181	24.972	13.599	39.354	64.501
Sector	N	%			
0 Agriculture, livestock, forestry, fishing, and extractive industries.	1,859	3.26%			
1 Manufacturing industry of food, tobacco, textile, wood, and paper.	5,599	9.81%			
2 Chemical, mineral, electronics, machinery, and vehicle manufacturing industry.	7,931	13.89%			
3 Other manufacturing industries, energy supply, and waste management.	1,727	3.02%			
4 Construction, trade, land transport, and vehicle repair.	28,193	49.37%			
5 Other transport, hospitality, and information.	3,190	5.59%			
6 Telecommunications and real estate, legal, and accounting professions.	4,037	7.07%			
7 Professional, scientific, technical, and administrative services.	2,277	3.99%			
8 Education and health.	1,485	2.60%			
9 Artistic and entertainment activities.	803	1.41%			
Total	57,101	100.00%			
Correlation matrix	1	2	3	4	5
1. Sustained performance	1.000				
2. VAIC	0.098***	1.000			
3. Age	0.064***	0.045***	1.000		
4. Size	0.086***	-0.006	-0.105***	1.000	
5. Debt	-0.017***	-0.023***	0.261***	-0.038***	1.000

Source: Own elaboration

*, **, and *** indicate a significance of 10%, 5%, and 1%, respectively

Additionally, the bivariate correlation matrix is included. The results indicate that there are no correlations exceeding 0.26, suggesting the absence of multicollinearity issues among the explanatory variables. Moreover, the dependent variable (Sustained performance) demonstrates robust levels of convergence and discriminant validity with the independent variables in the models.

4.2 Models

To address the objective of this research, several models were developed.

In the first of these, the relationship between intellectual capital efficiency (VAIC) and "Sustained Return" in a family SME context was empirically tested (see equation 1).

$$\text{Sustainedperformance}_{i,t} = \alpha_0 + \alpha_1 \text{VAIC}_{i,t} + \beta_1 \text{Age}_{i,t} + \beta_2 \text{Size}_{i,t} + \beta_3 \text{Debt}_{i,t} + \eta_i + \epsilon_{i,t=2008-2018} \quad (1)$$

Next, the moderating effect of localization in the previous relationship was tested by incorporating into the model the variable Location and the interaction between Location and the VAIC (see equation 2).

$$\text{Sustainedperformance}_{i,t} = \alpha_0 + \alpha_1 \text{VAIC}_{i,t} + \alpha_2 \text{Location}_{i,t} + \alpha_3 \text{VAIC}_{i,t} * \text{Location}_{i,t} + \beta_1 \text{Age}_{i,t} + \beta_2 \text{Size}_{i,t} + \beta_3 \text{Debt}_{i,t} + \eta_i + \epsilon_{i,t=2008-2018} \quad (2)$$

Following Scafarto et al., (2020) a GLS random-effects regression was employed to estimate the previous models for two reasons: 1) The location variable does not vary over time and the coefficients could not be estimated or would be imprecise if fixed effects were used; and 2) Our data cover a short period and a large sample of companies, and fixed-effect estimates in these contexts may be inconsistent. Therefore, we adopted a random-effects approach for specifying the panel data models. In addition, we tested whether these models are more appropriate than the OLS specification using the LM test, and the results supported the choice of the random effects estimator (LM test $p > 0.001$) (see Table 3).

Table 3. Relationship between sustained performance, VAIC, and localization. GLS random effects.

	Model 1 (GLS Random effects)	Model 2 (GLS Random effects)
Dependent variable (Sustained yield = mean ROA of t, t+1, t+2)		
Independent variable		
VAIC _{t,1} (α_1)	0.029*** (0.002)	0.026*** (0.002)
Moderator variable		
Location _t (1=rural; 0=urban) (α_2)		-0.229** (0.114)
Interactions		
VAIC _t * Location _t (α_3)		0.121*** (0.016)
Controls		
Age _t (β_1)	0.113*** (0.037)	0.115*** (0.037)
Size _t (β_2)	0.021*** (0.001)	0.021*** (0.001)
Debt _t (β_3)	-0.0137*** (0.005)	-0.013*** (0.005)
Time effects	Yes	Yes
Industry effects	Yes	Yes
LM test	65391.58***	64929.42***
Within R ²	0.1205	0.1214
Between R ²	0.0262	0.0296
Overall R ²	0.0619	0.0640
Wald chi ²	5864.01*** [23]	64929.42*** [23]
($\alpha_1 + \alpha_3$)		0.147***
Number of firms	5,191	5,191
Number of observations	46,706	46,706

The results are based on a sample of 5,191 family SMEs located in Spain for which data were collected and analyzed for the period 2008-2018. In parentheses, the standard errors and the significance of the coefficients are reported. *, **, ***, indicate a significance of 10%, 5% and 1%, respectively. The coefficients that have achieved significance are presented in bold

The results of Model 1 show that the efficiency of intellectual capital significantly contributes to achieving higher sustained performance in SMFFs ($\alpha_1 = 0.029$, $p < 0.001$). Therefore, Hypothesis 1 is accepted. These findings are consistent with the notion that, despite their size limitations, SMFFs that efficiently utilize intangible resources attain higher medium-term profitability (sustained return). This phenomenon has been attributed in the literature to their ability to manage relationships with employees, develop unique abilities and skills related to their long-term objectives (Human Capital) (see, among others, Basco, 2015; Cabrea-Suárez et al., 2001; Danes et al., 2009; Salvato & Melin, 2008; Sirmon & Hitt, 2003), optimize internal processes, and achieve higher productivity levels (Structural Capital) (Ceja-Barba, 2014; Pearson et al., 2014; Williams & Schubert, 2011). Additionally, SMFFs demonstrate a remarkable proficiency in establishing and sustaining long-lasting connections with their stakeholders, exemplifying their strength in the realm of Relational Capital (see, among others, Binz et al., 2013; Parker et al., 2014; Zellweger et al., 2012).

In Model 2, the Location variable and the interaction between VAIC and Location are incorporated.

The following conclusions are drawn from this model. Firstly, the coefficient of the Location variable is significant and negative ($\alpha_2 = -0.229$, $p < 0.01$), indicating that SMFFs located in rural areas experience lower sustained performance from their VAIC. These results align with the argument that certain limitations in rural areas negatively impact the sustained performance of SMFFs (Backman & Palmberg, 2015). This limitation can be attributed to the scarcity of available resources necessary for business development, or the inability to create networks that facilitate the sharing and utilization of available intangible resources, as opposed to urban areas (Backman & Palmberg, 2015). Secondly, the coefficient of the interaction variable (VAICLocation) is positive and significant ($\alpha_3 = 0.121$, $p < 0.001$), supporting the theory that SMFFs situated in rural contexts are more efficient in transforming the efficiency of intangible resources (intellectual capital) into higher sustained performance. The joint significance test of the variables VAIC and VAICLocation confirms this relationship, resulting in a significant coefficient ($\alpha_1 + \alpha_3$, $p < 0.001$). Therefore, it appears that the intrinsic characteristics of rural contexts, with lower population levels, favor this relationship. These results validate Hypothesis 2 and are consistent with previous studies, indicating that the characteristics of family businesses in proximity contexts enhance economic and social interactions with the environment (Basco, 2015; Carney, 2005; Menzel, 2005).

Concerning the behavior of the control variables, the results are consistent with previous studies. Older and larger family businesses can achieve higher sustained performance (β_1 and β_2 are positive in both models, $p < 0.001$), while indebtedness exerts the opposite effect (β_3 is negative in both models, $p < 0.001$).

5. Conclusions

This paper analyzes the impact of IC efficiency in enhancing sustainable performance in SMFFs. Efficient IC management is crucial for SMFFs as it is instrumental in enhancing performance by facilitating the strategic exploitation of internal knowledge, leading to the attainment of sustainable competitive advantages. Additionally, it equips SMFFs to adeptly respond to market dynamics, thereby optimizing the efficient use of other critical resources. In this regard, our study makes a valuable contribution to the existing body of literature by demonstrating that SMFFs that achieve higher IC efficiency also attain greater sustainable performance. Although previous research has studied the impact of IC efficiency on performance (Molodchik & Bykova, 2011; Javornik et al., 2011; Xu & Li, 2019), they have not specifically delved into its impact on sustainable performance. This distinction is significant in gaining a comprehensive understanding of the factors that underpin the sustainability of SMFFs. Our findings align with the hypothesis that IC management is essential for the survival and longevity of SMFFs.

Furthermore, this paper differs from all previous research in terms of focus on IC management. Our propositions and concepts align with the notion that the attributes of geographical contexts have an impact on firms' outcomes. We argue that the advantages of proximity enhance SMFFs' characteristics, leading to a more pronounced transformation of IC efficiency into sustainable performance in rural settings compared to urban environments. Accordingly, the conclusions of this study highlight the critical role of the local context in the economic development of SMFFs. This contributes to our understanding of divergent behavior (*family firm heterogeneity*) in how family firms convert their VAIC into sustainable performance, contingent upon their geographical location. Our results show that, to some extent, rural environments allow SMFFs to take advantage of IC management strategies by increasing their impact on sustainable performance, in contrast to their counterparts operating within urban areas. This phenomenon can be attributed to their ability and capacity to interact effectively within their economic and social surroundings. As such, our findings contribute to the literature on "*regional familiness*" (Basco, 2015), which attempts to understand which family business dimensions are critical for regional development.

The implications of this research are significant for both academia and policymakers. For researchers, this study opens new avenues for empirical research in the realm of SMFFs within local contexts. For government authorities and policymakers, this provides insights into potential family dimensions that impact local and

regional development, helping to identify aspects that should be considered in the design and implementation of regional policy strategies.

Nonetheless, our study is not without limitations. Firstly, the study distinguishes between urban and rural areas in line with its objectives. However, it is acknowledged that other factors influencing the behavior of the resident population exist and should be considered in future research. Exploring alternative classifications of urban and rural areas based on factors such as geography, employment structure, travel patterns, gender dynamics, or population aging would provide valuable insights.

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