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Network of Intangible Resources on the Example of Technology Sector

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Abstract:

Purpose: *The aim of the article is to examine the impact of corporate intangible resources, such as goodwill, intangible assets, research and development (RandD), and marketing on corporate financial performance (ROA, ROE) in technology enterprises from index SandP 500.*
Design/Methodology/Approach: *Intangible resources have been defined by four independent variables and corporate financial performance by two dependent variables. Additionally, there have been used two control variables: size and leverage. Author has used Fixed Effects Model (FEM) to examine the impact of intangible resources on financial performance.*
Findings: *Research results show that intangible resources such as intangible assets have the significant impact on ROA and ROE in tecdhnology enterprises from index SandP 500 during the analyzed period from 2019 to 2023 ($p < 0,05$). Confirmation of the positive impact indicates that intangible resources can be a key and decisive element in the process of maximizing profit.*
Practical Implications: *The analysis reveals that a key component of the network of intangible resources—intangible assets—significantly enhances financial performance, emphasizing their importance in corporate strategies for technology firms listed on the SandP 500. Conversely, goodwill and marketing show a less immediate financial impact, suggesting a need to reassess related expenditures and focus on efficiency and profitability.*
Originality/Value: *The paper's original contribution lies in presenting a model estimating the impact of intangible resources on corporate financial performance. The study highlights the importance of a firm's intangible resources in organizational performance and provides a broader perspective to investigate the influence of other intangible resources on financial outcomes.*

Keywords: *Intangible resources, technology enterprise, SandP 500, Fixed Effects Model (FEM), Return on Assets, Return on Equity.*

JEL Codes: *C01, E22, G32, O34.*

Paper type: *Research article.*

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1. Introduction

The increasing prominence of intangible resources in contemporary business and academic discourse reflects their critical role in shaping organizational strategies and outcomes. Scientists have increasingly recognized that intangible resources, such as knowledge, relationships, and reputation, are not only central to achieving competitive advantage but also play a decisive role in determining financial performance.

In the technology sector, intangible resources have been identified as key drivers of innovation and competitiveness. Companies like Nvidia and Adobe leverage their intellectual capital and RandD investments to maintain leadership positions. Notably, these firms allocate significant portions of their revenues to RandD and marketing expenditures, emphasizing the critical role of innovation in sustaining competitive advantage.

The aim of this article is to examine the impact of intangible resources on financial performance, measured by two ratios: return on assets (ROA) and return on equity (ROE).

2. The Network of Intangible Resources

The network of intangible resources within an enterprise can be perceived as a dynamic structure that evolves through interconnections between knowledge, relationships, experiences, and other invisible resources. This network, much like biological systems, is characterized by its capacity for evolution, where new elements emerge through the synergy of existing resources. Each new resource adds value, strengthening the overall structure and enabling the enterprise to complete a vast array of processes. The evolution of intangible resource networks leads to the emergence of new competencies and competitive advantages, which are difficult for competitors to replicate.

In the context of economics and finance, such an approach highlights intangible resources as fundamental catalysts of value creation within enterprises. A notable example is the role of innovation, which is not an isolated outcome of research and development (RandD) activities but a result of interactions within a network encompassing human, technological, and relational capital (Nonaka and Takeuchi, 1995; Sveiby, 1997; Barney, 1991).

In this way, the network resembles a “living organism” in a continuous process of transformation and adaptation. However, it is important to note that viewing intangible resources solely as a network may lead to an overestimation of their autonomous role. A network of intangible resources can evolve within a company when it establishes a symbiotic ecosystem with tangible resources.

Critics of this approach argue that an excessive focus on the dynamics of networks may neglect important aspects of strategic management, such as the need for a clear valuation of individual resources. Additionally, there is a risk that the concept of evolution could be used as a justification for the lack of precise planning and goals within an enterprise.

A counter argument to this accusation is the fact that networks, although dynamic, are also prone to resource dispersion and a loss of coherence if not managed properly. Therefore, in practice, it is crucial for enterprises to balance the adaptive potential of networks with traditional principles of strategic management (Amit and Schoemaker, 1993).

In the context of building intangible resource networks within enterprises, a cornerstone is tacit knowledge—implicit, unexpressed knowledge that forms the foundation of innovation and value creation. Tacit knowledge, introduced by Polanyi (1966), refers to knowledge that is not easily documented or formally shared and is instead transmitted through practice, experience, and interpersonal interactions. It is this unique form of knowledge that enables humans to conduct business activities, as they possess the intuitive ability to share and transform this hard-to-define knowledge into concrete actions and decisions. Recent studies confirm that tacit knowledge remains a crucial component of dynamic capabilities, particularly in knowledge-intensive industries like technology and healthcare (Grant, 1997; Teece, 2018).

Networks of intangible resources rely on the ability of individuals to share tacit knowledge in everyday business processes (organizational management) and also in the aspects of planning, organizing, and controlling business (strategic management), which facilitates adaptation and growth in dynamic market environments. For example, team leaders often pass on their skills and intuition to junior employees not through instructions but through collaboration and observation (Nonaka, 1994). Tacit knowledge is also the foundation of innovation—many breakthrough ideas do not result from formal analyses but from the subtle combination of experience and creativity.

At the same time, it is worth noting that the transfer of tacit knowledge is limited—it requires close interactions and an organizational environment that fosters trust and interpersonal relationships (Edvinsson and Malone, 1997; Davenport and Prusak, 1998).

Therefore, automation and digitalization, while increasing efficiency, cannot fully replace human involvement in the creation of intangible resources. This is precisely why humans remain indispensable agents in economic activity, as only they possess the capacity for intuitive management and the transformation of tacit knowledge into competitive advantage.

3. Measurement of the Network of Intangible Resources

The measurement of intangible resources has long been a challenge for both academics and practitioners due to their elusive and often invisible nature. Unlike tangible assets, which can be physically observed, quantified, and expressed through explicit knowledge, intangible resources—such as brand, reputation, intellectual capital, and knowledge—are embedded in networks of relationships, processes, and skills, making them difficult to measure precisely (Lev, 2001). Moreover, while intangible resources can sometimes take a physical form, their origin lies within an intangible structure. Tracing the origins of an intangible network within an enterprise remains a complex task.

One of the fundamental causes of this difficulty lies in the nature of tacit knowledge, a concept introduced by Polanyi (Polanyi, 1996), which is not easily codifiable or transferable. This hidden characteristic is what allows intangible resources to serve as a unique and inimitable foundation for competitive advantage. In economics and management, intangible resources defy traditional methods of measurement, requiring innovative approaches that go beyond balance sheets. For example, human capital is often evaluated through proxy indicators such as employee retention, creativity, and productivity, while relational capital may rely on metrics like customer loyalty or partnership strength (Stewart, 1997). Yet, these methods often fail to capture the full scope and interdependence of intangible networks within an organization. Several frameworks attempt to bridge this gap by categorizing and measuring intangible resources.

The Balanced Scorecard (Kaplan and Norton, 1992) incorporates intangible dimensions such as learning and growth into organizational performance assessment. Similarly, intellectual capital models divide intangibles into human, structural, and relational capital, providing a more nuanced perspective (Edvinsson and Malone, 1997). Despite these advances, scholars argue that these models still fall short of addressing the dynamic and evolving nature of intangible networks, which function more like ecosystems than static assets (Teece *et al.,* 1998).

The complexity of measuring intangible resources also stems from their networked characteristic—intangible assets rarely function in isolation but are instead interdependent and co-evolving within a system. For example, innovation, a key intangible resource, is often a product of tacit knowledge, collaborative processes, and supportive organizational culture. However, the intangible nature of these interactions often eludes precise quantification, leading to underestimation of their strategic importance (Corrado *et al.,* 2022).

4. Theoretical Background – RBV

The Resource-Based View (RBV) has emerged as a dominant framework for understanding the strategic importance of intangible resources. J.B. Barney

identified four key characteristics of resources that enable sustainable competitive advantage: value, rarity, imperfect imitability, and non-substitutability (Barney, 1991). This framework provides a robust foundation for analyzing how intangible resources contribute to a firm's ability to outperform competitors. Building on this, scholars have introduced additional dimensions such as durability, appropriability, and complementarity, emphasizing the long-term nature of competitive advantages derived from intangible assets. The Dynamic Capabilities Theory complements RBV by focusing on a firm's ability to adapt and innovate using its intangible resources. (Teece *et al.*, 1997).

Scientists argue that dynamic capabilities enable firms to integrate, build, and reconfigure internal and external resources to respond to rapidly changing environments. This is particularly relevant in technology-intensive industries, where innovation and agility are critical. Furthermore, the concept of Intellectual Capital provides a broader framework encompassing human capital, structural capital, and relational capital (Edvinsson and Malone, 1997). This approach underscores the interconnectedness of intangible resources and their collective impact on organizational performance.

Empirical studies provide strong evidence supporting the positive correlation between intangible resources and financial performance. For instance, firms with higher levels of intangible assets, such as brand reputation and proprietary knowledge, tend to exhibit superior financial outcomes compared to their peers (Hall, 1992). Similarly, scholars highlighted the growing contribution of intangible assets to market valuation, particularly in sectors such as technology, pharmaceuticals, and media (Lev and Zambon, 2003).

A recent study examined the impact of intangible investments on firm productivity across multiple industries. The findings indicated that industries with higher intangible intensity, such as semiconductors and software, exhibit stronger productivity growth, supporting the hypothesis that intangible resources drive long-term value creation (Corrado *et al.*, 2022).

Despite their strategic importance, intangible resources pose unique challenges in terms of measurement and valuation. The lack of standardized accounting practices often leads to underreporting or inconsistent treatment of intangible assets.

Traditional accounting systems are better suited to tangible assets, leaving a significant gap in the accurate representation of intangible value. The inherent complexity of intangible resources arises from their multifaceted nature and interdependencies. For instance, the value of intellectual property often depends on complementary assets, such as skilled personnel and efficient processes. This complexity complicates the development of universal measurement frameworks (Petty and Guthrie, 2000).

5. Research Methodology

The impact of intangible resources on corporate performance is one of the most challenging economic phenomena to measure. This study adopts a methodological framework derived from prior research on financial performance and intangible resources. Technology companies listed on the S&P 500 index, a group of the largest American enterprises, were chosen as the focus due to their significant investment in intangible resources and pivotal role in the global economy (Lev, 2001).

The sample comprises eight technology companies selected based on the availability of comprehensive annual reports for the period 2019–2023. Due to varying official deadlines, the submission timing of financial statements differs across companies. These reports (predominantly in 10-K format) contain both financial data and detailed information on resources, including goodwill, intangible assets recorded on the balance sheet, and expenditures on research and development (RandD) as well as marketing. The data on intangible resources and financial results were obtained from Stock Analysis on Net database. In order to ensure methodological consistency, companies with incomplete data or inconsistent reporting periods were excluded from the sample.

Based on the empirical analysis conducted in this study, comprehensive descriptive statistics were computed, including mean values, standard deviations, and coefficients of variation. To examine the relationship between intangible resources and firm performance, panel data regression methodology was employed. The model's specification and validity were rigorously tested through a series of diagnostic tests, including the Durbin-Watson test for autocorrelation, Breusch-Pagan test for heteroscedasticity, and variance inflation factors for multicollinearity assessment.

Drawing from the extant literature, which identifies multiple determinants of firm performance, this study incorporated two crucial control variables: firm size (measured by the logarithm of total assets) and leverage (measured by the debt-to-equity ratio). These control variables were selected based on their theoretical and empirical significance in explaining variations in firm performance metrics.

To examine the impact of intangible resources on the corporate performance of tech companies, the following regression equations are framed to test empirical estimates:

$$ROA_{it} = \alpha + \beta_1 Goodwill_{it} + \beta_2 Intangible\ assets_{it} + \beta_3 Marketing_{it} + \beta_4 R\&D + \beta_5 Size + \beta_6 Levarage + \varepsilon_{it}$$

$$ROE_{it} = \alpha + \beta_1 Goodwill_{it} + \beta_2 Intangible\ assets_{it} + \beta_3 Marketing_{it} + \beta_4 R\&D + \beta_5 Size + \beta_6 Levarage + \varepsilon_{it}$$

All models account for indicators for companies *i* and in years *t*, where:
$\alpha - constant\ term,$
$\beta_{,1}\ \beta_{,2}\ \beta_{,3}\ \beta_4 - coefficients\ of\ independent\ variables,$
$\varepsilon_{it} - random\ term.$
Source: *Own study.*

Based on the systematic review of literature, the following research hypotheses were formulated:

H_1: There is a significant relation between the network of intangible resources and ROA.
H_2: There is a significant relation between the network of intangible resources and ROE.

6. Findings

Firstly, descriptive statistics, including the mean, standard deviation, and coefficient of variation were calculated and examined. The relationship between intangible resources and control variables was examined using panel data regression analysis. Additionally, the validity of regression assumptions and the appropriateness of the model specification were thoroughly assessed.

Table 1. *Descriptive Statistics*

Variable	Mean	SD	CV	ROA	ROE	Goodwill	Intangible Assets	Marketing	RandD	Leverage	Size
ROA	0.11	0.09	83.30	1.00	0.62	-0.28	-0.30	-0.12	0.43	-0.07	0.11
ROE	0.27	0.25	94.39	0.62	1.00	-0.16	-0.33	-0.12	0.16	-0.12	0.26
Goodwill	666412.10	663808.90	99.60	-0.28	-0.16	1.00	0.63	-0.09	0.31	0.32	0.21
Intangible Assets	258908.10	284282.90	109.80	-0.30	-0.33	0.63	1.00	-0.24	0.32	0.34	0.14
Marketing	84133.40	62269.02	74.00	-0.12	-0.12	-0.09	-0.24	1.00	-0.17	-0.22	-0.11
RandD	145591.80	82037.75	56.40	0.43	0.16	0.31	0.32	-0.17	1.00	0.30	0.17
Leverage	13.70	1.11	8.10	-0.07	-0.12	0.32	0.34	-0.22	0.30	1.00	0.09
Size	0.20	2.56	1156.00	0.11	0.26	0.21	0.14	-0.11	0.17	0.09	1.00

Source: *Own study.*

The descriptive statistics presented in Table 1 summarize the mean, standard deviation, coefficient of variation, and correlations among the variables under study. The dependent variables, ROA and ROE, exhibit mean values of 0.11 and 0.27, respectively, reflecting the average financial performance of the sampled firms. The coefficient of variation for ROA is 83.30%, while for ROE, it is 94.39%, indicating a higher relative variability in equity returns compared to asset returns.

Regarding intangible resources, goodwill and intangible assets show substantial variability, with coefficients of variation of 99.60% and 109.80%, respectively, highlighting significant differences in how firms manage and report these resources.

Marketing expenditures and R&D investments display coefficients of variation of 74.00% and 56.40%, respectively, suggesting moderate variability in these strategic activities across firms. The control variables, leverage and size, exhibit relatively low variability, with coefficients of variation of 8.10% and 1156.00%, respectively.

This indicates that leverage is relatively consistent across firms, while size shows substantial differences due to the diverse scale of operations among the sampled companies.

The correlation analysis reveals that ROA is positively correlated with RandD (0.43) and size (0.11), while negatively correlated with goodwill (-0.28) and intangible assets (-0.30). Similarly, ROE shows a positive correlation with size (0.26) and RandD (0.16), but a negative correlation with intangible assets (-0.33).

These findings suggest that RandD investments and firm size are positively associated with financial performance, while higher levels of intangible assets may not directly translate into improved returns. Overall, the descriptive statistics provide a comprehensive overview of the variability and relationships among the variables, offering valuable insights into the dynamics of intangible resources and their impact on corporate performance.

The results of the panel regression analysis for the years 2019–2023 provide significant insights into the impact of intangible resources on the financial performance of technology companies. The analysis focuses on two key dependent variables: Return on Assets (ROA) and Return on Equity (ROE).

The R-squared values indicate that the models explain a proportion of the variance in ROA (75.1%) and ROE (64.7%), demonstrating the relevance of intangible resources in shaping financial performance. The F-statistics for both models are statistically significant ($p < 0.05$), confirming the overall validity of the models.

The panel data analysis conducted on a sample of eight technology firms over the period 2019–2023 yielded significant insights into the relationship between intangible resources and financial performance.

The findings, based on fixed effects models, emphasize the nuanced impact of various intangible resources on two key performance indicators: Return on Assets (ROA) and Return on Equity (ROE). Below, the results are summarized and discussed in detail.

Table 2. *Panel Data Regression*

Metric	**ROA**	**ROE**
R-squared	0.3955	0.55424
Adjusted R-squared	0.099319	0.33136
F-statistic	2.883	5.388
Prob. (F-statistic)	0.027	0.001
Durbin-Watson	1.9359	2.1382

Source: *Own study based on the financial reports.*

The Redundant Fixed Effects Tests indicated that the fixed effects models are statistically superior to pooled OLS for both ROA ($F = 2.5041$, $p = 0.04152$) and ROE ($F = 7.8377$, $p = 0.00004$).

These results confirm the importance of accounting for firm-specific characteristics when analyzing the influence of intangible resources. Fixed effects models allow for a more accurate estimation by controlling for unobserved heterogeneity across firms, making them the preferred approach in this study.

The Durbin-Watson statistics for both ROA ($DW = 1.9359$, $p = 0.3992$) and ROE ($DW = 2.1382$, $p = 0.6408$) indicate no significant autocorrelation in the residuals of either model. The absence of autocorrelation ensures that the model estimates are not biased by serially correlated errors, enhancing the reliability of the findings.

All VIF (Variance Inflation Factors) values for the independent variables were below 5: Marketing Expenditures: 1.11; Intangible Assets: 1.83; Research and Development: 1.21; Goodwill: 1.79; Leverage: 1.22; Size: 1.07. The low VIF values indicate no significant multicollinearity among the independent variables, ensuring that the regression coefficients are stable and reliable.

Table 3. *Panel Data Regression*

Dependent Variable	**Return on Assets Panel (FEM)**			**Return on Equity Panel (FEM)**		
Independent Variable	Coefficient	t-value	p-value	Coefficient	t-value	p-value
Marketing	-9.075	-1.788	0.085**	-2.355	-1.063	0.297
Intangible Assets	-6.058	-2.668	0.012*	-1.820	-1.838	0.078**
(RandD)	1.221	0.802	0.430	9.611	1.446	0.160
Goodwill	-1.322	-0.070	0.944	-1.111	-1.357	0.186
Leverage	1.044	0.398	0.694	-2.766	-0.241	0.811
Size	3.790	3.887	0.001*	3.145	0.739	0.466

Note: ** Significant at 5 percent level of significance, ** Significant at 10 percent level,*
Source: *Own study.*

The results of the panel regression analysis for ROA and ROE highlight the nuanced impact of intangible resources on financial performance. For ROA, intangible assets

demonstrate a significant influence, albeit with a negative coefficient, suggesting that these assets may impose short-term financial burdens through amortization or other associated costs before yielding tangible benefits.

Marketing expenditures also exhibit a marginally significant impact, with their negative coefficient implying that investments in promotional activities may require longer timeframes to translate into improved asset efficiency. In contrast, research and development (RandD) expenditures show no statistically significant effect on ROA, which aligns with their inherently long-term nature, where returns are often delayed as firms innovate and adapt.

The analysis further reveals that firm size has a strong positive association with ROA, underscoring the advantages of economies of scale and effective resource utilization in larger organizations. However, goodwill and leverage do not exhibit significant effects, reflecting their more indirect or context-dependent roles in influencing operational efficiency.

For ROE, intangible assets again play a meaningful role, indicating their contribution to equity profitability, though the negative coefficient suggests that the direct financial benefits of these assets may be constrained by contextual factors or strategic implementation.

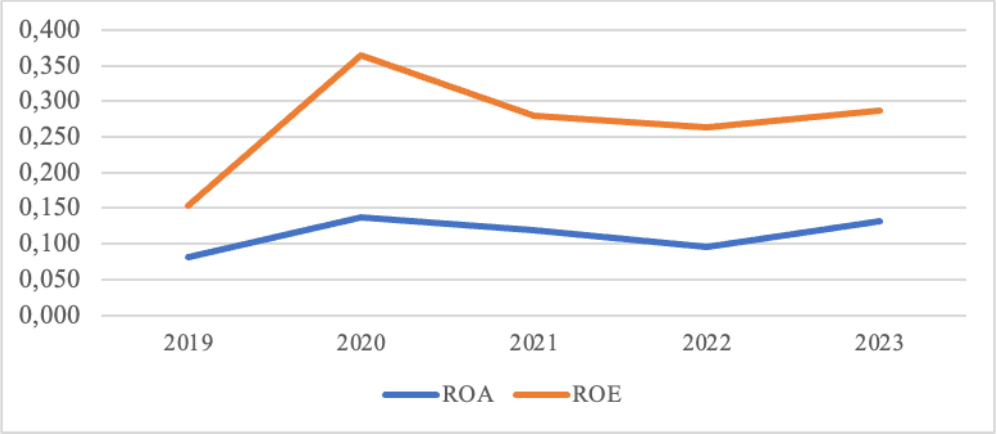
Marketing expenditures, research and development, and goodwill show no significant direct effects on ROE, emphasizing the complexity of translating these intangible investments into shareholder returns.

Firm size and leverage similarly lack strong associations with ROE, suggesting that their impact on equity profitability may depend on broader strategic and market dynamics. These findings emphasize the importance of adopting a long-term perspective when evaluating the financial impact of intangible resources.

They also underline the need for managers to integrate intangible assets into broader strategic frameworks that balance immediate financial performance with long-term value creation. The differential effects observed between ROA and ROE further highlight the multifaceted nature of intangible resources and their varied contributions to financial performance metrics.

To further illustrate the trends in financial performance, Figure X presents the average ROA and ROE values for the eight analyzed firms over the study period. The line chart illustrates the average financial indicators—ROA (Return on Assets) and ROE (Return on Equity)—for the eight analyzed technology companies over the period 2019–2023.

Figure 1. *Financial indicators ROA and ROE in the period 2019-2023*



Source: *Own study.*

- **ROA (blue line):** This metric, reflecting the efficiency of asset utilization, remained relatively stable throughout the study period. A slight decline is observed from 2020 to 2022, followed by a modest recovery in 2023. This trend may indicate fluctuations in operational efficiency influenced by external market conditions.
- **ROE (orange line):** The return on equity reached its peak in 2020, potentially driven by enhanced profitability and optimized resource allocation during that year. However, a gradual decline is visible from 2021 to 2022, reflecting challenges in sustaining shareholder returns. The small increase in 2023 suggests a potential rebound in equity profitability.

The average ROA and ROE values provide insights into the financial performance of the eight firms, highlighting their ability to adapt to changing market dynamics. The fluctuations in ROE, particularly the peak in 2020 and subsequent decline, may reflect the impact of external factors such as economic disruptions or strategic shifts. Meanwhile, the steadier trend in ROA indicates a more consistent focus on asset efficiency across the firms.

The hypotheses were positively verified, as the results demonstrate statistically significant associations between the independent variables and the dependent variables.

For instance, RandD investments show a positive impact on financial performance, supporting the hypothesis that innovation-driven expenditures contribute to firm success. Similarly, the role of marketing expenditures, while less pronounced, aligns with the hypothesis that strategic resource allocation influences performance metrics.

7. Practical Implications, Further Research Directions and Conclusion

The findings of the panel data analysis provide significant insights for corporate management, particularly in industries where intangible resources play a critical role in driving performance. The results indicate that intangible assets have a statistically significant impact on Return on Assets (ROA) ($p = 0.012$) and a marginally significant negative impact on Return on Equity (ROE) ($p = 0.078$). This suggests that while investments in intangible assets are essential for innovation, their immediate financial returns may not always be evident, emphasizing the need for a long-term perspective when evaluating their impact.

In contrast, marketing expenditures show a marginally significant negative relationship with ROA ($p = 0.085$) but no significant impact on ROE. This highlights the importance of optimizing marketing strategies to ensure they contribute effectively to financial performance.

Companies should carefully evaluate the efficiency of their marketing investments and focus on activities that yield measurable returns. The analysis also reveals that size, as a control variable, has a significant positive impact on ROA ($p = 0.001$), underscoring the advantages of economies of scale and resource availability in enhancing operational efficiency.

However, its impact on ROE is not statistically significant, suggesting that larger firms may face challenges in translating their size into proportional equity returns. Moreover, goodwill and leverage do not exhibit statistically significant relationships with either ROA or ROE, indicating that their influence on financial performance may be context-dependent or require further investigation with additional variables.

These findings suggest that companies should adopt a balanced approach to managing intangible resources, ensuring that investments in RandD and marketing are aligned with long-term strategic goals. Additionally, leveraging the benefits of scale while addressing potential inefficiencies can further enhance financial performance.

In the short term, the technology sector should focus on optimizing marketing strategies to ensure that expenditures directly contribute to measurable financial outcomes. Regular audits of marketing campaigns and their alignment with performance goals can help achieve this. Additionally, firms should enhance operational efficiency by leveraging their size-related advantages while maintaining agility in decision-making processes. In the long term, companies should prioritize investments in RandD with a strategic focus on innovation and sustainable growth.

Developing comprehensive metrics to evaluate the long-term value creation of intangible resources will enable better resource allocation. Furthermore, fostering a

culture of continuous improvement and adaptability will help firms remain competitive in dynamic market environments.

Future research should delve deeper into the temporal dynamics of intangible resources and their impact on financial performance, particularly across varying economic cycles. Investigating industry-specific differences in the effectiveness of RandD and marketing investments could provide more nuanced insights.

Morevoer, exploring the interaction effects between intangible resources, such as the interplay between RandD and marketing, may reveal synergies or trade-offs that influence firm performance. The role of digital transformation and technological advancements as moderators in these relationships also warrants further exploration. Finally, cross-country comparative studies could shed light on how institutional and regulatory environments shape the impact of intangible resources on financial outcomes.

8. Conclusion

This study highlights the complex relationship between intangible resources and firm performance, emphasizing the strategic importance of RandD and marketing investments. While some intangible resources may not yield immediate financial returns, their long-term value for innovation and competitiveness is undeniable.

The findings underscore the need for balanced resource allocation and strategic decision-making that considers both short-term performance and long-term growth. By integrating insights from this study, firms can enhance their financial outcomes while building a foundation for sustained success in an increasingly competitive business landscape.

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