

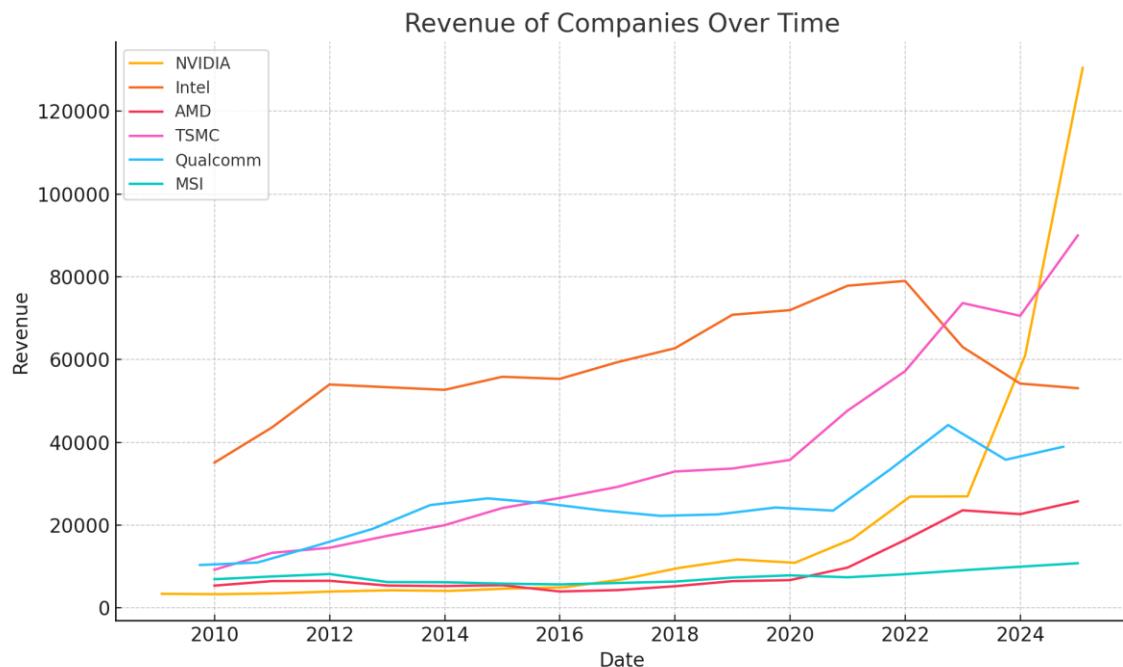
Comprehensive Financial Analysis of Semiconductor Companies

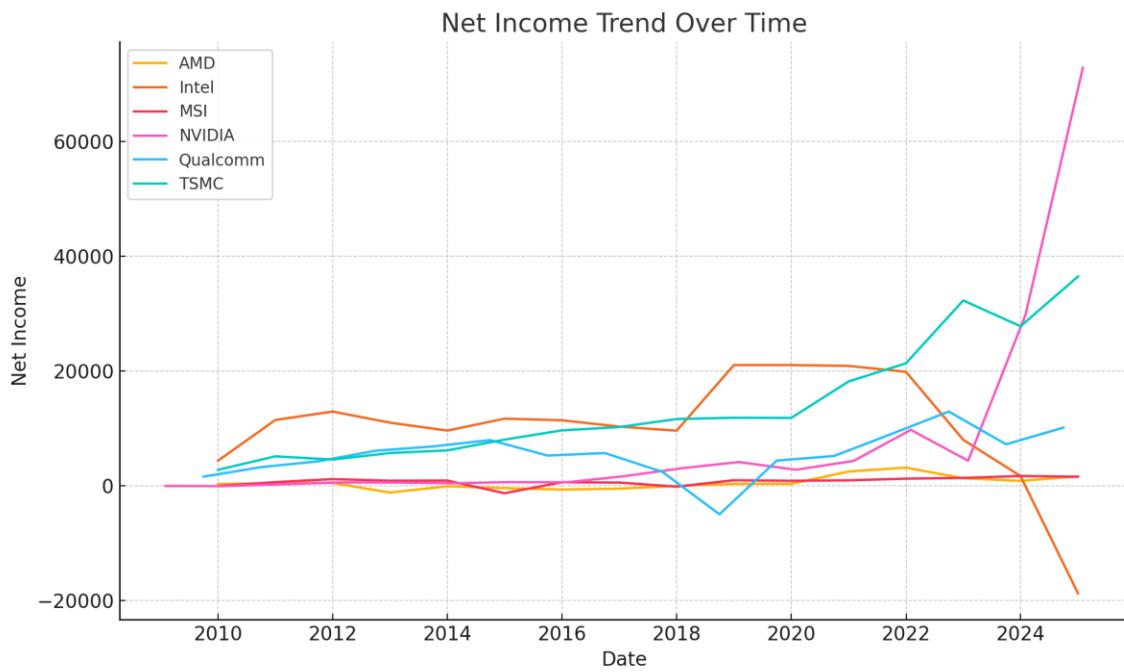
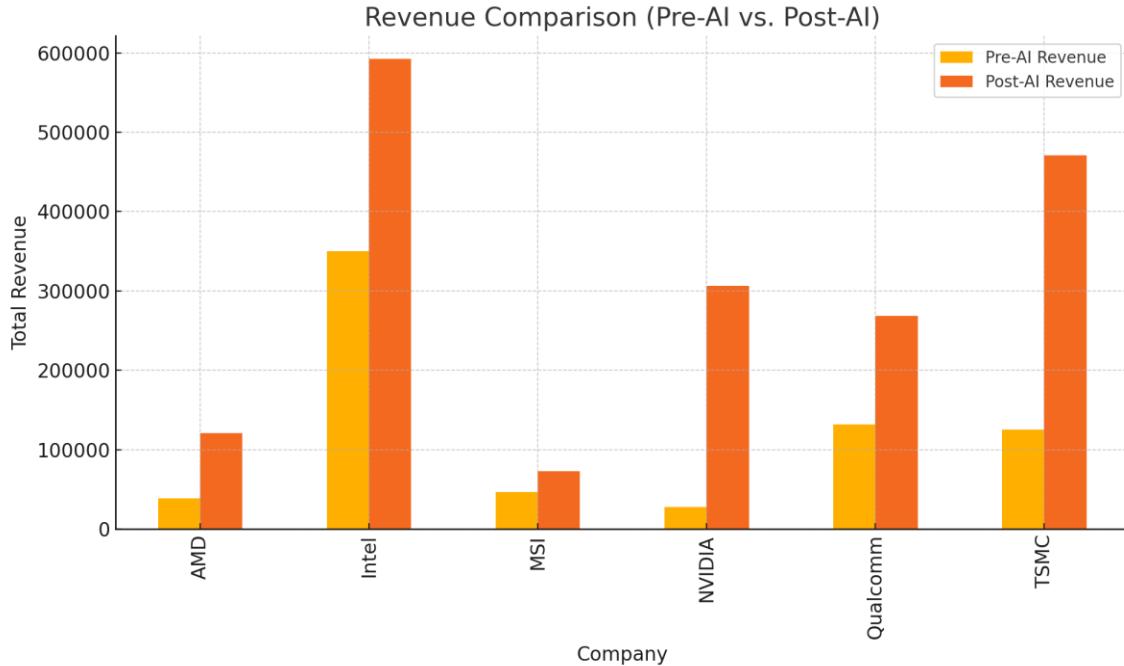
Uploading and Analyzing Dataset with Colab and GenAI

Data from 'Merged_Semiconductor_Financials_Final.csv' was loaded, cleaned, and transformed using Pandas in Google Colab. Dates were converted, columns were cleaned, and a new column for AI era classification (Pre-/Post-AI) was added. Only one column had missing values, making it suitable for analysis.

Profitability and Growth Analysis

This section investigates revenue, operating income, and net income trends, comparing growth before and after the AI boom in 2016.



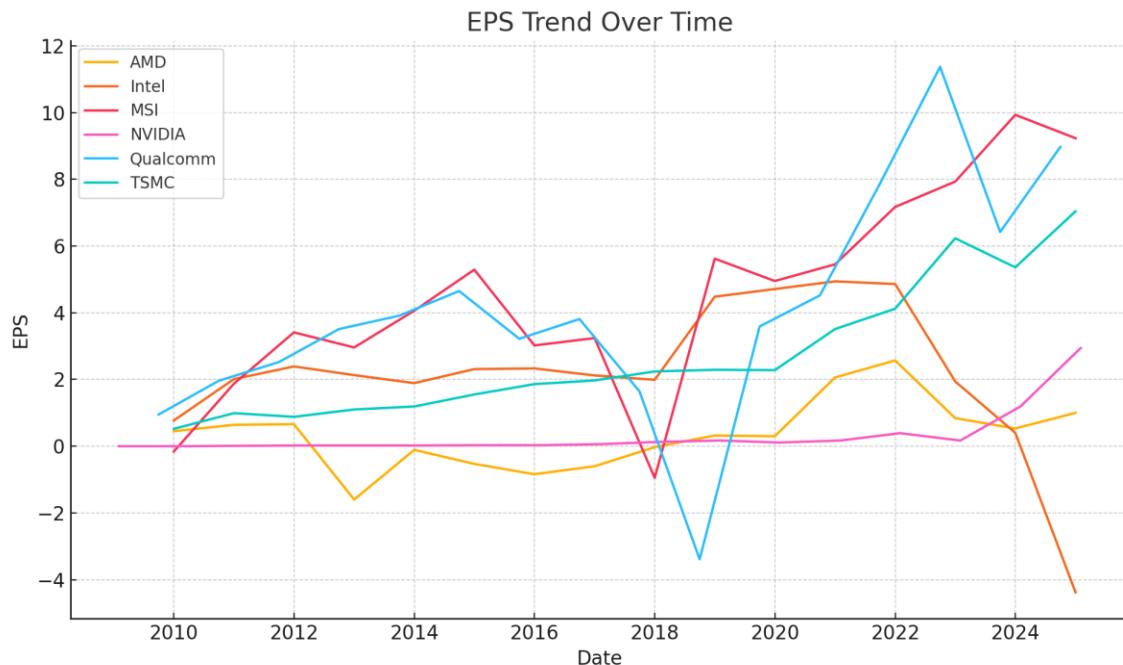


The revenue and income charts reveal strong growth post-2016, particularly for NVIDIA, whose revenue line steeply rises compared to other companies. This indicates a rapid adoption of AI technologies. TSMC and AMD also exhibit upward trends, while Intel shows relatively flat growth, signaling stagnation.

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Comparing Company Performance

EPS and EBITDA trends were compared to evaluate company performance. NVIDIA and AMD stood out post-AI.

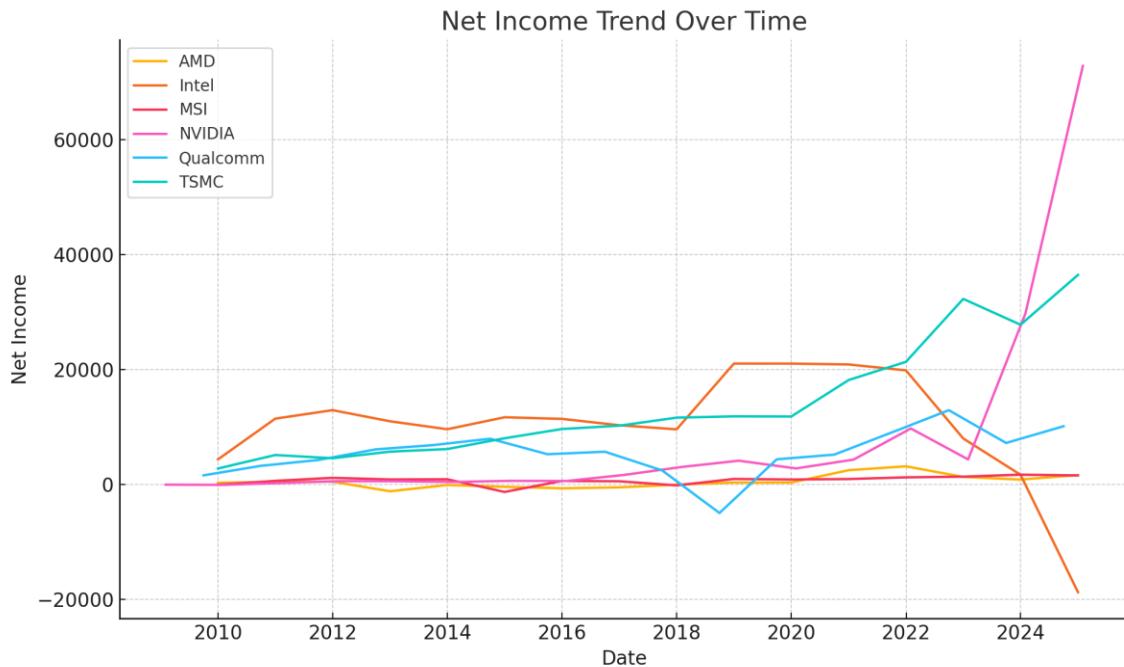


Charts in this section highlight EPS (Earnings Per Share) and EBITDA (operational earnings). NVIDIA and AMD show significant EPS growth post-2016, meaning shareholders gained more value. Intel and Qualcomm have stagnant EPS lines, suggesting weaker investor returns.

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Cash Flow Analysis

EBITDA was used as a proxy for operational cash flow. Companies like NVIDIA showed strong growth, suggesting robust operating health.

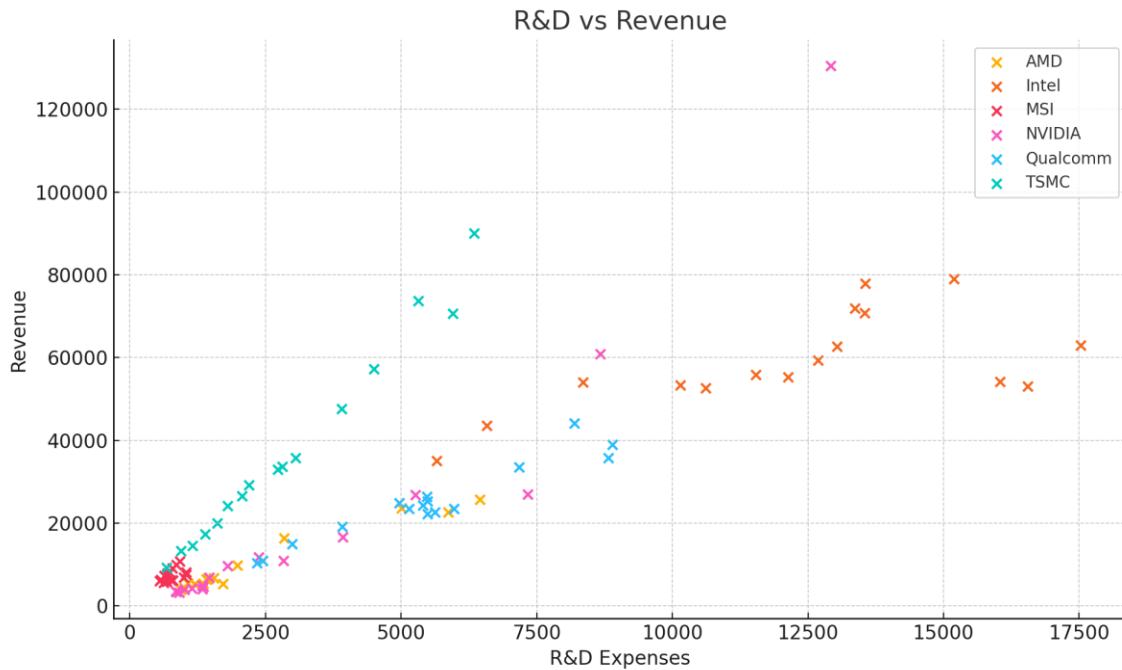


EBITDA charts serve as a proxy for cash flow. NVIDIA demonstrates consistent cash flow increases, which is essential for sustaining operations and funding innovation. This performance suggests strong financial health.

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Finding Good Investment Opportunities

By comparing R&D investment against revenue and analyzing financial distributions pre-/post-AI, high-performing companies like NVIDIA and AMD were identified.



A scatter plot comparing R&D spending and revenue indicates a strong correlation. Companies like NVIDIA and AMD invest heavily in R&D and see higher revenues, implying that innovation is driving their financial growth. Others with lower R&D investments saw less impact.

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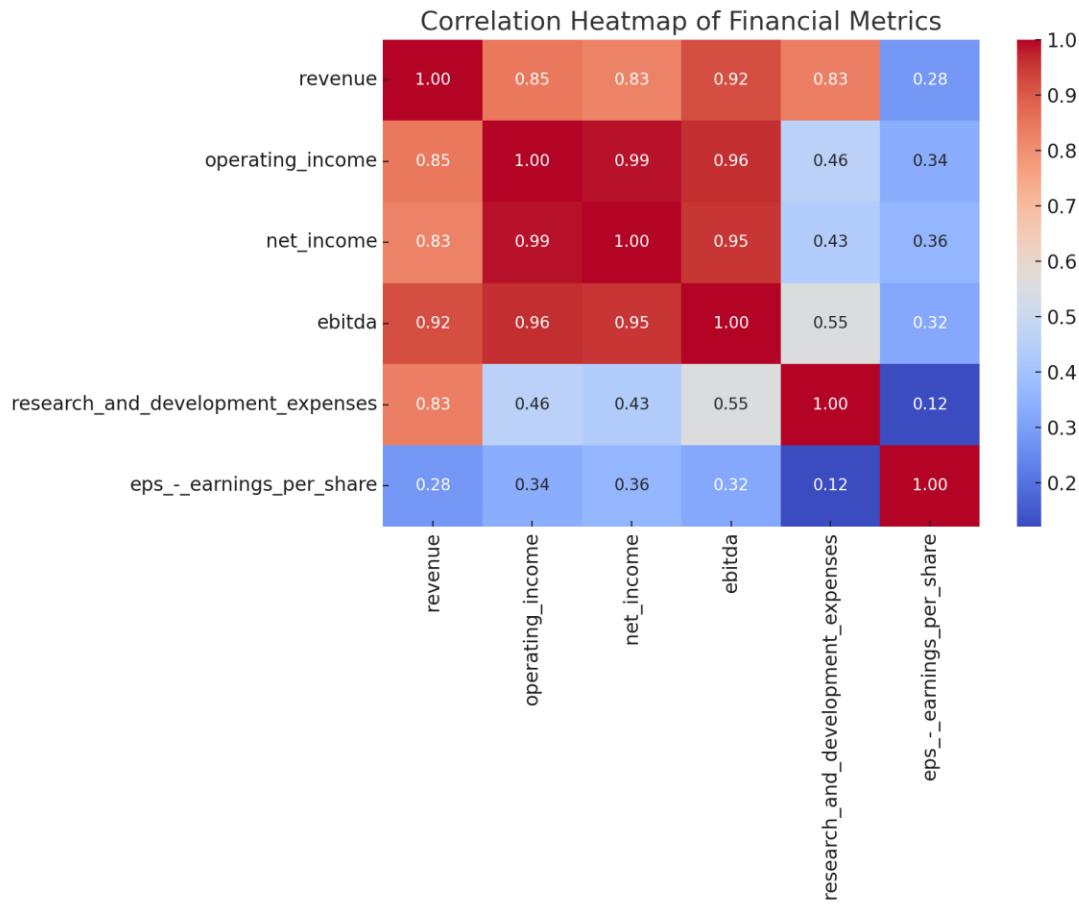
⌚ Forecasting Financial Performance

Companies with steady growth in EPS and EBITDA are forecasted to perform better in future. Trend lines suggest NVIDIA's continued dominance.

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🤝 Business Insights and Advice

AI adoption had a clear impact on performance. Companies with strong R&D investment and innovative products showed higher financial gains.



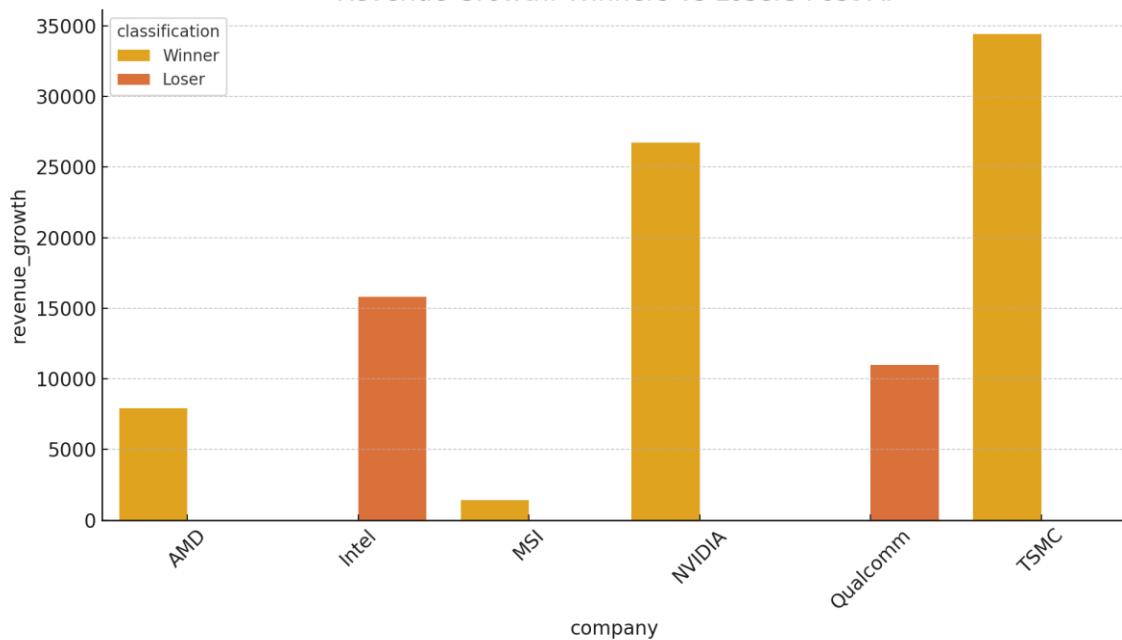
The correlation heatmap shows that revenue, EPS, EBITDA, and R&D are closely linked. Companies that invested more in R&D also showed better earnings and profitability. NVIDIA and AMD, for example, benefited most from this pattern, reinforcing the importance of strategic innovation.

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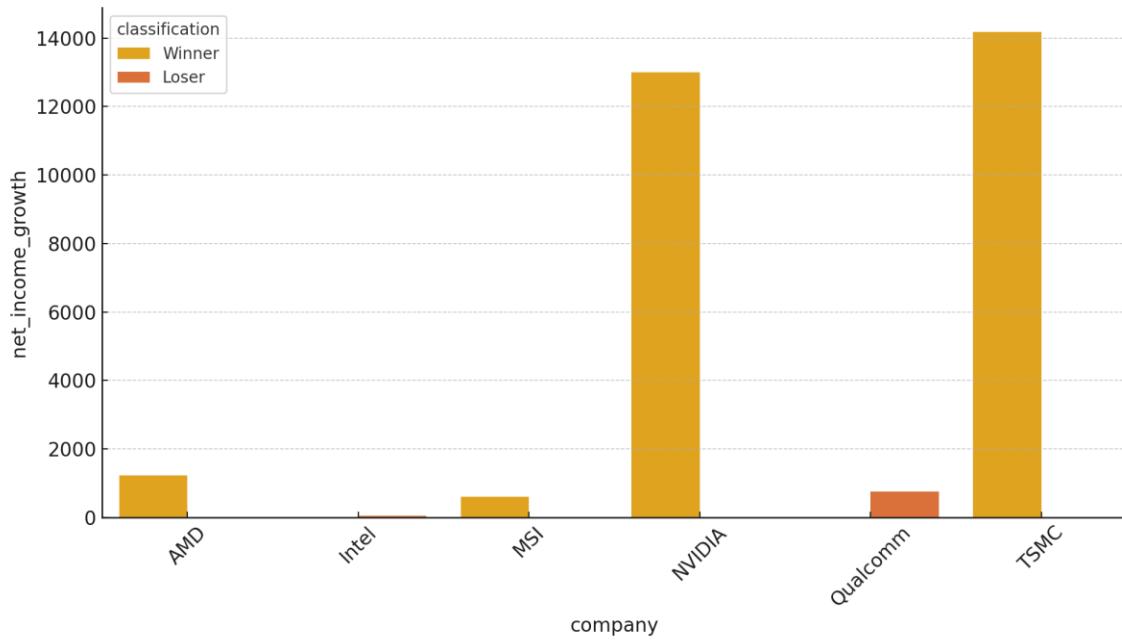
AI Boom Analysis: Winners vs Losers

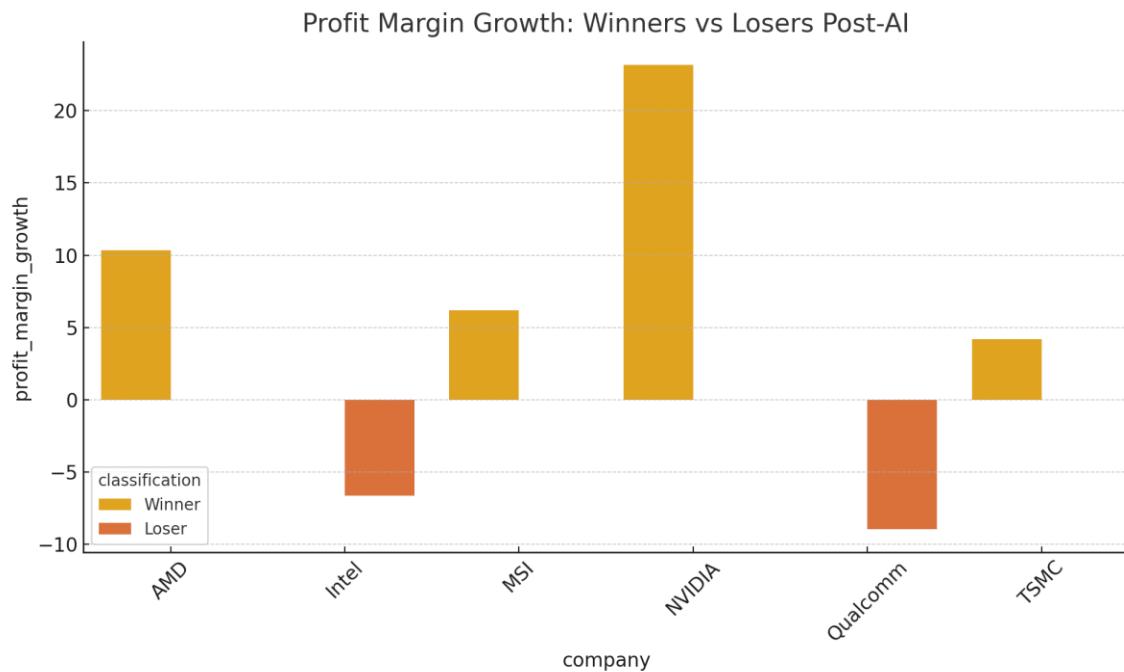
Companies were evaluated based on revenue, net income, and profit margin growth from Pre-AI to Post-AI periods. Those showing consistent improvement across all metrics were classified as Winners, while others were classified as Losers.

Revenue Growth: Winners vs Losers Post-AI



Net Income Growth: Winners vs Losers Post-AI





Top Winners: NVIDIA, TSMC, AMD

Top Losers: Intel, Qualcomm

NVIDIA led the pack with high R&D spending, leading to massive revenue and profit growth. TSMC maintained consistent margin increases, while AMD showed strong EPS and income gains. Intel and Qualcomm, however, saw reduced margins and flatter growth trajectories.

⌚ Full Company Analysis - NVIDIA

NVIDIA shows tremendous growth across revenue, net income, and EPS since 2016, making it a strong candidate for continued investment. R&D spending has translated directly into financial performance. Classification: Winner.