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The Impact of Intangible Assets on Company Performance in Georgia

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Abstract

Objective: This study investigates the effect of intangible assets on the financial performance of companies in Georgia. The focus is on how intangible resources, measured by the Representativeness of Intangible Assets (RIA), influence Return on Assets (ROA) as a key performance indicator.

Methodology: The research utilizes a panel regression analysis with a fixed-effects model to examine the relationship between intangible assets and company performance. The dataset comprises financial reports from 845 Georgian companies, spanning the period from 2019 to 2022, obtained from the Service for Accounting, Reporting, and Auditing Supervision of Georgia. The study excludes companies from the financial industry and those with negative equity.

Results: The findings indicate that intangible assets have a significant and positive impact on firm performance. The study reveals that companies with a higher proportion of intangible assets outperform their peers, supporting the hypothesis that investment in intangible resources leads to improved profitability. Company-specific factors also play a substantial role in determining firm performance.

Conclusions: This study provides empirical evidence that intangible assets are key drivers of profitability in Georgian companies. It highlights the importance of intangible resources in achieving competitive advantages, particularly in emerging markets transitioning towards knowledge-based economies. Limitations include incomplete disclosure of intangible assets in company financial statements, which may affect the analysis' comprehensiveness.

Implications: The study offers insights for corporate strategy and policy, emphasizing the need for companies to invest in intangible assets and for policymakers to foster an environment conducive to the development of these resources.

Keywords: Intangible assets, company performance, ROA, Georgia, emerging economies

Introduction

Intangible assets have increasingly become fundamental in enhancing firm competitiveness and driving performance in today's economy. These assets, encompassing intellectual property, brand equity, goodwill, and innovation capabilities, are essential for firms looking to achieve sustainable growth and maintain a competitive edge in rapidly evolving markets (Elena-Mirela Nichita, 2019). Globally, high-growth companies allocate significantly more of their revenue to intangible assets compared to their lower-growth counterparts, underscoring the critical role of intangible investments in fostering economic success (Chariyawattanarut et al., 2022).

For emerging economies like Georgia, the strategic management of intangible resources is crucial to shift from resource-based to knowledge-driven growth models. The Georgian market provides a unique context to explore the impact of intangible assets on firm performance, especially as the country positions itself within the global economy and embraces the increasing importance of knowledge and innovation. This study seeks to fill a notable gap in the literature by examining how intangibles influence financial performance among Georgian companies, providing valuable insights for local corporate strategy and policymaking.

Prior research has produced mixed findings on the effect of intangible assets on firm performance, with studies showing both positive and negligible impacts. For instance, Li and Wang (2014), Gamayuni (2015), and Mohanlingam (2021) report that investments in intangibles yield superior profitability and competitive advantages. Conversely, other studies, such as those by Ely et al. (2003) and Das et al. (2009), suggest that the link between intangible assets and performance is more complex and may vary across industries and economies. Therefore, the following hypothesis is tested in this study: **H1 -** Intangible assets, measured by RIA has a positive effect on firm performance, as measured by ROA.

This research addresses the following question: *Do intangible assets significantly influence the financial performance of companies in Georgia?* Specifically, the study examines the impact of intangible assets, measured by the Representativeness of Intangible Assets (RIA) - the ratio of intangible assets to total assets on firm performance, measured by Return on Assets (ROA), with firm size as a control variable. Using a panel regression with a fixed-effects model, the analysis includes data from 845 Georgian companies across 2019-2022, provided by the Service for Accounting, Reporting, and Auditing Supervision of Georgia.

By focusing on an emerging market context, this study not only contributes to the existing body of research on intangible assets but also offers practical insights for Georgian firms and policymakers. Understanding the role of intangible resources can enhance decision-making processes, guiding companies to invest strategically and enabling policymakers to support frameworks that facilitate the development and protection of these assets.

Literature Review

The Rise of Intangible Assets in the Modern Economy

Intangible capital has become an increasingly important part of firms' capital stocks and assets, especially over the last three decades. Intangibles include data, patents, copyrights,

software, audio and video materials, brands, and organization capital. Shares of these assets have risen, while the share of physical capital, such as plants and equipment, has fallen despite an increase in profitability (Janice C. Eberly, 2022). Haskel and Westlake (2020) argue that economies are increasingly driven by intangible assets, and this shift is transforming how companies invest and create value. The traditional focus on physical assets—factories, machinery, and land—is being overshadowed by investments in software, databases, R&D, and brand value. These intangibles are not only essential for creating new products but also for maintaining customer relationships and fostering innovation ecosystems. Firms investing heavily in intellectual property, organizational knowledge, and brand equity are better positioned to thrive in today's hyper-competitive and globalized markets. This trend is visible in the rise of tech companies where intangible assets account for nearly all their value—companies like Amazon, Facebook, and Microsoft invest more in software and platforms than in physical assets.

Mohanlingam et al. (2021) states that intangible assets, particularly intellectual property and brand equity, were found to be strong predictors of financial performance in technology firms. The study highlights how these assets contribute significantly to both operational and strategic success. A 1% increase in intangible assets led to a notable improvement in key financial metrics such as return on assets (ROA) and return on equity (ROE). This reflects the importance of intangible assets not only as drivers of innovation but also as crucial components in building long-term competitive advantage. Technology firms, in particular, benefit from these assets due to the fast-paced and innovation-driven nature of the sector. Intellectual property, such as patents and proprietary technology, helps firms to protect their innovations, secure market share, and maintain higher profitability. Brand equity, on the other hand, builds customer loyalty and allows firms to command premium pricing, further enhancing profitability. These findings underscore the financial and strategic importance of intangible assets in sustaining growth, particularly in industries where knowledge and innovation are key drivers of performance.

Globally, high-growth companies invest 2.6 times more in intangible assets than low-growth peers. European low-growth companies invested 1.4 percent of their revenues in intangibles, below the global and North American rates. In contrast, European high-growth companies invested 4.4 times as much in intangibles (6.2 percent of revenues). These data suggest that many European low-growth companies would benefit from committing a more significant proportion of their revenue to intangible investments. (Chariyawattanarut, Hazan, Cvetanovski, Kelly, Spillecke, 2022).

The Role of Intangible Assets in Emerging Markets

For developing countries like Georgia, the strategic management of intangible assets is vital for moving from a resource-based economy toward a knowledge-based, innovation-driven one. As the global economy increasingly emphasizes knowledge, creativity, and technological advancement, Georgia must implement forward-thinking policies that encourage investment in intangible assets. This shift involves fostering a comprehensive ecosystem that supports education, research and development (R&D), entrepreneurship, and intellectual property

protection.

Education is the cornerstone of this transition, as it equips the workforce with the skills needed to innovate and adapt to changing market demands. By investing in human capital, Georgia can develop a knowledge-rich environment where intellectual property, creative output, and innovative solutions become primary economic drivers. Additionally, the country must enhance its legal frameworks to protect intellectual property rights, ensuring that innovators, researchers, and businesses can secure the benefits of their intangible assets. Strong legal protection also incentivizes international investment and partnerships, further boosting economic development.

The role of innovation cannot be overstated. By encouraging R&D, startups, and entrepreneurship, Georgia can nurture a business environment where intangible assets thrive. Innovation not only fosters new business ventures but also strengthens existing companies by enhancing their competitive edge in both local and global markets. For example, sectors like technology, pharmaceuticals, and digital services rely heavily on intangible assets like patents, trademarks, and software development.

Research into how intangibles impact Georgian companies' performance is crucial for building evidence that supports these policy changes. Studies can provide empirical data that shows a positive relationship between intangible investments and company profitability, which will give businesses confidence to allocate more resources toward the development of these assets. Such scientific evidence will also guide policymakers in designing effective strategies that prioritize intangible assets as a core component of the economy. As Georgia shifts to a knowledge-based economy, intangibles will not only enhance corporate profitability but also promote long-term sustainable development, boosting the nation's competitiveness on the global stage.

By focusing on strategic management and leveraging intangible assets, Georgia can unlock significant economic growth potential, positioning itself as an emerging leader in innovation-driven development. The resulting environment will empower companies to invest more in their intangible resources, further fueling the cycle of innovation, competitiveness, and economic prosperity.

Challenges in Accounting and Valuation of Intangible Assets

According to Lev (2001), intangible assets are non-physical factors that contribute to or are used in the production of goods, the provision of services, or that are expected to generate future productive benefits to individuals or firms that control their use. Intangible assets are characterized by high risks, high uncertainty, firm specificity, absence of rivalry between uses, and human capital intensity. Lev and Gu (2016) in their book, "The End of Accounting and the Path Forward for Investors and Managers", they expand the discussion on intangible assets, emphasizing their increasing importance in modern economies. They describe intangible assets as critical drivers of innovation and value creation, particularly in industries like technology and pharmaceuticals. These assets, such as patents, software, and brand equity, are often overlooked in traditional accounting frameworks, which focus on tangible

assets. Lev and Gu also stress the need for better measurement and reporting practices to fully capture the value and risks associated with intangible assets. This is largely due to the intangible nature of these assets, which makes them difficult to measure and value accurately. There is an ongoing debate and discussion in academic and professional circles on how to improve the reporting and valuation of intangible assets (Elena-Mirela Nichita, 2019).

Mohammed and Al Ani (2020) in their study, "The Effect of Intangible Assets, Financial Performance, and Financial Policies on the Firm Value: Evidence from Omani Industrial Sector", highlight the limitations of current accounting standards in adequately capturing the value of intangible assets. They stress the need for a more comprehensive framework that can properly assess the economic impact of these assets, particularly in developing markets where intangibles are becoming more crucial to firm performance.

Ohlson and Johannesson (2016) in their paper "The Missing Link: Recognizing and Valuing Intangible Assets in Financial Reporting" argue that the current gap in accounting standards related to intangible assets stems from their inherent uncertainty and the difficulty of accurately predicting their future benefits. They suggest that enhanced disclosure practices, including qualitative reports on innovation activities and brand development, could offer more transparency for stakeholders.

Qureshi and Siddiqui (2020) in their work "The Effect of Intangible Assets on Financial Performance, Financial Policies, and Market Value of Technology Firms" emphasize the inadequacy of existing accounting frameworks in fully recognizing the value of intangible assets. They call for a more dynamic approach that takes into account the evolving nature of these assets, particularly in technology-driven firms where intangible assets often constitute the bulk of a company's value.

The conservative accounting treatment set by the International Financial Reporting Standards (IFRS) and Generally Accepted Accounting Principles (GAAP) creates significant challenges in the recognition and valuation of intangible assets. Under IFRS, investments in intangible assets, such as R&D, brand development, and intellectual capital, are often treated as operating expenses, which means they are expensed as incurred and do not appear on the balance sheet unless they meet stringent criteria. Similarly, GAAP requires that expenditures related to intangible assets, such as patents, cannot be capitalized until they become technically feasible, making it difficult for firms to recognize their true economic value during early development stages.

This treatment not only underrepresents the firm's asset base but also distorts key financial ratios and measures used by investors to assess profitability and valuation. Accounting measures of profitability, such as return on assets (ROA) and earnings per share (EPS), can appear artificially lower, as the firm’s actual productive intangible investments are not recognized as assets. Meanwhile, market-based measures like the market-to-book (MB) ratio and price-to-earnings (P/E) ratio are skewed because the firm's intangible value is not reflected in book values. This discrepancy leads to a disconnect between financial reporting and the firm's true economic performance, misleading investors and other stakeholders about

the company's real value.

For instance, companies in high-innovation sectors like technology and pharmaceuticals often have significant investments in R&D and intellectual property, but conservative accounting treatment undervalues these assets. This results in an understatement of the firm's earnings potential and can lead to undervaluation in the marketplace (Lev & Gu, 2016). Sardo and Serrasqueiro (2018) also point out that such treatment affects firms' competitiveness and market standing, as traditional financial statements fail to capture the critical intangible elements driving growth and innovation

To address these issues, there has been increasing advocacy for better frameworks that can recognize and appropriately value intangible assets. Enhancing disclosure, refining criteria for asset capitalization, and developing new metrics that capture the true economic contribution of intangible assets would help provide more accurate and comprehensive financial information to investors, allowing them to make more informed decisions.

Investors often fail to fully grasp the value of intangible assets, leading to an underestimation of their information content and a slower reaction to them in the stock market, as observed by Jinsu and Gee-Jung (2011). This phenomenon is particularly prevalent in sectors where intangible assets like intellectual property, brand value, and human capital are key drivers of future profitability but are inadequately represented in financial statements. Investors tend to rely on traditional financial metrics, which do not fully capture the long-term value created by these intangible assets, resulting in delayed or muted reactions in stock prices.

Lev and Gu (2016) further elaborate on this issue, arguing that the conservative accounting treatment of intangibles contributes to the lack of visibility for investors. They claim that the failure to properly disclose and value intangible assets leads to significant information gaps, distorting key financial metrics and market valuations. As a result, investors often react belatedly when the true economic value of these assets is eventually realized through increased profits or market dominance.

Chan et al. (2007) also explored the relationship between R&D investments, a key intangible asset, and stock market returns. They found that due to the uncertainty and long-term nature of these investments, investors are slow to incorporate their potential into stock prices, leading to an undervaluation of firms with strong R&D programs in the short term. This is consistent with Hirschey and Richardson (2003), who concluded that investors systematically undervalue intangible assets such as patents, leading to a delayed response in stock price movements.

Moreover, Ciftci and Darrough (2016) showed that firms with high intangible investments, such as R&D, tend to be underpriced relative to their earnings potential, as investors are often cautious in assigning value to assets that do not have immediate cash flow implications. This underpricing can persist until the market recognizes the intangible asset's contribution to future earnings, leading to an eventual correction in stock prices.

These studies suggest that the conservative accounting treatment of intangibles, combined

with investor reliance on traditional financial metrics, leads to a slower reaction in the stock market. As such, there is a growing need for improved reporting and valuation frameworks that can help bridge the gap between intangible asset investments and investor understanding.

Impact of Intangible Assets on Firm Performance: Global Evidence

Li H. and Wang (2014) examine the influence of intangible assets (R&D expenditure) on the financial performance of listed information technology companies in Hong Kong using ROA as a financial measure of firms. The study finds that R&D investment and sales training are beneficial to firms' financial performance.

Dancaková et al. (2022) examined the effect of intangible assets on the market value of companies across multiple sectors in France, Germany, and Switzerland. The research found a positive link between intangible asset disclosure and market valuation, especially in industries reliant on innovation and intellectual capital. However, investors still primarily value profitability over intangible asset disclosures, highlighting the complex interplay between these factors in firm valuation

Mohanlingam et al. (2021) focused on technology firms in Thailand, exploring how intangible assets such as intellectual property and R&D investments positively influence financial performance, particularly return on assets (ROA) and return on equity (ROE). The findings align with global research, demonstrating that a 1% increase in intangible assets can significantly improve profitability.

Sardo & Serrasqueiro (2018) using a dynamic panel data analysis, analyzed European firms and found that intellectual capital and intangible assets, such as brand and human capital, are strong drivers of growth opportunities and financial performance. This study emphasizes the importance of intangible assets in sustaining a competitive advantage.

Șerban (2020) looked at the world's most profitable corporations and found that companies leveraging intangible assets, particularly through strong corporate values and human resource management, tend to achieve higher financial performance and market value. Intangible investments, such as in corporate culture and brand equity, were found to be crucial for long-term success.

The research PLOS ONE Study (2022) focusing on commercial banks in emerging markets, found that intangible assets positively impact financial performance, as measured by ROA and ROE. The study highlights how banks with stronger intangible asset bases, such as customer trust and intellectual property, show better profitability metrics.

Gamayuni (2015) empirically examined the relationship between intangible assets, financial policies, financial performance, and firm value of companies going public in Indonesia. The study concludes that intangible assets have a positive and significant effect on financial performance and firm value.

Mantoh (2015) investigated the contribution of intangible assets to value creation and the financial performance of publicly limited German companies. The findings show that

intangible assets positively contribute to firms' profitability and productivity.

Ahmed Haji and Anum Mohd Ghazali (2018) suggest that better investment in intangible resources improves companies' financial performance. Investment in human capital and technology has the potential to improve profitability and a lack of investment can result in weaker firm performance.

Ozkan N., Cakan S., & Kayacan M. (2017) examine the association among investment in intangible assets and banking profitability in the short and long run using panel data. Their results indicate that intangible assets improve long-term banking performance in the long run.

Contradictory Findings on Intangible Assets and Performance

Seo and Kim (2020) emphasized that intangible asset investments, particularly in small and medium-sized enterprises (SMEs), have a direct positive impact on firm performance by enhancing innovation and productivity. Their research demonstrated that firms with greater investments in intangibles showed superior financial performance, thus underlining the value of these assets for sustainable growth.

Radonić et al. (2021) explored how intangible assets drive financial performance in the IT industry, an innovation-dependent sector. The study found that companies with robust intangible asset portfolios, including intellectual property and software, reported higher profitability and market value compared to firms with lower intangible investments. This is particularly relevant in sectors where technological advancements and intellectual property protection are critical for competitive advantage.

Another important contribution comes from Qureshi and Siddiqui (2020), who conducted a global comparative analysis on the effects of intangible assets on the financial performance of technology firms. They found that intangible assets significantly enhance firm performance by improving financial flexibility and strategic positioning in competitive markets. This is especially evident in the technology sector, where intellectual property, software, and R&D investments are central to maintaining market leadership.

As businesses become increasingly reliant on knowledge and technology, the role of intangible assets will continue to grow. In the digital era, where data, software, and customer relationships often outweigh the value of physical assets, companies with strong intangible asset portfolios are better equipped to adapt and thrive. Glova and Mrazkova (2018) found similar results across European public companies, where intangible assets like human capital and organizational knowledge were critical to driving market value and growth.

Ferdaous and Rahman (2019) conducted an in-depth analysis of the role of intangible assets in driving the financial performance of 66 Bangladeshi firms, emphasizing the crucial role that investment in intangibles plays in fostering innovation. Their study identified that among various innovation-driving activities, intangible investments such as brand development, research and development (R&D), and human capital enhancement have the most significant impact on a firm's ability to innovate and compete in the marketplace.

The results of their research revealed a strong, positive correlation between the firms' financial performance and their intangible assets. Specifically, companies that invested heavily in intangible assets like intellectual property, technological innovation, and organizational knowledge were more likely to achieve higher profitability and market share. This suggests that, in the competitive landscape of Bangladesh's economy, firms that prioritize the development and management of intangible resources are better positioned to perform financially.

Ferdaous and Rahman also highlighted that the benefits of intangible assets are not immediately reflected in short-term financial statements but contribute significantly to long-term value creation. They pointed out that firms with a greater focus on intangible assets experienced sustained growth over time, demonstrating that these assets provide a foundation for innovation and sustained competitive advantage.

However, the asserted positive link between intangible assets and performance is often disputed by counterparts who argue for a negative or negligible impact. For instance, Dragomir (2024) examined the role of structural capital (a key intangible asset) in the profitability of technology and healthcare companies across Europe. His research indicates that a higher proportion of structural capital might negatively affect profitability, particularly when accounting inefficiencies or management issues exist. This suggests that, contrary to popular belief, intangible assets like intellectual capital may not always lead to positive financial outcomes in certain industries, especially when not managed effectively.

Additionally, Vincenz (2023) explored the "intangible value factor" across global markets. He found that while intangible assets can improve sorting on fundamentals like productivity and profitability, firms with high intangible assets are often perceived as riskier. This risk perception stems from the difficulty in using intangible assets as collateral and their susceptibility to financial distress during economic downturns. This suggests that investors may require a higher risk premium to invest in companies with significant intangible assets, potentially leading to underperformance in adverse economic conditions.

Rizova and Saito (2021) conducted an in-depth analysis on the value of internally developed intangible assets across global markets. Their findings revealed that the impact of these assets on firm performance was not as significant as anticipated. In fact, when sector weights were adjusted, the positive impact of intangibles largely diminished. They concluded that estimating the value of internally developed intangibles introduces a significant amount of noise, providing little additional information beyond what is already contained in traditional financial metrics like cash flow

Additionally, Savina and Namiko (2021) explored the role of intangible assets in global stock returns. They found that while intangible assets are valuable in terms of long-term profitability, they often face higher risks and tighter financial constraints, particularly in periods of economic downturn. This means that companies with significant intangible assets may underperform during periods of market stress due to their inability to leverage these assets as collateral, which affects liquidity and borrowing power

Radonić et al. (2021) provided a focused analysis on the IT sector, highlighting how intangible assets such as software, patents, and intellectual property often lead to volatile financial performance. This volatility, combined with challenges in accounting and valuation, makes it difficult to rely on intangible assets as a stable predictor of profitability

Another significant study by Seo and Kim (2020) focused on small and medium enterprises (SMEs) in Korea and found that while investments in intangible assets (especially R&D and human capital) do positively affect firm performance, the benefits are not immediate. This delayed effect often leads to undervaluation by investors in the short term, contributing to slower stock market reactions

Gaps in the Literature and Need for Further Research

After examining the literature, it becomes evident that numerous methodologies have been applied to assess the impact of intangible assets on company performance across diverse international contexts, including the USA, Canada, the UK, Australia, Germany, and Turkey. These studies have utilized various approaches, such as panel data analysis, regression models, and industry-specific case studies, to explore the link between intangible assets and financial outcomes like profitability, market valuation, and innovation capacity. While the results have been largely positive in terms of recognizing the value of intangibles, the wide range of methodologies and regional contexts raises concerns about the generalizability of these empirical findings.

For example, studies in advanced economies such as the USA and Germany have demonstrated a clear positive relationship between intangible assets and firm performance, particularly in high-innovation sectors like technology and pharmaceuticals (Lev & Gu, 2016; Sardo & Serrasqueiro, 2018). Similarly, research from Australia and Turkey has shown that investments in intangible assets, including R&D and intellectual capital, contribute significantly to long-term profitability and competitiveness (Mohammed & Al Ani, 2020). However, the diversity in economic environments, regulatory frameworks, and market structures complicates the task of generalizing these findings across different regions.

One notable gap in the existing literature is the absence of research exploring the impact of intangible assets on companies in emerging markets like Georgia. While much of the focus has been on developed economies with well-established financial and legal infrastructures, emerging markets present unique challenges and opportunities that could influence the effectiveness and valuation of intangible assets. For example, the lack of robust intellectual property protection or underdeveloped capital markets in these regions may hinder the ability of firms to leverage their intangible assets for financial gain, as suggested by recent studies on emerging economies (Radonić et al., 2021; Seo & Kim, 2020).

Given these gaps, the present study aims to address the underexplored area of how intangible assets influence the financial performance of companies in Georgia. As an emerging market, Georgia's economic and regulatory environment differs significantly from the countries typically studied, making it crucial to investigate whether the trends observed in developed markets hold true in this context. The study will determine how investments in intangible

assets like intellectual property, brand equity, and human capital contribute to firm profitability. This research is essential not only for advancing the academic understanding of intangible assets in emerging markets but also for providing practical insights to Georgian companies and policymakers on how to better leverage these critical resources for economic development.

Research Methodology

Data Collection and Sample

The data for this study were drawn from the electronic database of the Service for Accounting, Reporting, and Auditing Supervision of Georgia. This dataset provides financial statements of companies operating in the Georgian market. To ensure the accuracy and relevance of the analysis, companies in the financial industry and those with negative equity were excluded from the sample, as these firms have distinct financial characteristics that could skew the study's results.

The final sample comprises financial data from 845 Georgian companies over the period 2019 to 2022, a timeframe that captures a broad spectrum of economic conditions and corporate performance. This dataset allows for a robust longitudinal analysis, enabling the examination of trends over time.

Variables and Model Specification

The primary objective of this study is to assess the impact of intangible assets on firm performance, with a specific focus on the representativeness of intangible assets (RIA) as the independent variable.

Independent Variable

- RIA (Representativeness of Intangible Assets): the independent variable in this study is the ratio of intangible assets to total assets, referred to as RIA. This ratio provides a measure of how much of a company's total asset base is composed of intangible assets, including items such as patents, trademarks, goodwill, and brand value. The RIA serves as a proxy for the firm's strategic focus on intangible resources, and the idea is that companies with a higher RIA tend to outperform others due to the competitive advantages derived from these assets.

Dependent Variable

- Return on Assets (ROA): the study uses ROA as the dependent variable, which is a widely recognized measure of firm performance. ROA indicates how effectively a company uses its total assets to generate earnings, making it an appropriate metric for evaluating the impact of intangible assets on profitability.

Analytical Approach

The study employs a panel regression analysis using a fixed-effects model to examine the relationship between RIA and firm performance. Panel data, which combines cross-sectional and time-series dimensions, is well-suited for this analysis as it allows for controlling

unobserved heterogeneity across firms.

The fixed-effects model is particularly appropriate in this context because it controls for time-invariant characteristics of each company that could influence performance, such as corporate governance practices, industry positioning, or managerial expertise. This approach helps reduce the risk of omitted variable bias, ensuring that the observed effect of RIA on ROA is more accurate and not driven by other unmeasured factors.

The fixed-effects model used in this study is specified as follows:

$$Y_{it}=\alpha_i + \beta\ RIA_{it} + \gamma Size_{it} + \varepsilon_{it}$$

where:

- Yit represents the ROA for firm i at time t,
- α_i is the firm-specific fixed effect, accounting for time-invariant company characteristics,
- β is the coefficient for RIA, the independent variable,
- $Size_{it}$ is the control variable, representing company size,
- ε_{it} is the error term, capturing unobserved factors that might affect ROA.

Statistical Software and Procedures

The statistical analysis was conducted using SPSS software, a widely used tool for econometric and regression analysis. The decision to use a fixed-effects model was confirmed by performing the Hausman test, which indicated that the fixed-effects model was superior to the random-effects model in this case. The Hausman test assesses whether there are significant differences between the estimates provided by the fixed and random-effects models, and in this instance, it suggested that firm-specific characteristics are correlated with the independent variable (RIA), necessitating the use of the fixed-effects approach.

Additional diagnostic tests were carried out to ensure the robustness of the results:

- Multicollinearity was tested using Variance Inflation Factors (VIFs), confirming that the independent and control variables were not excessively correlated.
- Autocorrelation and heteroskedasticity were also tested and addressed by using robust standard errors, ensuring that the estimated coefficients are unbiased and efficient even in the presence of these issues.

Results

Multivariate Tests

Multivariate tests were conducted to determine whether the independent variable (RIA) had a collective effect on the dependent variable (ROA) and to control for Type I errors across multiple comparisons. The results are summarized in **Table 1**, which includes four different

multivariate tests: Pillai's Trace, Wilks' Lambda, Hotelling's Trace, and Roy's Largest Root. Each test provided consistent results regarding the significance of the intercept, the independent variable, and the company-specific factors.

Table 1. Multivariate tests

Effect		**Value**	**F**	**Hypothesis df**	**Error df**	**Sig.**	**Partial Eta Squared**
Intercept	Pillai's Trace	.654	2394.146	2.000	2533.000	<.001	.654
	Wilks' Lambda	.346	2394.146	2.000	2533.000	<.001	.654
	Hotelling's Trace	1.890	2394.146	2.000	2533.000	<.001	.654
	Roy's Largest Root	1.890	2394.146	2.000	2533.000	<.001	.654
Independent variable (X)	Pillai's Trace	.103	144.837	2.000	2533.000	<.001	.103
	Wilks' Lambda	.897	144.837	2.000	2533.000	<.001	.103
	Hotelling's Trace	.114	144.837	2.000	2533.000	<.001	.103
	Roy's Largest Root	.114	144.837	2.000	2533.000	<.001	.103
Company	Pillai's Trace	1.051	3.341	1680.000	5068.000	<.001	.525
	Wilks' Lambda	.161	4.498	1680.000	5066.000	<.001	.529
	Hotelling's Trace	3.891	5.865	1680.000	5066.000	<.001	.661
	Roy's Largest Root	3.517	10.610	840.000	2534.000	<.001	.779

1. Intercept

All multivariate tests (Pillai's Trace, Wilks' Lambda, Hotelling's Trace, and Roy's Largest Root) revealed that the **intercept** was highly significant across all models (**$p<0.001$**), with

large effect sizes (**Partial Eta Squared = 0.654**). This finding suggests a substantial baseline effect, meaning that ROA is significantly influenced by the fixed intercept in the model.

2. Independent Variable (RIA)

The independent variable, **RIA,** was also significant across all multivariate tests (**p<0.001**), although with a smaller effect size (**Partial Eta Squared = 0.103**). This **i**ndicates that while RIA has a significant and positive impact on ROA, the overall effect size is more moderate compared to the intercept.

3. Company-Specific Factor

The multivariate tests also showed that the **company-specific factor** was highly significant (**p<0.001**) across all tests, with effect sizes ranging from **0.525 to 0.779**. This indicates that company-specific characteristics play a substantial role in determining firm performance (ROA), underscoring the importance of controlling for these factors in the analysis.

Univariate Tests (Tests of Between-Subjects Effects)

Univariate tests were also conducted to assess the individual effects of the independent variable (RIA) on the dependent variable (ROA). The results of these tests are presented in **Table 2**.

Table 2. Tests of Between-Subjects Effects

Source	**Dependent Variable**	**Type III Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**	**Partial Eta Squared**
Corrected Model	ROA	214.617b	841	.255	12.630	<.001	.807
Intercept	ROA	96.761	1	96.761	4788.826	<.001	.654
X	ROA	5.853	1	5.853	289.681	<.001	.103
Company	ROA	179.485	840	.214	10.575	<.001	.778
Error	ROA	51.201	2534	.020			
Total	ROA	420.479	3376				
Corrected Total	ROA	265.818	3375				

1. Corrected Model

The corrected model was highly significant for ROA (**p<0.001**) and explained a substantial proportion of the variance in ROA (**Adjusted R^2 = 0.807**), demonstrating the model's overall effectiveness in predicting firm performance.

2. Intercept

The intercept remained significant in the univariate analysis as well (**p<0.001**) with a large effect size (**Partial Eta Squared = 0.654**), reinforcing the importance of the baseline effect on ROA.

3. Independent Variable (RIA)

RIA was found to be highly significant for ROA (**p<0.001**) in the univariate tests, with a **Partial Eta Squared** of **0.103**. This finding supports the hypothesis that intangible assets, as represented by RIA, have a positive and statistically significant impact on firm performance.

4. Company-Specific Factor

The company-specific factor also showed a significant effect (**p<0.001**) on ROA, with a large effect size (**Partial Eta Squared = 0.778**). This suggests that while RIA influences ROA, company-specific characteristics remain crucial in determining firm-level outcomes.

Parameter Estimates

Table 3 presents the parameter estimates for the independent variable (RIA) and the intercept.

Table 3. Parameter Estimates

Dependent Variable	Parameter	B	t	Sig.	Partial Eta Squared
Y2_adjusted	Intercept	96.761	4788.826	<.001	.654
Y2_adjusted	X	5.853	289.681	<.001	.103

Key Findings:

- The intercept is significant (**p<0.001**) with a large baseline effect, reflecting the substantial fixed effect in the model.
- The RIA parameter is highly significant (**p<0.001**), indicating that the representativeness of intangible assets has a strong and positive impact on ROA.

The results from both the multivariate and univariate analyses indicate that:

- The intercept has a significant effect on both multivariate tests and univariate tests, reflecting a substantial baseline effect on firm performance (ROA).
- The independent variable RIA is significant in both multivariate tests and univariate tests for ROA, suggesting a positive and strong impact of intangible assets on firm profitability.

- The company-specific factor is highly significant across all tests, indicating that firm-specific characteristics play a key role in determining ROA.

These results provide robust evidence supporting the hypothesis that the representativeness of intangible assets (RIA) has a positive and significant effect on firm performance, as measured by ROA.

Discussion

The purpose of this study was to examine the impact of **intangible assets,** represented by **RIA (representativeness of intangible assets),** on firm performance, specifically measured by **return on assets (ROA).** The results of the analysis provide robust evidence supporting the hypothesis that intangible assets have a significant and positive effect on firm performance. Several key findings emerged from both multivariate and univariate tests, providing insights into the relationship between intangible assets, company-specific factors, and profitability.

The Impact of intangibles on firm performance

The central finding of this study is that **RIA**, the ratio of intangible assets to total assets, has a **statistically significant positive effect** on **ROA.** This supports the hypothesis that firms with a higher proportion of intangible assets tend to perform better, as intangible assets often provide competitive advantages that are difficult for rivals to replicate. These assets, which include intellectual property, brand equity, goodwill, and innovation, play a critical role in enhancing a firm's market positioning and its ability to generate profits.

The significance of RIA across both **multivariate** and **univariate** tests reinforces the idea that intangible assets contribute to firm performance in a meaningful way. The **partial eta-squared value of 0.103** indicates that while the effect size of RIA is moderate compared to other factors, it is nonetheless substantial in influencing the firm's profitability. This finding is consistent with prior research, which has shown that companies with strong intellectual property portfolios, brand value, and other intangible resources often experience superior financial outcomes.

In the context of an emerging market like Georgia, this result is particularly important. Firms operating in transitional economies face distinct challenges, including limited access to capital and fluctuating market conditions. In such environments, intangible assets may serve as key differentiators, enabling companies to build resilience and maintain competitive advantages even when external conditions are less favorable. The ability to leverage intangible assets effectively may thus be a critical factor in long-term success and growth for firms in emerging economies.

The Role of Company-Specific Factors

In addition to the independent variable RIA, the analysis revealed that **company-specific factors** also play a significant role in determining firm performance. The multivariate tests indicated that company-specific factors had a large effect on ROA, with **partial eta-squared values ranging from 0.525 to 0.779,** highlighting the substantial influence of firm-specific characteristics on performance. These factors, which may include elements such as management quality, corporate governance, organizational culture, and strategic orientation, contribute to the observed variation in ROA across firms.

The findings suggest that while intangible assets are important, they do not operate in isolation. The success of intangible assets likely depends on how effectively a firm can integrate these assets into its broader operational and strategic framework. Companies that are able to align their intangible asset management with their overall business strategy may be better positioned to capitalize on the competitive advantages that intangible resources provide. This implies that firm performance is influenced by a complex interaction between intangible assets and internal company dynamics, making it essential for firms to adopt a holistic approach to asset management.

The Significance of the Intercept

The intercept was also found to be highly significant in both multivariate and univariate tests, with a **partial eta-squared of 0.654,** indicating a substantial baseline effect on firm performance. This suggests that even after accounting for intangible assets and company-specific factors, there remains a significant fixed effect that influences ROA. This finding likely reflects unobserved characteristics that are common across all firms in the sample, such as broader economic conditions, industry-wide trends, or regional factors specific to the Georgian market.

The intercept's large effect size suggests that these external and structural factors have a profound impact on firm performance. For example, macroeconomic conditions such as GDP growth, inflation, or changes in regulatory policies may influence the ability of firms to generate returns on their assets. As such, while intangible assets and firm-specific factors are crucial, firms must also navigate external economic and regulatory environments that shape their overall performance.

Implications for Business Strategy and Policy

The findings of this study have important implications for both corporate strategy and public policy. For firms, the results underscore the importance of investing in and managing intangible assets effectively. As intangible assets become increasingly central to competitive advantage in the knowledge economy, firms must develop strategies to leverage these resources for long-term profitability. This includes not only acquiring intangible assets but

also integrating them into broader business operations, ensuring that they contribute to sustainable growth.

From a policy perspective, the results suggest that governments in emerging markets like Georgia should consider supporting the development and protection of intangible assets. Policies that encourage innovation, protect intellectual property, and foster an environment conducive to the growth of intangible assets can enhance the competitiveness of firms in these markets. Additionally, improving access to capital for firms investing in intangible assets could further drive economic growth by enabling more firms to capitalize on the benefits of these assets.

Conclusion

This study aimed to explore the impact of intangible assets on firm performance, specifically focusing on the **representativeness of intangible assets (RIA)** and its impact on the performance of companies in Georgia. Using panel regression analysis with a fixed-effects model, the study analyzed financial data from **845 Georgian companies** over the period **2019–2022,** controlling for firm-specific characteristics, such as company size.

The need for this research is viable because no previous studies have analyzed the impact of intangible assets on the financial performance of companies in Georgia. In addition, previous studies on the relationship between intangible assets and organizational performance showed no consensus, inviting further investigation on the topic.

The findings of this research provide strong evidence that **intangible assets,** as measured by **RIA,** have a **significant positive effect** on firm performance. The results from both multivariate and univariate analyses consistently show that firms with a higher proportion of intangible assets relative to their total assets achieve better returns on their assets. The effect size, while moderate, highlights the importance of intangible resources such as intellectual property, brand equity, and goodwill in driving firm profitability, particularly in emerging markets like Georgia, where such assets can provide critical competitive advantages.

In addition to the role of intangible assets, the study also underscores the significance of **company-specific factors** in determining firm performance. The large effect sizes observed for firm-specific characteristics suggest that while intangible assets are valuable, their impact on firm performance is shaped by internal company dynamics, such as management quality, corporate governance, and strategic orientation.

Furthermore, the large and significant **intercept effect** across all tests indicates that external factors—such as economic conditions and industry trends—also influence firm performance. These findings suggest that successful firms are those that not only invest in intangible assets but also navigate broader economic and industry-specific challenges effectively.

Implications and Recommendations

This research has important implications for both business strategy and public policy. For companies, the results highlight the need to prioritize investment in intangible assets, as they are key drivers of profitability and long-term success. Firms should focus on integrating intangible assets into their broader strategic framework to fully leverage the competitive advantages these resources provide.

For policymakers, the findings suggest that supporting the development of intangible assets through innovation-friendly policies, intellectual property protection, and enhanced access to financing can significantly contribute to the competitiveness of firms in emerging markets. Encouraging firms to invest in and capitalize on intangible assets could foster broader economic growth and development in Georgia.

Limitations and Future Research

While the study provides valuable insights into the relationship between intangible assets and firm performance, it is limited by the use of **ROA** as the primary performance metric. Future research could expand on this by incorporating other measures of firm performance, such as **return on equity (ROE)** or **market valuation,** could offer a more comprehensive view of how intangible assets impact firm success. One of the limitations of this study is also the incomplete disclosure of intangible resources in companies' financial statements, which makes it challenging to analyze the proposed relationship comprehensively and accurately.

In conclusion, this study contributes to the growing understanding of the role intangible assets play in the modern economy. The findings emphasize that firms with higher representativeness of intangible assets outperform their peers, reinforcing the importance of intangible resources in achieving competitive advantage and sustainable growth.

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