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THE IMPACT OF AI-ORIENTED R&D EXPENDITURES ON CORPORATE REVENUE GROWTH: A CASE STUDY OF MICROSOFT AND GOOGLE COMPANIES



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Abstract: *This research paper investigates the impact of artificial intelligence (AI) -related investment on research and development (R&D) expenditures on corporate revenue growth, in the cases of 2 companies: Microsoft and Google. over the period 2022-2025. The main objective of this research is to analyse how investment in technologies particularly Artificial intelligence (AI) and AI-related research and development influence company financial performance. The article is based on financial statement analysis and is conducted using key indicators such as the R&D-to-revenue ratio, revenue growth, total investment, and investment intensity. A comparative and trend analysis approach was applied to assess the relationship between investment strategies and revenue dynamics. The results indicate that both companies are increasing their investment levels, and correspondingly, their revenue indicators are also rising proportionally. While Google outperforms Microsoft in all indicators, Microsoft demonstrates a stable and balanced investment structure.*

Key words: *artificial intelligence, R&D expenditures, revenue growth, investment intensity, financial performance, Microsoft, Google*

Introduction

Artificial Intelligence (AI) has become an integral part of business operations. Through automating processes, increasing efficiency, and improving customer service, AI brings a variety of benefits to businesses, both large and small.

AI can drastically reduce costs for businesses. Automation technologies can cut labor costs, and AI-powered insights can reduce the costs of making decisions. AI can also be used to leverage existing data sets, helping businesses save on the costs of gathering and processing new information. Additionally, through automated processes, AI can save businesses time and money.¹

Currently, on a global scale, major technology companies are increasingly focusing on research and development (R&D) activities directed toward artificial intelligence (AI) and are making significant investments in this area. These investments not only enhance operational efficiency but also play a crucial role in ensuring revenue growth through the development of innovative products and services. Additionally, companies investing in AI

¹ https://www.google.co.uz/books/edition/Unlocking_Your_Business_Potential_with_A/XxisEAAAQBAI?hl=uz&gbpv=1

are securing substantial future revenue streams for their businesses. By leveraging AI, companies can reduce human labor, work with more precise data, and plan to achieve higher profits with lower costs. In particular, leading technology giants such as Microsoft and Google are developing AI technologies to gain a competitive advantage over other companies in the market.

As global investments directed toward artificial intelligence reach trillion-dollar milestones, debates have emerged regarding whether the return on investment (ROI) is truly being justified. Consequently, exploring the empirical correlation between AI-related expenditures and financial performance is essential for determining and comprehending these economic dynamics.

The main objective of this article is to analyze the impact of AI-focused R&D expenditures on company revenue growth, using Google and Microsoft as case studies.

Literature review

Numerous studies have identified opportunities to invest in artificial intelligence (AI) and enhance profits through its implementation.

According to Lui, A. K., Lee, M. C., & Ngai, E. W. (2022), due to the development of AI and the growing interest in the field, investments in AI have accelerated and continue to increase. However, the impact of AI on company value has largely been overlooked. Based on their research, which analyzed 119 announcements from 62 companies that invested in AI, it was found that AI investments had a negative effect on the companies' market value, with stock prices decreasing by 1.77%. The results indicate that for investors, announcements regarding AI investments are generally perceived as unexpected and negative news for most companies. [2]

Xiao, L., Xiao, Y., & He, R. (2024) found that the adoption of AI significantly improves the efficiency of R&D management and overall enterprise performance. Companies that implement AI technologies are able to increase their R&D efficiency by an average of 20%, while enterprise performance indicators such as revenue growth rate, profit margin, and market share improve by an average of 15%. The results demonstrate that investment in and adoption of AI technologies are positively correlated with enterprise performance. [3]

Research conducted by Dmitrieva, E. (2023) highlights that the impact of AI on company value is often overlooked. This study analyzed 120 announcements from 62 publicly traded companies between 2018 and 2022 and found that AI investments had a negative effect on the market value of these companies. The corporations' stock prices decreased by 1.89%. Non-manufacturing initiatives and companies with weak information technology capabilities or low credit ratings experienced more severe negative consequences compared to other firms. For most companies, announcements regarding AI investments were perceived negatively by investors. [4]

Van Der Vlist, F., Helmond, A., & Ferrari, F. (2024) argue that there is no AI without Big Tech, highlighting the central role of major technology conglomerates such as Amazon, Microsoft, and Google in the industrialization of artificial intelligence. This process refers to the transition of AI technologies from the research and development stage to practical applications across various industry sectors, creating new dependencies and driving substantial investments. [5]

In the study by Röhms, S., Bick, M., & Boeckle, M. (2022, May), the challenges, opportunities, current practices, and future potential of AI adoption within the venture capital (VC) investment process were examined. The research was based on a qualitative analysis of 17 expert interviews conducted with early-stage VC investors and academic researchers. The findings indicate that most firms are not yet fully leveraging AI, even though they already employ data-driven decision-making, primarily due to limited resources. VC firms that have implemented AI tend to focus on making their deal sourcing and screening processes more efficient and increasing portfolio diversification. [6]

Study done by Ojonugwa, B. M., Adanigbo, O. S., Ogunwale, B., & Ochefu, A. (2024), the integration of Artificial Intelligence (AI) with impact investing—which aims to generate positive social and environmental effects—has emerged as a promising approach for improving developmental outcomes through data-driven investment strategies. AI technologies enable more informed and targeted investment decisions. [7]

Based on the investigation of Amir, M. S., Ali, A., & Audi, M. (2025), several studies highlight the significant role of Artificial Intelligence (AI) investment in enhancing firm performance, particularly in developing economies. Empirical evidence from Pakistan's accounting, finance, and audit sectors indicates that AI investment supported by strong technological infrastructure increases profitability, whereas cybersecurity risks may reduce these gains. Successful AI adoption requires not only strategic investment but also ecosystem-level support, providing practical guidance for managers, investors, and policymakers on effectively leveraging AI to improve firm outcomes. [8]

METHODOLOGY

In this study, all data were collected from the official websites of Microsoft and Google over a four-year period from 2022 to 2025. Additionally, data were obtained from reliable sources and the academic platform Google Scholar. As a research method, multiple calculation analysis was applied. Furthermore, key indicators such as investment intensity, total investment, and revenue growth were calculated and analyzed.

ANALYSIS AND RESULTS

From this table, it can be seen that during 2022–2025, the company experienced growth across key financial metrics. Revenue increased from 198,270 in 2022 to 281,724 in 2025, showing a steady upward trend. Capital expenditures (CAPEX) rose from 23,886 in 2022 to 64,551 in 2025, reflecting expanded spending on long-term assets. Net income increased significantly from 72,738 in 2022 to 101,832 in 2025, indicating improved profitability alongside increased investments. The R&D figure also increased by a total of 7,976 during the same period, indicating more investment in research and development over the four years.

Table 1

Key Financial indicators of Microsoft company (2022-2025)

	Revenue	R&D Expenses	CAPEX	Net Income
2025	281,724	32,488	64,551	101,832
2024	245,122	29,510	44,447	88,136
2023	211,915	27,195	28,107	72,361
2022	198,270	24,512	23,886	72,738

Research and development expenses include payroll, employee benefits, stock-based compensation expense, and other headcount-related expenses associated with product development. It also includes technology development costs, including AI training and other infrastructure costs, third party development and programming costs.²

Table 2

Google's Financial Performance and Investments (2022–2025)

	Revenue	R&D Expenses	CAPEX	Net Income
2025	402,836	61,087	91,447	132,17
2024	350,018	49,326	52,535	100,118
2023	307,394	45,427	32,251	73,795
2022	282,836	39,500	31,485	59,972

It can be seen from the table that between 2022 and 2025, Google demonstrated an upward trend, meaning that all key indicators increased. Revenue rose significantly from 282,836 in 2022 to 402,836 in 2025, showing a steady growth trend. Research and development (R&D) expenses increased from 39,500 in 2022 to 61,087 in 2025, indicating that the company has been investing more in R&D over the years. Capital expenditures (CAPEX) grew sharply from 31,485 in 2022 to 91,447 in 2025, reflecting substantial investments in long-term assets and infrastructure. The net income also shows an upward trend, indicating that as investments increased, profitability improved as well.

Calculations:

1. **R&D / Revenue * (%)**

Formula: $R\&D / Revenue * 100$

2. **Revenue Growth (%)**

Formula: $(Current\ year - Previous\ year) / Previous\ year * 100$

3. **Total Investment**

Formula: $R\&D + CAPEX$

4. **Investment Intensity**

Formula: $(R\&D + CAPEX) / Revenue * 100$

Table 3

Calculated Financial and Investment Indicators of Microsoft (2022-2025)

	2022	2023	2024	2025
R&D / Revenue * 100	12,36293943	12,83297549	12,03890308	11,53185387
Revenue Growth (%)	-	6,882029556	15,66996201	14,93215623
Total Investment	48,398	55,302	73,957	97,039

² <https://www.microsoft.com/investor/reports/ar25/index.html>

Investment Intensity	24,41014778	26,0963122	30,17150643	34,44470475
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Between 2022 and 2025, the company demonstrates steady growth in its financial performance, supported by increasing investments and improving revenue trends. Total investment rises significantly from 48,398 to 97,039, nearly doubling over the period, while investment intensity also increases consistently, indicating a growing share of resources being directed toward long-term development.

Table 4

Calculated Financial and Investment Indicators of Google (2022-2025)

	2022	2023	2024	2025
R&D / Revenue * 100	13,96569036	14,77810237	14,0924181	15,16423557
Revenue Growth (%)	-	8,682770227	13,86624332	15,09008108
Total Investment	70,985	77,678	101,861	152,534
Investment Intensity	25,09758305	25,26984912	33,13695127	37,86503689

Throughout 2022 and 2025, the company demonstrates steady overall upward trend. Investments and investment intensity increase significantly, while revenue growth becomes stronger each year. Simultaneously, the R&D-to-revenue ratio slightly rises, indicating continued focus on innovation. Overall, the company is expanding and improving its financial performance.

Comperative analysis

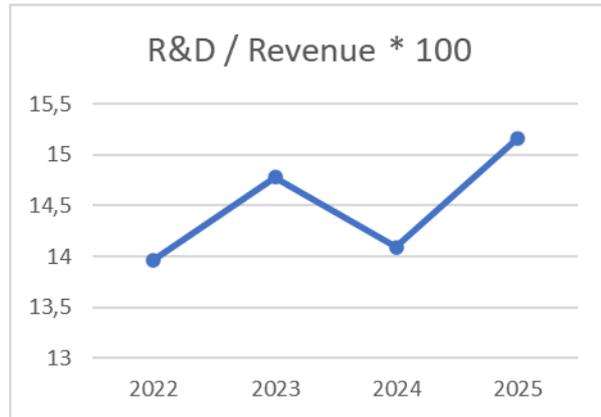
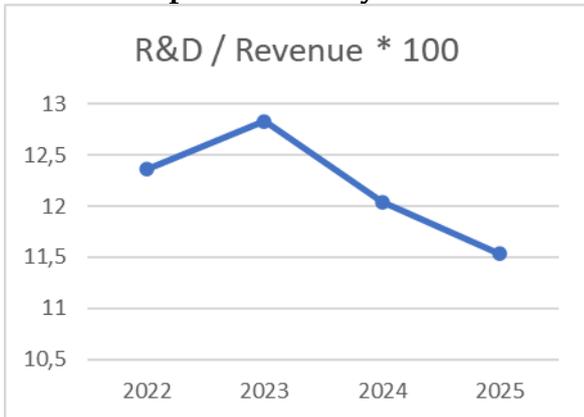


Figure 1. Microsoft's R&D/Revenue ratio

Figure 2. Google's R&D/Revenue ratio

The two-line charts show what percentage of revenue is invested in research and development (R&D) by Google and Microsoft. Based on Google's data, it is clear that the company places strong emphasis on AI and technology, increasing its investment each year. This figure was around 14% in 2022 and rose to approximately 15% by 2025. This indicates that Google is allocating a growing share of its annual revenue to AI-related investments. In contrast, Microsoft shows a relatively slow downward trend. From 2022 to

2024, the company consistently invested about 12% of its revenue in R&D, with no significant change over these three years. However, in 2025, this figure decreased by about 1%. In conclusion, while Google is increasing its investment in AI, Microsoft appears to be gradually reducing its R&D investment.

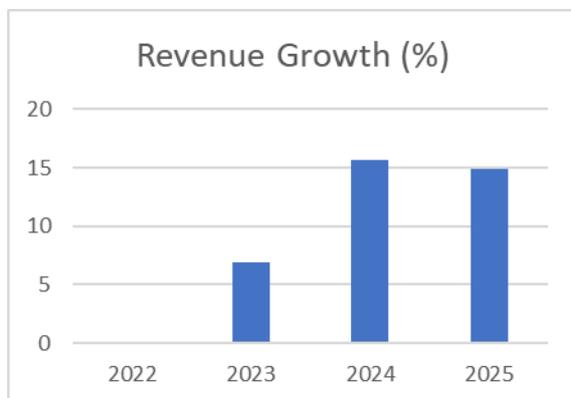


Figure 3. Microsoft's Revenue Growth

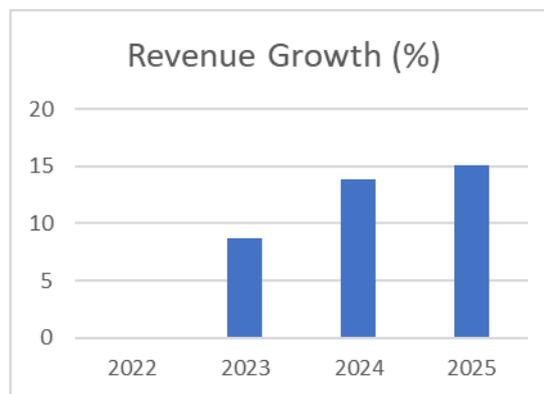


Figure 4. Google's Revenue Growth

The charts show that both companies generated nearly similar returns from their investments. In Microsoft's case, revenue from its investments declined, as the company reduced its R&D spending in 2025, which resulted in lower revenue growth that year. In contrast, Google experienced a significant increase. Its revenue growth rose from 8.68% in 2023 to 15.09% in 2025. This suggests that Google's investment in research and development had a positive impact on its revenue growth in the following years. Overall, in this aspect as well, Google outperformed Microsoft.

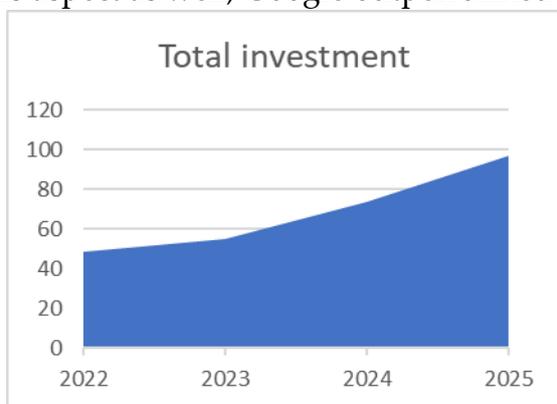


Figure 5. Microsoft's Total Investment

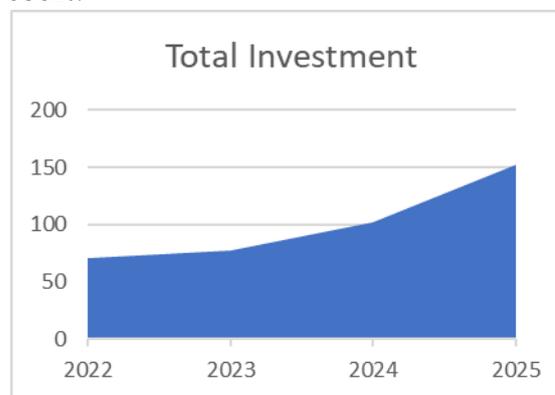


Figure 6. Google's Total Investment

Comparing the two companies in terms of total investment, Microsoft shows a sharp and continuous increase, rising from 48,398 in 2022 to 97,039 in 2025, almost doubling over the period. Although total investment increased significantly during this time, the relatively stable R&D intensity suggests that the growth was mainly driven by capital expenditures rather than research and development spending. In Google, total investment also increased actively. This figure rose from 70,985 in 2022 to 152,534 in 2025, nearly doubling as well.

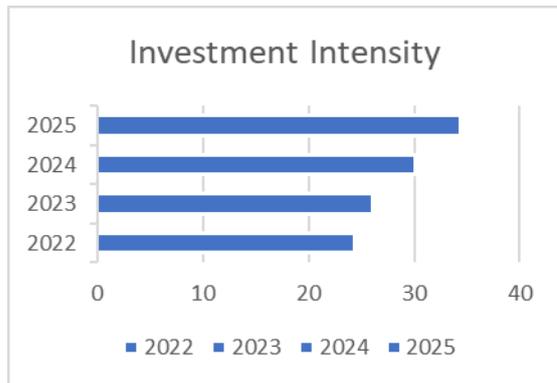


Figure 7. Microsoft's Investment Intensity

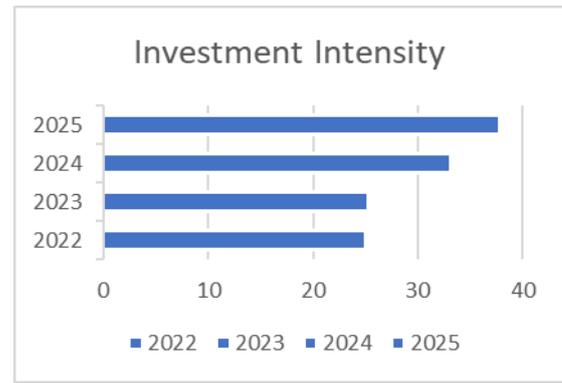


Figure 8. Google's Investment Intensity

Investment intensity increased for both companies. In Microsoft, it rose from 24.41% in 2022 to 34.44% in 2025. In Google, this figure increased from 25.09% in 2022 to 37.86% in 2025. This indicates that both companies are reinvesting a growing share of their revenue, reflecting a strategy focused on long-term development and technological advancement.

Conclusion and suggestions

This study demonstrates that high levels of research and development and overall investment have a positive impact on companies' revenue growth, especially investments focused on technology and artificial intelligence, which play a significant role. Both companies show upward trends across all indicators, and investments in artificial intelligence have had a positive effect. However, Google outperformed Microsoft in all aspects, including all key indicators, the amount of investment, and the revenue generated from these investments. Google stands out with its high investment intensity, while Microsoft is distinguished by a stable and balanced approach.

Based on the conducted theoretical and empirical analysis, companies should not only increase their research and development expenditures but also place significant emphasis on improving its efficiency. Moreover, at a time when artificial intelligence is rapidly advancing, such companies should further increase their investments in this field. The findings highlight the importance of strategically allocating investments toward innovation-driven sectors, particularly AI, to maintain a competitive advantage in the digital economy.

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