

“The role of knowledge assets and corporate social responsibility in creating firm value”

AUTHORS	Kyriakos Christofi  Pieris Chourides  George Papageorgiou 
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Kyriakos Christofi, Ph.D., Lecturer,
SYSTEMA Research Centre,
School of Business Administration,
European University Cyprus, Cyprus.
(Corresponding author)

Pieris Chourides, Ph.D., Dean,
SYSTEMA Research Centre, School
of Business Administration, European
University Cyprus, Cyprus.

George Papageorgiou, Ph.D., Professor,
SYSTEMA Research Centre, School
of Business Administration, European
University Cyprus, Cyprus.



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Kyriakos Christofi (Cyprus), Pieris Chourides (Cyprus), George Papageorgiou (Cyprus)

THE ROLE OF KNOWLEDGE ASSETS AND CORPORATE SOCIAL RESPONSIBILITY IN CREATING FIRM VALUE

Abstract

The purpose of this paper is to investigate how knowledge assets and corporate social responsibility jointly influence the market value of a firm. In the contemporary knowledge-driven economy, where competitive advantage is based on intangible and intellectual capital, this paper emphasizes the strategic significance of knowledge assets, open innovation, and sustainable development practices in creating and maximizing market value. By employing multiple regression analysis on panel data for ten financial years, the study examines the optimal composition of knowledge assets and the impact of CSR initiatives on firm value. Key findings highlight a crucial threshold leading to the peak of market value, approximately when knowledge assets account for about 36% of a firm's total non-current assets. Further, this study demonstrates that maintaining a balance between internally developed knowledge assets and external acquisitions significantly enhances value, correlating with the cultivation of a capitalization ability. Finally, this paper shows that corporate social responsibility emerges as a substantial driver of generating firm value, suggesting that integrating these practices into corporate strategic decisions not only aligns with ethical goals but also enhances market valuation. The insights from this study offer valuable perspectives for both academic researchers and industry professionals, advocating for a well-balanced approach to corporate asset management and underscoring the strategic importance of incorporating corporate social responsibility.

Keywords

strategic management, knowledge management,
corporate social responsibility, assets management,
strategic acquisitions, firm value

JEL Classification M10, L17, L24

INTRODUCTION

In the current landscape of knowledge-driven economy, the essence of competitive advantage extends beyond operational efficiencies, pivoting crucially on the strategic management of intellectual capital and intangible assets (Katona, 2021; Wang et al., 2022), as well as stakeholder management. This evolving dynamic has propelled investments in intangible assets as a critical strategic imperative, underpinning firm competitiveness (Roth et al., 2023). The extant literature establishes a notable contribution of knowledge assets to firm performance, highlighting their role in sharpening a firm's competitive edge (Denicolai et al., 2015; Dancaková et al., 2022; Uddin et al., 2022). Further, this contribution is more intense when there is a propel balance with other complementary assets. In attempting to create knowledge assets, firms may focus on internal development of such assets or may choose to acquire knowledge assets via direct acquisitions or business combinations.

Simultaneously, the realms of corporate social responsibility (CSR) and sustainability have gained heightened importance, transcending their traditional perception as ethical obligations to become integral

elements of developing a strategic competitive advantage (Al-Dhamari et al., 2022). However, despite the recognition of knowledge assets and corporate social responsibility as drivers of firm value, an outstanding gap in the literature is appeared. To date, there is no evidence of empirical research examining the effects of corporate social responsibility and knowledge assets on market value creation. As a result, this gap led to a scientific problem. It is unknown how knowledge assets and corporate social responsibility jointly affect a firm's market value. In addition, an important aspect that remains unexplored is the optimal balance of knowledge assets and their source of development that maximizes market value.

1. LITERATURE REVIEW AND HYPOTHESES

The knowledge-based view (KBV) of firms posits that intangible resources are pivotal in today's dynamic business milieu, dictating competitive advantage through the strategic application and synchronization of knowledge across organizational boundaries. Initially, academic focus primarily centered on Research and Development (R&D) investments as indicators of a firm's innovation and absorptive capacities (Ebers & Maurer, 2014; Cheng & Shiu, 2020). However, the shift to prioritizing intangible assets reflects their embodiment of explicit knowledge, an aspect crucial for firm valuation, as delineated in financial reports (Katona, 2021). Based on the international accounting standards, (IAS), any entity must meet the following characteristics to be considered as an intangible asset. First, it must be identifiable and separable from its goodwill. Second, the company must own the ownership and the control of those entities, and third, it must have the potential to generate future economic benefits for the firm. Eisfeldt and Papanikolaou (2013) found that firms with substantial investments in intangible assets often exhibit enhanced growth trajectories. Additionally, Roth et al. (2023) found that intangible assets increased operational productivity. Further, Uddin et al. (2022) observe that these assets provide resilience against external adversities, evidenced by the lesser financial impact on firms rich in intangibles during crises. The literature also distinguishes knowledge assets from the totality of intangibles.

Hence, knowledge assets, a subset of intangibles, include capitalized R&D costs, patents, and copyrights, and are crucial for value creation and competitive advantage (Zhang et al., 2021; Roth et al., 2023). Asiaei et al. (2023) highlight the necessity for these assets to synergize with other resources for optimal performance. Zhang et al. (2021)

reinforce this, arguing that complementary resources amplify the benefits of knowledge assets, particularly in international expansion contexts. Knowledge assets can be a result of internal research and development efforts or through external acquisitions. The prevailing academic consensus advocates for a hybrid approach that integrates both sources. Denicolai et al. (2014a) argue that firms engaging in external acquisitions often experience more significant turnover growth than those relying solely on internal developments.

Parallel to the discourse on knowledge assets is the increasing significance of CSR and sustainability. CSR, rooted in stakeholder theory, urges firms to consider a broader stakeholder base beyond profit maximization (Freeman, 2010). Al-Dhamari et al. (2022) illustrate CSR's impact on market performance, while Padilla-Lozano and Collazzo (2022) discuss its influence on intangible performance. Gullifor et al. (2023) and Servaes et al. (2023) explore CSR's effects on employee outcomes, and Abbasi et al. (2023) highlight its role in fostering customer trust and loyalty.

Despite the rich literature, there remains a gap in understanding the combined influence of knowledge assets and CSR on firm market value. This study aims to fill this gap through a dual-focused examination: determining the optimal balance of knowledge assets for peak market value and assessing the cumulative impact of CSR and knowledge assets on firm value.

Therefore, this paper aims to examine the joint effect of knowledge assets and corporate social responsibility on a firm's value. To achieve this, the following hypotheses are formulated:

H1: Knowledge assets have a non-linear relationship with a corporation's market value, indicating a potential threshold effect.

H2: *A similar non-linear relationship exists between outsourced knowledge assets and market value, suggesting possible drawbacks of over-reliance on external acquisitions.*

H3: *CSR positively influences a corporation's market value, affirming its role in today's stakeholder-oriented business environment.*

2. METHOD

Anchoring this investigation is a panel data multiple regression analysis, a method chosen for its robustness in handling longitudinal data and its capacity to reveal trends and patterns over time. This approach stands on the pillars of empirical rigor and analytical precision, with a particular emphasis on accounting indicators as proxies for the model variables.

Accounting indicators are preferred due to their objective nature and reliability. Unlike survey tools susceptible to subjective biases, these indicators offer a tangible reflection of a firm's knowledge value. This approach is supported by the work of scholars such as Berchicci (2013) and Denicolai et al. (2014a, 2016), who advocate for the authenticity and robustness of accounting-based measures. Secondly, there is a dimension of temporal depth that the panel data approach introduces. It enriches this study by providing the opportunity to delve deeper by tracing patterns and trends over an extended period. This longitudinal depth, as emphasized by Wooldridge (2010), enables a comprehensive exploration of data patterns over time, thereby adding layers of depth and insight to the analyses.

The study utilizes data from the Refinitiv Eikon database, covering a period from 2012 to 2021. The focus is on European listed companies adhering

to International Financial Reporting Standards (IFRS), ensuring a consistent and comparable reporting framework. The selection process involved:

- **CSR Reporting:** Only those corporations that had an immaculate track record of ESG reporting for a fiscal year and had secured an aggregate score from Revinitiv, reflective of their CSR endeavors, found a place in the sample.
- **Explicit Mention of Knowledge Assets:** The focus tightened around corporations that categorically showcased their knowledge assets, distinct from the larger intangible assets umbrella. The clarity in demarcation ensured that this study remained unswervingly aligned with its objectives.
- **Clarity in Knowledge Assets Origin:** The delineation between internally nurtured and externally acquired knowledge assets was paramount. Only those annual reports that shed light on the origins of their intangibles were incorporated.
- **Consistent Financial Year Endings:** To avoid discrepancies that might arise due to varying reporting timelines, only corporations wrapping up their financial year by December were selected.

A rigorous adherence to the above criteria culminated in a distilled sample of 93 corporations, spanning multiple sectors, yielding 572 observations, testament to the depth and breadth of this study's dataset.

Central to this study is the meticulous quantification of the variables, with a particular emphasis on a corporation's market value. In capturing

Table 1. Composition of final sample based on county and economic sector

Country	Economic Sector					Total
	Health Care	Industrials	Technology	Telecommunications	Other	
France	0	2	1	0	1	4
Germany	4	16	3	3	5	31
Switzerland	2	0	1	1	0	4
United Kingdom	7	18	10	2	1	38
Other	2	7	3	0	4	16
Total	15	43	18	6	11	93

this crucial metric, the study employs the Tobin's Q ratio, a well-regarded market-centric metric. Tobin's Q transcends mere numerical valuation; it is a forward-looking measure that encapsulates market sentiments and anticipates future growth prospects. Its relevance in this context lies in its ability to reflect not only the current market valuation of a company but also its potential for future growth and profitability, making it an ideal tool for assessing the impact of knowledge assets and CSR on firm value.

The computation of Tobin's Q follows the methodology established by Chung and Pruitt (1994) and further refined by Lee and Makhija (2009). This approach involves a nuanced calculation that balances market valuation with the replacement cost of assets, providing a comprehensive view of a firm's market position relative to its tangible assets. By utilizing this method, the study gains a refined understanding of how market value correlates with the strategic management of knowledge assets and CSR initiatives.

To provide a structural framework for the analysis, the study employs a conceptual model (Figure 1). This model acts as a navigational tool, delineating the relationship between the dependent variable, firm market value (as measured by Tobin's Q), and the key explanatory variables. The model visually represents the theoretical underpinnings of the study, illustrating how different factors

such as Knowledge Assets Intensity, Outsource Knowledge Intensity, and Corporate Social Responsibility practices interact and influence the market value of corporations. This visual representation aids in conceptualizing the hypothesized relationships and serves as a guide through the analytical journey of the study.

In accordance with the proposed research hypotheses, the study identifies three core explanatory variables within the framework of the knowledge-based multiple regression analysis, as visualized in Figure 1. These variables are: Knowledge Assets Intensity (KNAI), Outsource Knowledge Intensity (OKI), and Corporate Social Responsibility (CSR) practices.

The Knowledge Assets Intensity (KNAI) variable is central to understanding the knowledge asset base of organizations in its totality. It is calculated as the ratio of the cumulative net book value of knowledge assets, including patents, copyrights, design models, licenses, self-generated software, and capitalized development costs, to the total net book value of non-current assets. This approach, drawing on the insights of scholars like Denicolai et al. (2014b) and Denicolai et al. (2015), ensures a focused measure of a firm's investment in knowledge assets relative to its overall asset base.

The study's second explanatory variable, the External Sourcing Intensity, was determined by

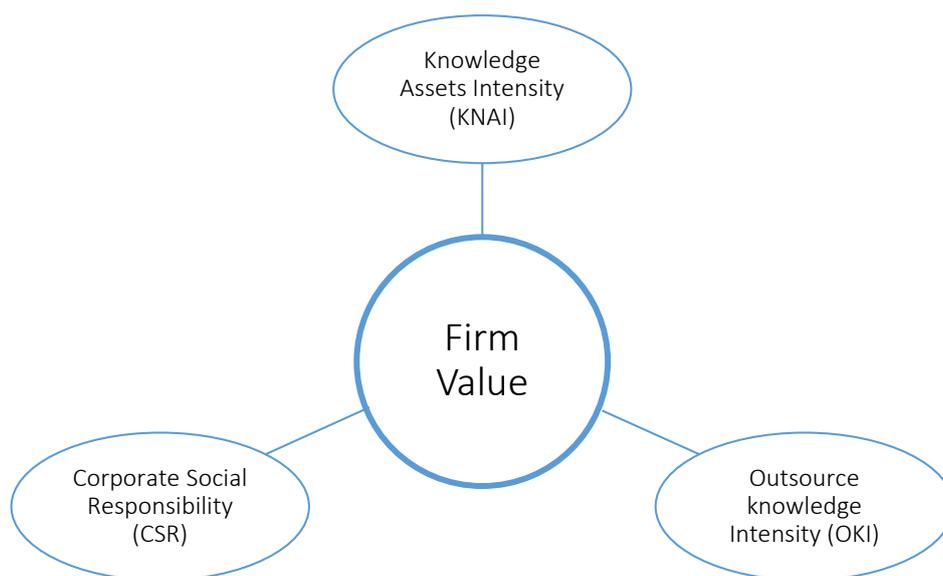


Figure 1. Conceptual model

parsing the net book values of externally acquired knowledge assets. The Outsource Knowledge Intensity (OKI) was calculated by dividing the cumulative net book value of externally acquired knowledge assets by the overall net book values of knowledge assets. It is noteworthy that values nearing unity imply a corporation's pronounced dependency on external knowledge sourcing, while those veering towards zero hint at a predominant internal knowledge development strategy.

Turning attention to the third explanatory variable, the study integrates Corporate Social Responsibility (CSR). Informed by the research works of Cheng and Shiu (2020) and Hendratama and Huang (2021), the aggregate ESG score from Refinitiv was utilized as a surrogate to encapsulate the corporate social responsibility ethos of the surveyed organizations. This multifaceted index critically evaluates organizational performance across three foundational pillars: Environment, Social, and Governance. The Environment dimension considers resource efficiency, emissions, and innovative product-related strides. The Social facet provides a detailed examination of workforce practices, product responsibility, community engagement, and human rights advocacy. Meanwhile, the Governance dimension assesses a corporation's commitment to corporate social responsibility, its structural foundation, and the audit mechanisms instituted for overseeing these commitments. Through the adept use of the ESG score, the study captures a comprehensive view of an organization's dedication to sustainable and conscientious practices.

Incorporating a holistic approach and heeding the advice of academic authorities like Denicolai et al. (2015) and Denicolai et al. (2016), several control variables were integrated into the analysis. These include corporation size and the intensity of research and development (RDI). The inclusion of such variables facilitates an exploration of the potential relationship between larger firms and the effective transformation of development costs into organizational value. Auxiliary dummy variables were established to account for variations associated with corporate headquarters' geographical locations and industry classifications. Corporate size was evaluated using the natural logarithm of turnover, as detailed in income statements, while

R&D intensity was determined using a widely acknowledged ratio that juxtaposes R&D expenses against revenues.

For industry stratification, the Industry Classification Benchmark (ICB) from the FTSE Russell indices was employed. Industry-specific dummy variables were created for sectors such as technology (TECH), industrial and basic materials (IND), healthcare (HEALTH), and telecommunications (TELEC), collectively covering 88.2% of the corporations in the chosen sample. The remaining 12.8% were categorized under the "other" category, recognizing its less prominent representation. Geographic dummy variables were introduced for corporations domiciled in Germany (GER), France (FR), Switzerland (SW), and the United Kingdom (UK), which collectively accounted for a substantial 82.2% of the total entities examined.

3. RESULTS

Table 2 delves into the descriptive statistics of the continuous variables in the sample, revealing a notable diversity in a firms' investment strategies, particularly in research and development (R&D). This diversity is not limited to R&D expenditure but also extends to the source of knowledge assets, highlighting varied approaches between reliance on internal development and external acquisitions.

The correlations among the primary explanatory variables are weak, suggesting a minimal risk of multicollinearity in the regression model. This observation is corroborated by the variance inflation factor test (VIF), where values significantly below the threshold of 5, as advised by Wang et al. (2023), further alleviate multicollinearity concerns. Table 2 provides the means and standard deviations for continuous variables, alongside their correlation coefficients, offering insights into their interrelationships and individual characteristics.

Table 3 presents the results of the multiple regression analysis through both random effects models (models 1-4) and fixed effects models (models 5-8). The Hausman test suggests a better fit for the fixed effects model; however, results from the random effects model are also presented for robustness. This

Table 2. Means and standard deviations for the continuous variables

Variable	Descriptive statistics					Correlation Coefficients					
	Obs	Min	Max	Mean	Std. Dev.	Value	RDI	SIZE	KNAI	EXK	CSR
Value	572	0.106	8.102	1.728	1.295	1	-	-	-	-	-
RDI	572	0.001	0.77	0.060	0.074	.372**	1	-	-	-	-
SIZE	572	7.390	11.238	9.320	0.772	-.417**	-.324**	1	-	-	-
KNAI	572	0.003	0.697	0.135	0.116	.188**	.264**	-.307**	1	-	-
OKI	572	0	1	0.469	0.292	-.065	-.090*	.225**	-.222**	1	-
CSR	572	6.998	94.689	56.108	19.858	.112**	-.082	.494**	-.038	-.101*	1

Note: * Correlation is significant at the 0.05 level (2-tailed). ** Correlation is significant at the 0.01 level (2-tailed).

table delineates the development of the regression models, contrasting random and fixed effects approaches across various explanatory variables.

In the initial estimation of the model, only the control variables, research and development intensity, size, economic sector, and country dum-

Table 3. Multiple regression model development

Variable	Regression Type							
	Random Effects				Fixed Effects			
	1	2	3	4	5	6	7	8
Constant	3.564 (3.094)	2.633 (3.356)	2.673 (3.042)	4.267 (3.011)	1.919 (9.833)	1.696 (9.520)	1.674 (8.315)	4.486 (7.974)
UK	-0.927 (0.394)	-0.010 (0.426)	-0.399 (0.412)	0.037 (0.422)	-	-	-	-
GER	-0.469 (0.313)	0.378 (0.338)	-0.408 (0.331)	0.395 (0.327)	-	-	-	-
FR	-0.760* (0.433)	-0.811* (0.419)	-0.656 (0.411)	-0.631 (0.424)	-	-	-	-
SW	0.362 (0.377)	0.581 (0.404)	0.512 (0.416)	0.513 (0.435)	-	-	-	-
TECH	1.009*** (0.290)	0.927*** (0.295)	0.839*** (0.278)	0.823*** (0.265)	-	-	-	-
IND	0.597*** (0.219)	0.586*** (0.230)	0.420* (0.230)	0.344 (0.219)	-	-	-	-
TELEC	0.133 (0.241)	-0.159 (0.333)	-0.214 (0.341)	-0.254 (0.360)	-	-	-	-
Health	1.438*** (0.384)	1.278*** (0.370)	1.157*** (0.359)	1.067*** (0.374)	-	-	-	-
RDI	1.864 (2.082)	1.641 (2.121)	1.610 (1.981)	1.205 (2.111)	-2.242 (4.305)	-2.780 (4.167)	-2.855 (3.713)	-3.672 (3.777)
SIZE	-0.258 (0.319)	-0.199 (0.338)	-0.241 (0.310)	-0.481 (0.310)	-0.006 (1.035)	-0.265 (1.008)	0.081 (0.886)	0.474 (0.855)
KNAI	-	3.983** (2.067)	3.964** (1.989)	3.683* (1.979)	-	4.944** (2.557)	4.594** (2.365)	3.936* (2.403)
KNAI ²	-	-5.448* (2.937)	-5.098* (2.830)	-4.926* (2.808)	-	-6.962** (3.251)	-6.295** (3.069)	-5.444* (3.167)
OKI	-	-	2.467** (1.192)	2.589** (1.196)	-	-	2.906** (1.330)	3.023** (1.316)
OKI ²	-	-	-2.245* (1.273)	-2.233* (1.275)	-	-	-2.628* (1.469)	-2.579* (1.436)
CSR	-	-	-	0.012** (0.006)	-	-	-	0.159** (0.007)
Obs (n)	572	572	572	572	572	572	572	572
R ²	0.3080	0.3141	0.3258	0.3316	0.1324	0.0044	0.0034	0.0313

Note: Robust standard errors in parentheses. * denotes that the regression coefficient is significant at * 0.1; ** at 0.05; *** at 0.01.

mies, are applied. As evidenced in Table 3, the majority of country dummies are not statistically significant. The standout is France, displaying a negative coefficient and achieving statistical significance ($p < 0.1$). However, this significance fades in the model's subsequent iterations. Economic sector dummies for industrial and materials (IND), healthcare (Health), and technology (TECH) were integrated due to their statistical significance ($p < 0.01$). This aligns with expectations as these sectors typically show resilience in even volatile financial markets, consistently producing positive returns (Mazur et al., 2021). Additionally, the first model indicates that research and development intensity does not significantly influence a firm's value, reaffirming the limitations of this ratio in capturing the true essence of knowledge and innovative advancements as highlighted by Patel (2012) and Denicolai et al. (2014a).

As a second step, the variable of knowledge intensity (KNAI) and its squared counterpart (KNAI²) were added aiming to discern the potential quadratic relationship between knowledge assets and firm value. As outlined in Table 3, the coefficients for knowledge intensity (KNAI) in Model 6 manifest a positive and statistically significant value ($p < 0.05$). In contrast, the coefficients for its squared version (KNAI²) are negative and statistically significant ($p < 0.05$). This evidence suggests an inverse quadratic relationship between knowledge intensity and firm value. Therefore, the first hypothesis is supported. This implies that while knowledge assets are pivotal in value creation, their impact plateaus beyond a certain threshold. To truly optimize organizational performance, there is a need to mesh knowledge assets with other intangibles like customer relations, brand equity, and fixed assets.

The fixed-effect model posits a turning point at 35.5% concerning the ratio of knowledge assets to total non-current assets. This model's outcome challenges previous research like that of Kuivalainen et al. (2009), which proposed a linear relationship between knowledge intensity and international financial performance. However, the findings resonate with the perspectives of Cuervo-Cazurra et al. (2007), Denicolai et al. (2014b), and Edi and Wati (2022). They advocate that for firms to thrive amid present global uncertainties,

knowledge assets should seamlessly blend with both tangible and intangible assets.

As a third step, this investigation strikes an optimal balance between externally sourced and internally generated knowledge. To achieve this, two variables, outsource knowledge intensity (OKI) and its squared term (OKI²), were introduced. Table 3 showcases that the coefficients for externally acquired knowledge are positively and statistically significant ($p < 0.05$). However, the coefficients for its squared term are negatively statistically significant ($p < 0.05$). This outcome supports the second hypothesis, showing an inverse quadratic relationship between externally acquired knowledge assets and a firm's value. This finding suggests that organizations should not rely solely on internal or external sources but should harmoniously integrate both. This integration aligns with prominent open innovation literature. Specifically, Du et al. (2014), Chen et al. (2016), and Santoro et al. (2018) maintain that leveraging externally sourced knowledge requires strong internal developmental capabilities. As presented in model 7 in Table 3, the turning point for the external knowledge asset-to-total asset ratio hovers around 55.3%. Meanwhile, knowledge intensity retains its statistical significance, with its turning point rising to 36.5%.

In the conclusive model, the variable of corporate social responsibility (CSR) was added to probe the repercussions of sustainable practices on firm value. The presence of CSR does not diminish the significance of previously mentioned factors, with knowledge intensity and external knowledge sourcing remaining significant. As elucidated in Table 3 (Model 8), CSR's regression coefficient emerges as statistically significant ($p < 0.05$) and positively influences a firm's market value. Hence, hypothesis three is supported. In essence, companies that holistically integrate CSR, addressing environmental, social, and governance challenges, are positioned at a market value advantage over their counterparts. This insight mirrors the findings of Hendratama and Huang (2021), Abedifar et al. (2023), and Rahman et al. (2023), who also deduced a positive nexus between ESG scores and firm value. In contrast, the results of this study counter Jensen's (2002) contention that CSR might inflict unnecessary overheads, potentially hampering a firm's competitive edge.

4. DISCUSSION

This empirical investigation contributes significantly to the field of strategic management by examining the intricate interplay between knowledge assets, open innovation, and sustainability. The study navigates through several complex dynamics, offering profound implications for both academia and industry. The role of knowledge assets in influencing a company's market value remains a salient topic in knowledge management literature. Historically, perspectives have varied. Some scholars, such as Kuivalainen et al. (2009), advocate a linear relationship between knowledge assets and firm value, implying an unfettered accumulation of such assets. However, this study aligns with the more nuanced perspective proposed by Cuervo-Cazurra et al. (2007) and Denicolai et al. (2014b). They argue that market value arises not only from the accumulation of knowledge assets but rather from their strategic integration with complementary assets. The findings of this paper echo this view, indicating a threshold effect where an overemphasis on knowledge assets beyond 36% in the non-current assets mix could lead to diminishing returns.

Open innovation has emerged as a pivotal concept in modern strategic management, with scholars like Santoro et al. (2018) highlighting the limitations of relying exclusively on internal knowledge development. This study endorses the necessity of external knowledge acquisition but introduces a critical caveat. Firms heavily investing in external knowledge assets, particularly beyond the 58.5% threshold, risk diminishing returns, potentially impacting their market position. This suggests a delicate balance in open innovation strategies, combining internal and external knowledge sources effectively.

The role of sustainability and corporate social responsibility (CSR) in strategic management is further enriched by this study. Aligning with the burgeoning literature on CSR, the research corroborates the positive impact of robust ESG performance on firm value. Firms with high ESG scores, indicative of strong commitments to environmental, social, and governance principles, enjoy a competitive edge, evident in higher market valuations. This underlines the strategic importance of aligning with UN Sustainable Development Goals and integrating ESG criteria into corporate strategies.

The methodological approach of this study, focusing on the book values of firm assets, provides a more authentic assessment of knowledge assets' value compared to survey-based methods. However, this study is not without its limitations. Its focus on publicly listed firms may not fully capture the complexities of private entities, and the generalized treatment of inbound knowledge as a uniform category could obscure the differences between science-based and market-based collaborations. Future research should further dissect these categories, exploring their strategic balance and impact on firm performance.

Additionally, given the dual significance of knowledge assets and CSR in value creation, future studies could explore the synergy between eco-friendly innovation and firm value. This could yield valuable insights into how sustainable practices intertwine with knowledge management to drive firm success. In sum, this study illuminates various aspects of strategic management, offering new insights and establishing a foundation for more detailed investigations. The landscape of strategic management, as revealed through this study, is multifaceted and complex, inviting continued exploration and deeper understanding in the future.

CONCLUSIONS

In exploring the determinants of firm value, this study embarked on a journey with three distinct yet interrelated objectives. Firstly, it sought to unravel the impact of knowledge assets on a firm's market value. Secondly, it delved into the intricate dynamics between externally sourced knowledge and internal innovation efforts. Finally, the study probed the potential ramifications of corporate social responsibility (CSR) and sustainability practices on organizational value.

Employing a robust multiple regression analysis process within a knowledge-infused CSR framework, the study harnessed data from a diverse array of European publicly listed corporations. The findings

weave a narrative that challenges traditional perspectives on firm value maximization. It emerges that firms achieve peak market value not merely through the accumulation of knowledge assets but through their strategic integration with other vital assets. A key insight from this study is the identification of an optimal knowledge asset combination. It was found that on the aggregate level, approximately 36% of knowledge assets relative to a firm's non-current assets could act as a catalyst for maximizing value.

The analysis further elucidates the nuanced balance between internal knowledge development and external acquisitions. It underscores that peak value is not realized by an overreliance on either source alone but through a synergistic blend of both. This equilibrium highlights the critical need for a judicious approach in both external knowledge acquisition and internal innovation efforts.

Moreover, a pivotal conclusion of this study is the enhanced role of CSR in the contemporary corporate milieu. Companies that deeply embed environmental stewardship, social responsibility, and strong governance within their strategic core are shown to enjoy superior market valuation. Conversely, firms that neglect these aspects are at a competitive disadvantage. This finding accentuates the evolving landscape of corporate strategy, where CSR is no longer a peripheral activity but a central tenet of business success.

Reflecting on these conclusions, the study underscores the complexity and multifaceted nature of factors that influence firm value in today's business environment. As the study is based on a high volume of panel data drawn from leading corporations, profound implications are drawn for both management theory and business effectiveness. This study not only contributes to the theoretical enrichment of strategic management but also offers practical guidance for firms striving to navigate the intricacies of knowledge management, innovation strategies, and CSR in the pursuit of developing competitive advantage and enhancing the market value.

AUTHOR CONTRIBUTIONS

Conceptualization: Kyriakos Christofi.
 Data curation: Kyriakos Christofi.
 Formal analysis: Kyriakos Christofi, Pieris Chourides.
 Investigation: Kyriakos Christofi.
 Methodology: Pieris Chourides.
 Project administration: George Papageorgiou.
 Software: Kyriakos Christofi.
 Supervision: George Papageorgiou.
 Validation: Pieris Chourides, George Papageorgiou.
 Writing – original draft: Kyriakos Christofi, Pieris Chourides.
 Writing – review & editing: George Papageorgiou.

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