



## **Final Report On**

**“Evaluation of Financial Metrics in German Industrial  
Manufacturing Companies: Analyzing Key Financial Trends  
and Challenges”**

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# Title

***“Evaluation of Financial Metrics in German Industrial Manufacturing Companies: Analyzing Key Financial Trends and Challenges”***

## Table of Contents

<b>Abstract.....</b>	<b>1</b>
<b>Introduction.....</b>	<b>2</b>
<b>Key Challenges.....</b>	<b>3</b>
<b>Data Availability and Access: .....</b>	<b>3</b>
<b>Complex Accounting Practices: .....</b>	<b>3</b>
<b>Economic and Industrial Factors: .....</b>	<b>3</b>
<b>Limitations of Financial Statements:.....</b>	<b>3</b>
<b>Time Constraints:.....</b>	<b>4</b>
<b>Company-Specific Factors: .....</b>	<b>4</b>
<b>External Influences on Financial Metrics:.....</b>	<b>4</b>
<b>Interpretation and Analysis: .....</b>	<b>4</b>
<b>Technological and Digital Transformation: .....</b>	<b>4</b>
<b>Data and Methodology .....</b>	<b>5</b>
<b>Data: .....</b>	<b>5</b>
<b>Methodology:.....</b>	<b>5</b>
<b>Data Analysis and Results .....</b>	<b>5</b>
<b>Question no.1 .....</b>	<b>5</b>
<b>Question no.2 .....</b>	<b>6</b>
<b>Question no.3 .....</b>	<b>10</b>
<b>Figure 03 .....</b>	<b>12</b>
<b>Question no.4.....</b>	<b>13</b>
<b>Question no.5.....</b>	<b>14</b>
<b>Question no.6.....</b>	<b>15</b>
<b>Question no.7.....</b>	<b>16</b>
<b>Question no.8.....</b>	<b>16</b>
<b>Question no.9.....</b>	<b>17</b>
<b>Question no.10.....</b>	<b>18</b>
<b>Conclusion .....</b>	<b>19</b>
<b>References.....</b>	<b>20</b>

## **Abstract**

This study evaluates the financial performance of German industrial manufacturing companies by analyzing key financial trends and challenges. Utilizing financial metrics such as profitability, liquidity, solvency, and operational efficiency, the research examines how these firms navigate market dynamics and economic fluctuations. The analysis is based on financial data spanning from 2017 to 2024, sourced from public reports and industry databases. Key challenges identified include data availability, complex accounting practices, and external economic influences. The findings highlight that while German manufacturing firms exhibit strong revenue generation and efficiency, they face challenges related to fluctuating profit margins and regulatory pressures. The study underscores the significance of financial analysis in strategic decision-making, offering insights for investors, policymakers, and corporate executives. Additionally, the research emphasizes the role of technological advancements and digital transformation in shaping financial outcomes. The results indicate that a comprehensive understanding of financial metrics can help stakeholders assess the resilience and long-term sustainability of industrial firms in a competitive global economy. Future research could extend this analysis by incorporating environmental, social, and governance (ESG) factors to evaluate sustainability initiatives and their financial implications.

## Introduction

Germany's manufacturing industry, which is well-known for its high productivity, technical innovation, and worldwide competitiveness, is one of the most important sectors of the national economy. Investors, legislators, and corporate executives must comprehend the financial performance of German manufacturing firms in order to evaluate operational effectiveness, profitability, and long-term viability. The purpose of this study is to examine the financial performance of a particular German manufacturing company, with an emphasis on the company's growth trends, financial stability, and difficulties in relation to the worldwide market.

Financial statements, key performance indicators (KPIs), and ratio analysis will all be used in the study to assess important factors like operational efficiency, profitability, liquidity, and solvency. In order to make strategic decisions for the company's future growth, the research will compare financial performance over a given time period in order to find trends, strengths, and weaknesses. Furthermore, the research will shed light on the ways in which external factors—like market rivalry, regulatory changes, and worldwide economic conditions—affect the company's financial performance. This analysis will broadly examine financial aspects such as revenue trends, cost structures, debt levels, and profit margins of several leading German industrial firms. The objective is to identify patterns and gain insights into their operational effectiveness and strategic positioning. The broader implications of these findings will help assess how these companies contribute to the strength of the industrial sector, their resilience in changing market conditions, and their capacity for long-term growth and competitiveness.

Analyzing financial information is essential to comprehending a company's success, stability, and room for expansion, especially in the cutthroat industrial sector. Germany offers a compelling backdrop for this kind of analysis because of its robust industrial foundation and position as a worldwide market leader. Industrial businesses in this area use cutting-edge technology, creativity, and effective manufacturing techniques to propel the European economy. Through this research, the objective is to deliver valuable conclusions that can guide stakeholders in making informed decisions and contribute to broader discussions on the financial strategies of German manufacturing firms in a dynamic and competitive global economy.

## **Key Challenges**

### **Data Availability and Access:**

One of the most significant challenges in this research is gaining access to accurate and comprehensive financial data. German manufacturing companies, particularly publicly traded ones, disclose their financial information in annual reports and regulatory filings. However, private companies may not disclose detailed financial statements or other critical performance metrics. Additionally, some firms may have financial data that is too general, making it difficult to conduct a granular analysis. Ensuring that the data is up-to-date, reliable, and consistent is another hurdle.

### **Complex Accounting Practices:**

Different manufacturing companies may follow varying accounting principles, even within Germany. While German companies adhere to International Financial Reporting Standards (IFRS) or the German Generally Accepted Accounting Principles (HGB), there may still be differences in how certain financial metrics are calculated or reported. This can create challenges in comparing financial data across different time periods, industries, or companies. Differences in depreciation methods, inventory valuation, or recognition of revenues can complicate the analysis.

### **Economic and Industrial Factors:**

The performance of a German manufacturing company is influenced by several macroeconomic and industry-specific factors, such as fluctuations in global demand, supply chain disruptions, labour costs, and technological advancements. Isolating the direct impact of these factors on the financial performance of a single company is challenging, especially when external factors like geopolitical tensions, inflation, or trade policies (e.g., Brexit, US-China trade war) also play a role. Separating the effects of these externalities from the company's own operational performance is a complex task.

### **Limitations of Financial Statements:**

While financial statements provide a snapshot of a company's financial health, they do not capture non-financial elements such as customer satisfaction, employee productivity, or brand reputation, which can significantly influence long-term success. Relying solely on quantitative data without considering qualitative factors can provide an incomplete picture of the company's overall performance.

### **Time Constraints:**

Given the vast amount of data and complex variables involved in a comprehensive financial analysis, time constraints can be a significant challenge. The research requires deep analysis of historical data, industry trends, and macroeconomic factors. However, limited time for data collection, analysis, and report writing may limit the scope of the project, reducing its ability to fully capture all the influencing factors.

### **Company-Specific Factors:**

- **Diverse Business Models:** Industrial companies often have varying operational scopes, product portfolios, and revenue streams, making it challenging to establish uniform benchmarks.
- **Mergers and Acquisitions:** Recent M&A activity can distort financial metrics, especially if integration costs or one-time events significantly impact results.

### **External Influences on Financial Metrics:**

- **Macroeconomic Influences:** Economic downturns, inflation, or currency exchange fluctuations can affect profitability and liquidity, requiring adjustments to account for such externalities.
- **Energy and Environmental Factors:** German industrial firms face pressure to meet strict environmental regulations and transition to sustainable energy, which can affect costs and long-term investment strategies.

### **Interpretation and Analysis:**

- **Complex Financial Structures:** The financial data of large industrial firms may include subsidiaries and joint ventures, making it difficult to isolate core business performance.
- **Qualitative Factors:** Metrics alone do not capture qualitative aspects such as management competence, innovation capacity, or market reputation, which are also critical to financial success.

### **Technological and Digital Transformation:**

- **Adoption of Digital Technologies:** Companies at different stages of adopting Industry 4.0 technologies may show varying financial impacts, which are not always immediately apparent in standard metrics.
- **Cyber-security Risks:** Growing reliance on digital systems increases exposure to cyber-security threats, which can lead to unforeseen financial liabilities.

Addressing these challenges requires a careful selection of financial metrics, an understanding of the broader context, and the use of advanced analytical tools. Combining quantitative analysis with qualitative insights can help overcome these hurdles and provide a well-rounded evaluation of the financial performance of German industrial companies.

## Data and Methodology

### Data:

Data for this analysis has been collected from Kaggle. This data shows quarterly financial performance like revenue, Net income, Liability, ROA, ROE, Assets, Equity, NIM, Debt Ratio and Debt to Equity for some German manufacturing firms. It is a panel data contain a period from 2017 to 2024.

### Methodology:

To analysis the performance of industry and company a question and answer method applied. 10 question maiden and try to solve the question. For this purpose several software used. Some of them like MS word, MS power point, MS excel, Google docs, Chatgpt, etc.

## Data Analysis and Results

**Question no.1: What is the average revenue and average net income of Volkswagen, Audi, Evoink and Continental AG for 2023?**

### Answer:

To find the Average we used average function for targeted company's column for selected time period by using pivot table

Table 01

Row Labels	Average of Revenue	Average of Net Income
Audi AG	12428305368	1137754225
Continental AG	12662499403	1300889329
Evoink Industries	12416678254	1224158283
Volkswagen AG	12428305368	1335629413
<b>Grand Total</b>	<b>12483947098</b>	<b>1249607812</b>

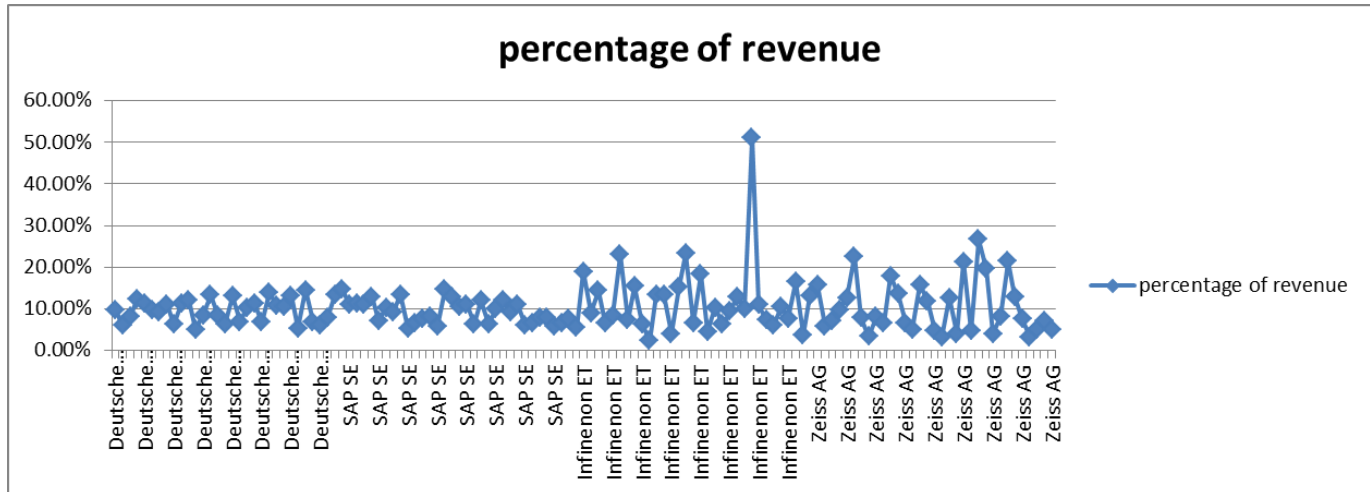


**Question no.2: Show the percentage of revenue to net income for 'Deutsche Telekom AG', 'Zeiss AG' and 'SAP SE' for 2017 to 2024.**

**Answer:**

For this question we separate the target company and their selected time period data like revenue and net income, then used percentage formula to find the answer:

Figure 01



This is the Graphical representation of the percentage of revenue from pivot graph.

Company	Period	Revenue	Net Income	percentage of revenue
Deutsche Telekom AG	3/31/2017	13951553720	1348710564	9.67%
Deutsche Telekom AG	6/30/2017	15409119271	924345905.8	6.00%
Deutsche Telekom AG	9/30/2017	14110556301	1163491999	8.25%
Deutsche Telekom AG	12/31/2017	11505351408	1425682028	12.39%
Deutsche Telekom AG	3/31/2018	17427808963	1967928248	11.29%
Deutsche Telekom AG	6/30/2018	10561657912	1025524147	9.71%
Deutsche Telekom AG	9/30/2018	10796012246	986280250.6	9.14%
Deutsche Telekom AG	12/31/2018	15273880507	1698666925	11.12%
Deutsche Telekom AG	3/31/2019	17933328881	1112803764	6.21%
Deutsche Telekom AG	6/30/2019	9246129285	1035650167	11.20%
Deutsche Telekom AG	9/30/2019	11461718687	1380378045	12.04%
Deutsche Telekom AG	12/31/2019	15796654133	805016265.8	5.10%
Deutsche Telekom AG	3/31/2020	17673360637	1501884164	8.50%
Deutsche Telekom AG	6/30/2020	16609605942	2209253956	13.30%
Deutsche Telekom AG	9/30/2020	15589999588	1310559971	8.41%
Deutsche Telekom AG	12/31/2020	19614896783	1231038198	6.28%
Deutsche Telekom AG	3/31/2021	6356573780	831921707.3	13.09%
Deutsche Telekom AG	6/30/2021	5509568002	378951538.1	6.88%
Deutsche Telekom AG	9/30/2021	14468035363	1480956904	10.24%
Deutsche Telekom AG	12/31/2021	18588737724	2116759905	11.39%
Deutsche Telekom AG	3/31/2022	6523953565	440649540.1	6.75%
Deutsche Telekom AG	6/30/2022	8444063288	1187007039	14.06%
Deutsche Telekom AG	9/30/2022	14873007184	1613587509	10.85%
Deutsche Telekom AG	12/31/2022	9420241101	990420474.4	10.51%
Deutsche Telekom AG	3/31/2023	10942719196	1439735669	13.16%
Deutsche Telekom AG	6/30/2023	10399408221	561732001.5	5.40%
Deutsche Telekom AG	9/30/2023	5149849693	750613275.1	14.58%
Deutsche Telekom AG	12/31/2023	12752580163	884167446.6	6.93%
Deutsche Telekom AG	3/31/2024	16377852382	1007117429	6.15%
Deutsche Telekom AG	6/30/2024	15923641671	1238976660	7.78%
Deutsche Telekom AG	9/30/2024	6531276814	872767531.7	13.36%
Deutsche Telekom AG	12/31/2024	19139621006	2834016899	14.81%
SAP SE	3/31/2017	6568715630	719090971.2	10.95%
SAP SE	6/30/2017	6644029236	744873003.7	11.21%
SAP SE	9/30/2017	18227487487	1997618536	10.96%
SAP SE	12/31/2017	17560385805	2276360916	12.96%
SAP SE	3/31/2018	19774628627	1421900578	7.19%
SAP SE	6/30/2018	5282345417	541864195.9	10.26%
SAP SE	9/30/2018	8133295785	750601103.2	9.23%
SAP SE	12/31/2018	10184334320	1365996842	13.41%
SAP SE	3/31/2019	18300753695	989934361.3	5.41%
SAP SE	6/30/2019	13878289168	932271478.5	6.72%
SAP SE	9/30/2019	13973147193	1079900966	7.73%
SAP SE	12/31/2019	8046709255	662165230.7	8.23%
SAP SE	3/31/2020	9236017256	529982877.3	5.74%
SAP SE	6/30/2020	6413035553	941195826.2	14.68%
SAP SE	9/30/2020	15986728775	2071404633	12.96%
SAP SE	12/31/2020	9687560178	1027662516	10.61%
SAP SE	3/31/2021	6588278496	731216298.1	11.10%

SAP SE	6/30/2021	11199189899	719949867.5	6.43%
SAP SE	9/30/2021	9000667547	1079598533	11.99%
SAP SE	12/31/2021	12465229611	800983300.4	6.43%
SAP SE	3/31/2022	14896500404	1471513321	9.88%
SAP SE	6/30/2022	14799049316	1792143630	12.11%
SAP SE	9/30/2022	18713092617	1701020228	9.09%
SAP SE	12/31/2022	16805465254	1837934274	10.94%
SAP SE	3/31/2023	14505450248	863046066.9	5.95%
SAP SE	6/30/2023	10806122549	698788622.5	6.47%
SAP SE	9/30/2023	17167661800	1338393789	7.80%
SAP SE	12/31/2023	13414872686	1069408471	7.97%
SAP SE	3/31/2024	13351789947	761306516.2	5.70%
SAP SE	6/30/2024	8144018454	529257365.4	6.50%
SAP SE	9/30/2024	10824151396	830279996.2	7.67%
SAP SE	12/31/2024	16754700510	923006607.2	5.51%
Infinenon ET	3/31/2017	5883512064	1112803764	18.91%
Infinenon ET	6/30/2017	11523447744	1035650167	8.99%
Infinenon ET	9/30/2017	9631040999	1380378045	14.33%
Infinenon ET	12/31/2017	12119018742	805016265.8	6.64%
Infinenon ET	3/31/2018	17555661518	1501884164	8.55%
Infinenon ET	6/30/2018	9586227654	2209253956	23.05%
Infinenon ET	9/30/2018	17963578177	1310559971	7.30%
Infinenon ET	12/31/2018	7955302121	1231038198	15.47%
Infinenon ET	3/31/2019	12923331618	831921707.3	6.44%
Infinenon ET	6/30/2019	16367236342	378951538.1	2.32%
Infinenon ET	9/30/2019	10956259576	1480956904	13.52%
Infinenon ET	12/31/2019	15806884536	2116759905	13.39%
Infinenon ET	3/31/2020	10779438774	440649540.1	4.09%
Infinenon ET	6/30/2020	7764718758	1187007039	15.29%
Infinenon ET	9/30/2020	6912391322	1613587509	23.34%
Infinenon ET	12/31/2020	14994514428	990420474.4	6.61%
Infinenon ET	3/31/2021	7884337935	1439735669	18.26%
Infinenon ET	6/30/2021	12452147525	561732001.5	4.51%
Infinenon ET	9/30/2021	7245971264	750613275.1	10.36%
Infinenon ET	12/31/2021	14047287806	884167446.6	6.29%
Infinenon ET	3/31/2022	10774855240	1007117429	9.35%
Infinenon ET	6/30/2022	9602996001	1238976660	12.90%
Infinenon ET	9/30/2022	8621455856	872767531.7	10.12%
Infinenon ET	12/31/2022	5536870879	2834016899	51.18%
Infinenon ET	3/31/2023	8880891013	980884827.4	11.04%
Infinenon ET	6/30/2023	16477351074	1197653535	7.27%
Infinenon ET	9/30/2023	12920254885	793777927.1	6.14%
Infinenon ET	12/31/2023	16438581863	1743084807	10.60%
Infinenon ET	3/31/2024	12668426079	983139976.9	7.76%
Infinenon ET	6/30/2024	16413767338	2711256442	16.52%
Infinenon ET	9/30/2024	15911174550	599573691.4	3.77%
Infinenon ET	12/31/2024	13056746207	1726421482	13.22%
Zeiss AG	3/31/2017	6974057939	1097018126	15.73%
Zeiss AG	6/30/2017	11003803134	639354361.8	5.81%
Zeiss AG	9/30/2017	17552142118	1253796606	7.14%

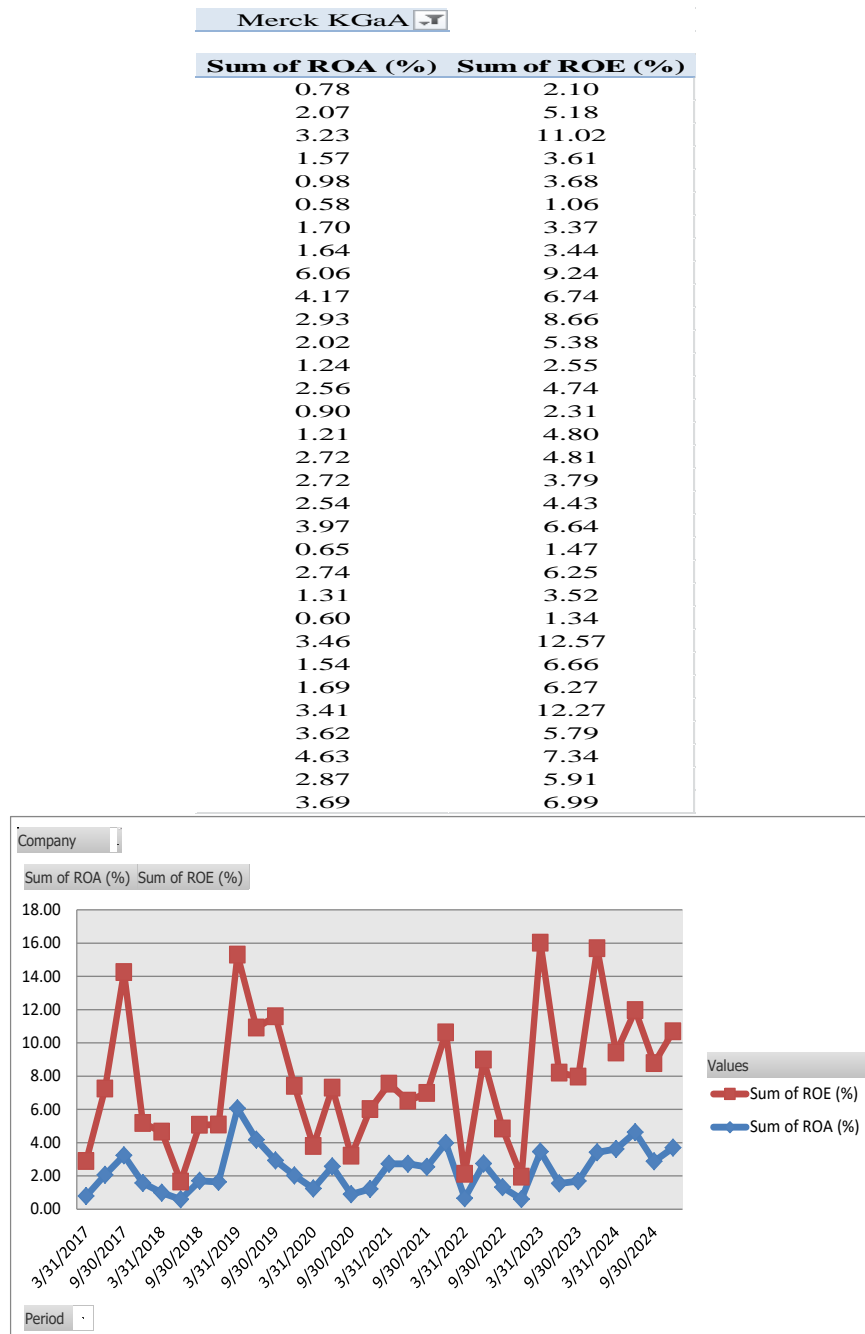
<b>Zeiss AG</b>	<b>12/31/2017</b>	<b>11760953647</b>	<b>1145842379</b>	<b>9.74%</b>
<b>Zeiss AG</b>	<b>3/31/2018</b>	<b>9318197850</b>	<b>1179606125</b>	<b>12.66%</b>
<b>Zeiss AG</b>	<b>6/30/2018</b>	<b>7868422908</b>	<b>1786382228</b>	<b>22.70%</b>
<b>Zeiss AG</b>	<b>9/30/2018</b>	<b>17415152986</b>	<b>1375991001</b>	<b>7.90%</b>
<b>Zeiss AG</b>	<b>12/31/2018</b>	<b>14241334382</b>	<b>482111535</b>	<b>3.39%</b>
<b>Zeiss AG</b>	<b>3/31/2019</b>	<b>19217681417</b>	<b>1559286116</b>	<b>8.11%</b>
<b>Zeiss AG</b>	<b>6/30/2019</b>	<b>16209619277</b>	<b>1066739844</b>	<b>6.58%</b>
<b>Zeiss AG</b>	<b>9/30/2019</b>	<b>12097020632</b>	<b>2170220695</b>	<b>17.94%</b>
<b>Zeiss AG</b>	<b>12/31/2019</b>	<b>17666094987</b>	<b>2406144332</b>	<b>13.62%</b>
<b>Zeiss AG</b>	<b>3/31/2020</b>	<b>15236467952</b>	<b>1013271417</b>	<b>6.65%</b>
<b>Zeiss AG</b>	<b>6/30/2020</b>	<b>17048403140</b>	<b>877145067</b>	<b>5.15%</b>
<b>Zeiss AG</b>	<b>9/30/2020</b>	<b>8081970522</b>	<b>1278461027</b>	<b>15.82%</b>
<b>Zeiss AG</b>	<b>12/31/2020</b>	<b>5897253747</b>	<b>704852259.1</b>	<b>11.95%</b>
<b>Zeiss AG</b>	<b>3/31/2021</b>	<b>14786170161</b>	<b>691428622</b>	<b>4.68%</b>
<b>Zeiss AG</b>	<b>6/30/2021</b>	<b>14025754117</b>	<b>440969634.7</b>	<b>3.14%</b>
<b>Zeiss AG</b>	<b>9/30/2021</b>	<b>14686380695</b>	<b>1856279741</b>	<b>12.64%</b>
<b>Zeiss AG</b>	<b>12/31/2021</b>	<b>12917187369</b>	<b>527374446.2</b>	<b>4.08%</b>
<b>Zeiss AG</b>	<b>3/31/2022</b>	<b>7570645554</b>	<b>1618745275</b>	<b>21.38%</b>
<b>Zeiss AG</b>	<b>6/30/2022</b>	<b>19175705351</b>	<b>888471372.7</b>	<b>4.63%</b>
<b>Zeiss AG</b>	<b>9/30/2022</b>	<b>7888146905</b>	<b>2101927829</b>	<b>26.65%</b>
<b>Zeiss AG</b>	<b>12/31/2022</b>	<b>7610452133</b>	<b>1492220093</b>	<b>19.61%</b>
<b>Zeiss AG</b>	<b>3/31/2023</b>	<b>18085416710</b>	<b>719090971.2</b>	<b>3.98%</b>
<b>Zeiss AG</b>	<b>6/30/2023</b>	<b>9146296754</b>	<b>744873003.7</b>	<b>8.14%</b>
<b>Zeiss AG</b>	<b>9/30/2023</b>	<b>9297896247</b>	<b>1997618536</b>	<b>21.48%</b>
<b>Zeiss AG</b>	<b>12/31/2023</b>	<b>17637490503</b>	<b>2276360916</b>	<b>12.91%</b>
<b>Zeiss AG</b>	<b>3/31/2024</b>	<b>18818295502</b>	<b>1421900578</b>	<b>7.56%</b>
<b>Zeiss AG</b>	<b>6/30/2024</b>	<b>16561793827</b>	<b>541864195.9</b>	<b>3.27%</b>
<b>Zeiss AG</b>	<b>9/30/2024</b>	<b>15036344926</b>	<b>750601103.2</b>	<b>4.99%</b>
<b>Zeiss AG</b>	<b>12/31/2024</b>	<b>18915504026</b>	<b>1365996842</b>	<b>7.22%</b>
<b>Zeiss AG</b>	<b>3/31/2017</b>	<b>19695988685</b>	<b>989934361.3</b>	<b>5.03%</b>

**Question no.3: Graphically show the 'Merck KGaA' ROA and ROE trend as well as 'Thyssenkrupp' Debt Ratio and Debt to Equity Ratio for 2017 to 2024.**


**Answer:**

Initially, we have answered the question in two segment and used pivot table to separate wanted data for graph. The used graph tool to show ROA and ROE trend

a) Table 02 and Figure 02



b) 'Thyssenkrupp' Debt Ratio and Debt to Equity Ratio for 2017 to 2024. Table 03

Company		Thyssenkrupp 
Row Labels ▼	Sum of Debt ratio	Sum of Debt to Equity
3/31/2017	0.477418373	0.766890253
6/30/2017	0.39381332	0.926705457
9/30/2017	0.891539689	1.829902962
12/31/2017	0.472961551	1.159705254
3/31/2018	0.662323135	1.315985094
6/30/2018	0.684013463	1.052327172
9/30/2018	0.710387043	0.976545413
12/31/2018	0.660927906	1.774691283
3/31/2019	0.13234095	0.261572262
6/30/2019	0.328738324	0.737756496
9/30/2019	0.380623657	0.607085848
12/31/2019	0.998767303	1.315178292
3/31/2020	0.499190841	0.882666955
6/30/2020	0.404448576	0.84177187
9/30/2020	0.848573544	3.198529341
12/31/2020	0.407057128	0.786292022
3/31/2021	0.382706061	0.565129913
6/30/2021	0.309572826	0.945444583
9/30/2021	0.439422054	0.755458056
12/31/2021	0.267329041	0.351811424
3/31/2022	0.598668579	0.86728473
6/30/2022	0.565175404	1.796477011
9/30/2022	0.405303286	0.690016798
12/31/2022	1.428582518	2.301981128
3/31/2023	0.866783364	2.710120966
6/30/2023	0.634249302	1.446045285
9/30/2023	0.884933946	1.283270827
12/31/2023	0.824141135	1.743958421
3/31/2024	0.354378527	0.784368946
6/30/2024	0.482893773	1.739819771
9/30/2024	0.619443743	0.9033508
12/31/2024	0.740105125	1.321082213
<b>Grand Total</b>	<b>18.75681348</b>	<b>38.63922685</b>

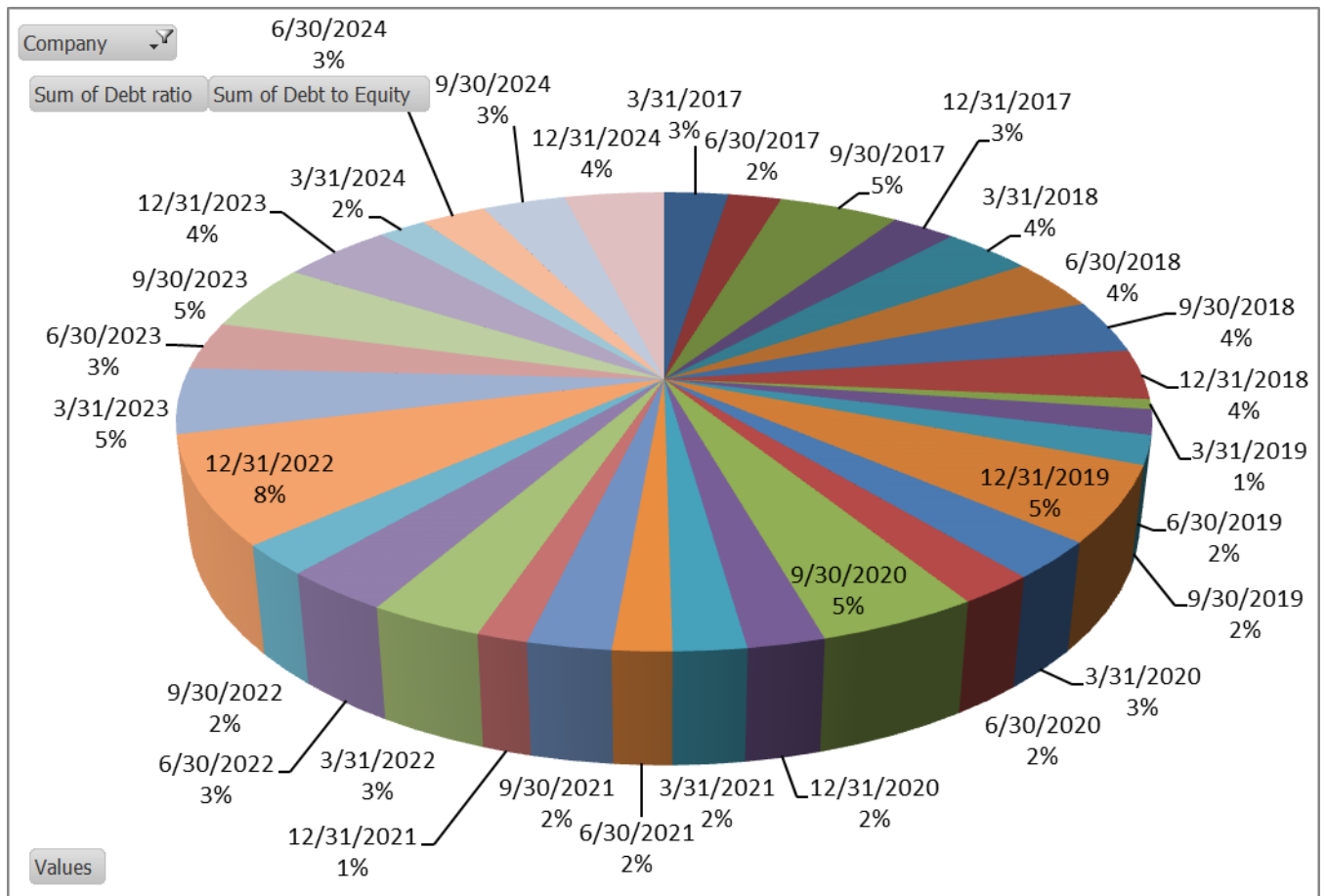


Figure 03

**Question no.4: Which company has the highest asset and lowest liabilities in last quarter of 2024?**

**Answer:** Used pivot table. Table 04

Row Labels	Max of Assets	Min of Liabilities
Allianz SE	41830939577	23852825717
Audi AG	83248031989	19407851173
BASF SE	88221659272	43259483243
Bayer AG	80121015584	34398569588
BMW AG	57427208762	29243056689
Bosch	79618978403	43259483243
Continental AG	83248031989	43381572844
Daimler AG	79618978403	48085311015
Deutsche Bank AG	76222443508	36451064643
Deutsche Telekom AG	41643539977	18313729720
Diehl Group	57427208762	29243056689
Evoink Industries	96053458782	33315961378
Henkel SE	41830939577	23852825717
Infineon ET	62560115073	41539802392
Merck KGaA	65357495789	30820597362
MTU AE	80121015584	42708053991
Porsche AG	62560115073	33698449632
Rheinmetall	76222443508	35514608139
SAP SE	96053458782	49206362475
Siemens AG	83248031989	43381572844
Thyssenkrupp	41643539977	30820597362
Voith	79618978403	25112465464
Volkswagen AG	32642980976	14632441063
Zeiss AG	65357495789	44932510908
<b>Grand Total</b>	<b>96053458782</b>	<b>14632441063</b>





**Question no.5:** What is the revenue and net income margin of all company for 2nd quarter 2023 and 2024?

**Answer:** Used Pivot Table Table 05

Row Labels	Sum of Revenue	Sum of NIM
<b>Allianz SE</b>	<b>18378054257.00</b>	<b>0.147282534</b>
6/30/2023	5318114486.00	0.081062746
6/30/2024	13059939771.00	0.066219788
<b>Audi AG</b>	<b>25805571576.00</b>	<b>0.201338893</b>
6/30/2023	12729418594.00	0.127679585
6/30/2024	13076152982.00	0.073659308
<b>BASF SE</b>	<b>25923097192.00</b>	<b>0.190432031</b>
6/30/2023	14800185962.00	0.087527838
6/30/2024	11122911230.00	0.102904193
<b>Bayer AG</b>	<b>17408402300.00</b>	<b>0.275788555</b>
6/30/2023	10038837028.00	0.131390859
6/30/2024	7369565272.00	0.144397696
<b>BMW AG</b>	<b>32296765213.00</b>	<b>0.228448873</b>
6/30/2023	14368618381.00	0.106734471
6/30/2024	17928146832.00	0.121714401
<b>Bosch</b>	<b>25923097192.00</b>	<b>0.109672464</b>
6/30/2023	14800185962.00	0.029794871
6/30/2024	11122911230.00	0.079877593
<b>Continental AG</b>	<b>23345727248.00</b>	<b>0.260918219</b>
6/30/2023	14327627383.00	0.128165863
6/30/2024	9018099865.00	0.132752356
<b>Daimler AG</b>	<b>16574644493.00</b>	<b>0.155808506</b>
6/30/2023	6677625789.00	0.066036889
6/30/2024	9897018704.00	0.089771617
<b>Deutsche Bank AG</b>	<b>16435283595.00</b>	<b>0.191227924</b>
6/30/2023	7129233268.00	0.11280068
6/30/2024	9306050327.00	0.078427244
<b>Deutsche Telekom AG</b>	<b>26323049892.00</b>	<b>0.131823135</b>
6/30/2023	10399408221.00	0.054015766
6/30/2024	15923641671.00	0.077807369
<b>Diehl Group</b>	<b>32296765213.00</b>	<b>0.154000194</b>
6/30/2023	14368618381.00	0.090156774
6/30/2024	17928146832.00	0.06384342
<b>Evoink Industries</b>	<b>18950141003.00</b>	<b>0.192105167</b>
6/30/2023	10806122549.00	0.048718811
6/30/2024	8144018454.00	0.143386357
<b>Henkel SE</b>	<b>30719427668.00</b>	<b>0.215462891</b>
6/30/2023	12729885504.00	0.130612997
6/30/2024	17989542164.00	0.084849894
<b>Infinenon ET</b>	<b>32891118412.00</b>	<b>0.237866684</b>
6/30/2023	16477351074.00	0.072684834
6/30/2024	16413767338.00	0.165181849
<b>Merck KGaA</b>	<b>25708090581.00</b>	<b>0.242022871</b>
6/30/2023	9146296754.00	0.094941344
6/30/2024	16561793827.00	0.147081528
<b>MTU AE</b>	<b>17408402300.00</b>	<b>0.249712841</b>
6/30/2023	10038837028.00	0.12720452
6/30/2024	7369565272.00	0.122508321
<b>Porsche AG</b>	<b>32891118412.00</b>	<b>0.139870737</b>
6/30/2023	16477351074.00	0.074428991
6/30/2024	16413767338.00	0.065441747
<b>Rheinmetall</b>	<b>16435283595.00</b>	<b>0.239855445</b>
6/30/2023	7129233268.00	0.129655725
6/30/2024	9306050327.00	0.110199721
<b>SAP SE</b>	<b>18950141003.00</b>	<b>0.129653241</b>
6/30/2023	10806122549.00	0.064665991
6/30/2024	8144018454.00	0.06498725
<b>Siemens AG</b>	<b>23345727248.00</b>	<b>0.220242513</b>
6/30/2023	14327627383.00	0.113437267
6/30/2024	9018099865.00	0.106805246
<b>Thyssenkrupp</b>	<b>26323049892.00</b>	<b>0.185385104</b>
6/30/2023	10399408221.00	0.117929077
6/30/2024	15923641671.00	0.067456027
<b>Voith</b>	<b>16574644493.00</b>	<b>0.416221092</b>
6/30/2023	6677625789.00	0.279392751
6/30/2024	9897018704.00	0.136828342
<b>Volkswagen AG</b>	<b>25805571576.00</b>	<b>0.247350189</b>
6/30/2023	12729418594.00	0.130617788
6/30/2024	13076152982.00	0.116732402
<b>Zeiss AG</b>	<b>25708090581.00</b>	<b>0.11415757</b>
6/30/2023	9146296754.00	0.081439847
6/30/2024	16561793827.00	0.032717724

**Question no.6: Compare net income and net income margin between BMW and Porsche for 2017 to 2024**

**Answer:** Table 06

Column Labels 						
Row Labels 	BMW AG		Porsche AG		Total Sum of Net Income	Total Sum of NIM
	Sum of Net Income	Sum of NIM	Sum of Net Income	Sum of NIM		
3/31/2017	1081539894	5.76%	440184439.5	7.48%	1521724334	13.25%
6/30/2017	526461438.3	5.16%	1069672005	9.28%	1596133443	14.44%
9/30/2017	1856672009	12.52%	1113020766	11.56%	2969692775	24.08%
12/31/2017	960184349.6	5.11%	894091080.3	7.38%	1854275430	12.48%
3/31/2018	743322627.7	10.13%	1335299860	7.61%	2078622488	17.74%
6/30/2018	1167741135	6.74%	1382170553	14.42%	2549911688	21.16%
9/30/2018	430192893.6	7.62%	2139702451	11.91%	2569895345	19.53%
12/31/2018	618883604.9	9.44%	939711762.4	11.81%	1558595367	21.25%
3/31/2019	1022601951	6.76%	1676027156	12.97%	2698629107	19.73%
6/30/2019	782523298.9	5.83%	1857704381	11.35%	2640227680	17.18%
9/30/2019	738019784.6	9.11%	738896491.2	6.74%	1476916276	15.85%
12/31/2019	1144565565	12.92%	845076735.9	5.35%	1989642301	18.27%
3/31/2020	1045458883	8.13%	1358943185	12.61%	2404402068	20.73%
6/30/2020	2732548048	13.72%	920211365.8	11.85%	3652759414	25.58%
9/30/2020	803442750.4	8.47%	945409918.5	13.68%	1748852669	22.15%
12/31/2020	962499322.1	13.87%	1118453310	7.46%	2080952632	21.33%
3/31/2021	742678238	8.82%	1152213820	14.61%	1894892058	23.44%
6/30/2021	1571388192	13.08%	908357933.3	7.29%	2479746125	20.38%
9/30/2021	1250503703	8.85%	1033867668	14.27%	2284371371	23.12%
12/31/2021	1436804767	7.84%	1489899027	10.61%	2926703794	18.45%
3/31/2022	1123917078	9.65%	975556879.2	9.05%	2099473957	18.70%
6/30/2022	1399147461	12.08%	1224040111	12.75%	2623187572	24.82%
9/30/2022	1614997271	8.60%	1229669587	14.26%	2844666858	22.86%
12/31/2022	1093800017	14.82%	298030924.1	5.38%	1391830941	20.20%
3/31/2023	2009563555	10.33%	668545569.7	7.53%	2678109125	17.86%
6/30/2023	1533626886	10.67%	1226392611	7.44%	2760019497	18.12%
9/30/2023	1804875257	14.18%	1147104411	8.88%	2951979668	23.06%
12/31/2023	602960048.5	7.12%	1419961878	8.64%	2022921927	15.76%
3/31/2024	2129654605	13.44%	744579528.3	5.88%	2874234133	19.31%
6/30/2024	2182113657	12.17%	1074145603	6.54%	3256259260	18.72%
9/30/2024	2639441820	14.67%	1241693861	7.80%	3881135681	22.48%
12/31/2024	707968936.5	11.51%	1500333956	11.49%	2208302893	23.00%
<b>Grand Total</b>	<b>40460099047</b>	<b>319.12%</b>	<b>36108968828</b>	<b>315.88%</b>	<b>76569067875</b>	<b>635.00%</b>

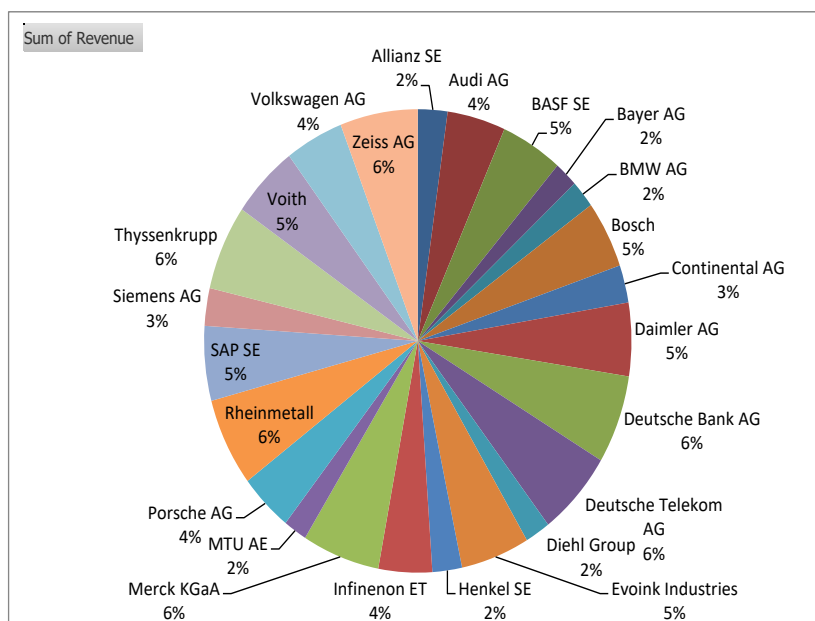
### Question no.7: What is the average ROA and average ROE for 2021

Answer: Table 07

Column Labels		Average of ROA (%)								Average of ROE (%)		Total Average of ROA (%)		Total Average of ROE (%)	
Row Labels		3/31/2021	6/30/2021	9/30/2021	12/31/2021	3/31/2021	6/30/2021	9/30/2021	12/31/2021						
Allianz SE		0.952273549	5.872462313	1.289693495	1.95855493	3.318158603	7.893783146	4.329135364	4.872164475			2.518246072		5.103310397	
Audi AG		3.554555808	1.525398166	4.359905925	2.302994196	4.911113383	5.343290763	7.671463098	6.298663447			2.935713524		6.056132673	
BASF SE		1.873642035	2.347132848	0.770194428	4.968541876	3.14982347	5.115213316	1.384304888	6.439124871			2.489877797		4.022116636	
Bayer AG		4.588555503	1.538103173	0.818216606	2.932682364	9.33416709	3.155698855	1.653793789	7.872745579			2.469389412		5.504101328	
BMW AG		1.47628905	4.326564081	2.077943587	1.950609154	5.314962029	8.011078402	4.796642602	3.55394994			2.457851468		5.419158243	
Bosch		2.901065359	1.414004428	3.449888154	3.086583128	4.957357767	3.972717483	4.561195527	5.732565224			2.712885267		4.805959	
Continental AG		4.821864073	1.527531277	2.838943601	5.987730765	7.0852608	5.642534845	5.66242894	13.12855248			3.794017429		7.879694267	
Daimler AG		2.901065359	1.414004428	3.449888154	3.086583128	14.38156209	3.047917184	11.02431133	6.277933363			2.712885267		8.682930992	
Deutsche Bank AG		1.674431233	0.501102064	0.902988313	1.396843544	2.176963241	0.980479945	1.785222349	2.421859412			1.118841289		1.841131237	
Deutsche Telekom AG		1.187084544	0.696633836	1.78292287	3.267252713	1.752930131	2.127540375	3.065215849	4.29978286			1.733473491		2.811367304	
Diehl Group		1.969393337	3.781762402	1.094474718	3.669205326	3.493381508	2.810063378	3.087650091	10.55731799			2.628708946		4.987103241	
Evoink Industries		2.851758218	0.466570555	3.771950288	3.320655125	3.626725141	0.909674311	6.596242484	7.295172124			2.602733547		4.606953515	
Henkel SE		2.071373153	2.749235552	1.984690906	2.480596806	7.217615834	3.695531467	6.662044601	6.170812697			2.321474104		5.93650115	
Infinenon ET		2.353410768	0.731430154	1.262322929	2.077396711	3.44156708	1.620338829	4.748589373	3.190825436			1.606140141		3.250330179	
Merck KGaA		2.722323518	2.723952986	2.541619392	3.970295613	4.814757986	3.785003473	4.430601873	6.64400246			2.989547877		4.918591448	
MTU AE		5.085420182	1.979812555	2.04648295	1.218529345	10.34490303	4.061946116	4.136387315	3.271125312			2.582561258		5.453590442	
Porsche AG		1.883423791	1.182771111	1.7386781	3.500594092	2.754270272	2.620195442	6.540535831	5.376818307			2.076366774		4.322954963	
Rheinmetall		1.126572491	1.409774146	1.130795561	0.852533387	1.464680575	2.758430622	2.235600925	1.478129756			1.129918896		1.984210469	
SAP SE		1.363232632	0.779185008	2.217591773	1.544303617	1.733691877	1.519179847	3.878039728	3.392692186			1.476078258		2.63090091	
Siemens AG		3.554555808	1.525398166	4.359905925	2.302994196	5.223074426	5.634655366	8.696071832	5.049488923			2.935713524		6.150822637	
Thyssenkrupp		1.644115312	1.669851703	1.244672485	2.299682939	2.427812983	5.099776577	2.139851304	3.026437852			1.71458061		3.173469679	
Voith		2.037678765	2.154379881	1.199941017	0.589302942	10.10146276	4.643812516	3.834478905	1.198608445			1.495325651		4.944590656	
Volkswagen AG		1.765271344	1.705958471	2.904762713	4.247245654	4.010187943	2.301374609	6.58512162	6.679450762			2.655809546		4.894033734	
Zeiss AG		1.120362621	0.734068367	2.168287736	1.225372338	1.981496629	1.020007076	3.779802647	2.050571953			1.312022766		2.207969576	
Grand Total		2.394988269	1.864878653	2.141948401	2.676545162	4.959080277	3.657093498	4.720197178	5.261616494			2.269590121		4.649496861	

### Question no.8: Show the market cap of all company in 12/31/2024. Table 8 and Figure 4

Row Labels	Sum of Revenue
Allianz SE	7203400075
Audi AG	14186610709
BASF SE	15113132584
Bayer AG	5728072323
BMW AG	6152045684
Bosch	15113132584
Continental AG	8451674463
Daimler AG	16456922307
Deutsche Bank AG	19852203756
Deutsche Telekom AG	19139621006
Diehl Group	6152045684
Evoink Industries	16754700510
Henkel SE	7203400075
Infinenon ET	13056746207
Merck KGaA	18915504026
MTU AE	5728072323
Porsche AG	13056746207
Rheinmetall	19852203756
SAP SE	16754700510
Siemens AG	8451674463
Thyssenkrupp	19139621006
Voith	16456922307
Volkswagen AG	14186610709
Zeiss AG	18915504026

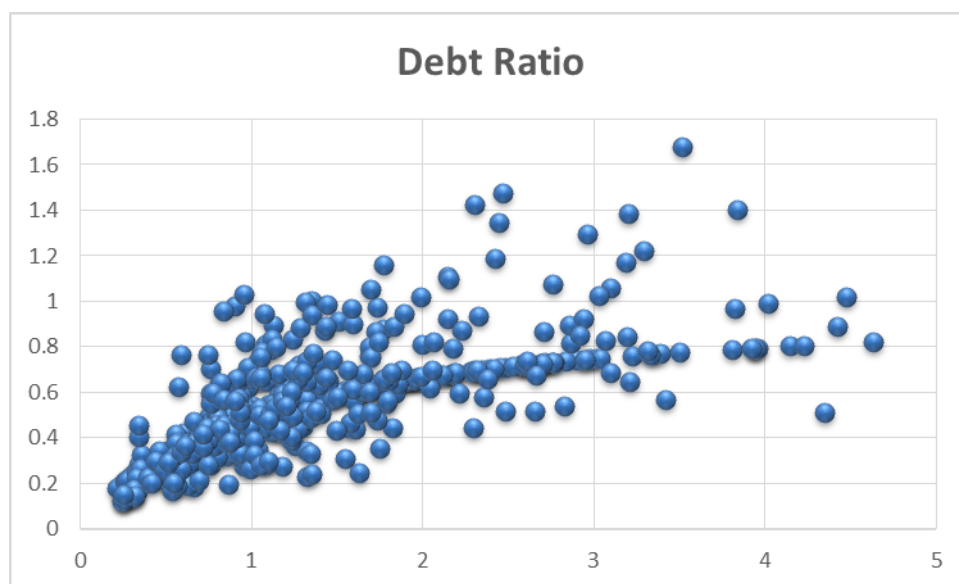


**Question no.9: Determine the correlation between 'Debt to equity' and 'debt ratio' as well as 'net income' and 'NIM' for all the companies**

**Answer:** Figure 05 and 06

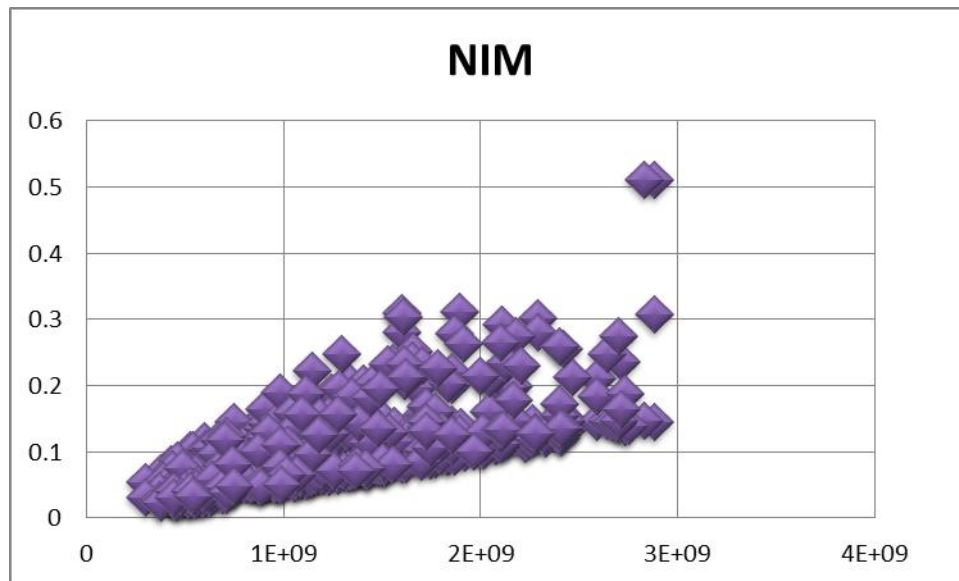
Correlation Between Debt to Equity and Debt Ratio	0.741917
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Formula: =CORREL (A2:A770, B2:B770)



Correlation Between Net Income and Net Income Margin	0.634363
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Formula: =CORREL (A2:A770, B2:B770)



**Question no.10: Calculate the Deutsche group total net income and total percentage of debt ratio for 2024**

**Answer:** Used pivot table. Table 09

Row Labels	Sum of Net Income	Sum of Debt ratio
<b>Deutsche Bank AG</b>	<b>7609639359</b>	<b>224.27%</b>
3/31/2024	2333015849	50.91%
6/30/2024	729847876.9	49.21%
9/30/2024	2323022170	76.32%
12/31/2024	2223753463	47.82%
<b>Deutsche Telekom AG</b>	<b>5952878520</b>	<b>202.47%</b>
3/31/2024	1007117429	54.82%
6/30/2024	1238976660	72.24%
9/30/2024	872767531.7	31.43%
12/31/2024	2834016899	43.98%
<b>Grand Total</b>	<b>13562517879</b>	<b>426.74%</b>

## Conclusion

The financial performance evaluation of selected German manufacturing companies reveals critical insights into the operational efficiency, profitability, and overall financial health of the industry. Through the analysis of key financial metrics such as liquidity ratios, profitability ratios, solvency ratios, and efficiency ratios, this study highlights the strengths and weaknesses of the selected companies within the competitive landscape. The evaluation of financial metrics is a vital process for understanding the performance, stability, and growth prospects of German industrial companies. These firms are central to Germany's economy, driving innovation, creating employment, and maintaining a significant presence in global markets. By analyzing key financial indicators such as profitability, liquidity, solvency, and efficiency, it becomes possible to assess not only their individual financial health but also the collective strength of the industrial sector.

Despite the robustness of Germany's industrial base, several challenges must be addressed in financial analysis. These include variations in reporting standards, external economic influences, sector-specific risks, and the need to interpret qualitative factors alongside quantitative metrics. Furthermore, evolving market dynamics, technological disruptions, and increasing regulatory pressures add layers of complexity to financial evaluation. A thorough analysis of these metrics offers insights into the adaptability and resilience of German industrial companies, their ability to navigate market challenges, and their capacity for long-term competitiveness. Such evaluations are essential for stakeholders—ranging from investors and policymakers to management teams—seeking to make informed decisions and foster sustainable growth.

The findings indicate that while German manufacturing companies demonstrate robust revenue generation and operational efficiency, certain challenges persist, such as fluctuating profit margins and exposure to external economic factors. The industry's resilience is supported by its innovative capacity, technological advancement, and strong export orientation, but the study underscores the need for continued focus on cost management and adaptability to global market trends. This evaluation also emphasizes the importance of strategic decision-making in sustaining financial stability. By leveraging their strengths and addressing identified gaps, these companies can enhance their competitive position and ensure long-term growth. Future research may extend this analysis by incorporating environmental, social, and governance (ESG) criteria to assess how sustainability initiatives impact financial performance in the German manufacturing sector. In conclusion, while challenges persist, the financial evaluation of German industrial companies provides a window into their strategic positioning and underscores their pivotal role in shaping the economic landscape, both domestically and globally. Addressing the complexities involved will enhance the depth and accuracy of such analyses, supporting better decision-making and contributing to the sustained success of Germany's industrial sector.

## References

**1. Excel Data From Kaggle website:**

<https://www.kaggle.com/datasets/heidarmirhajisadati/top-12-german-companies-financial-data>

**2. Information From Chatgpt:** <https://chatgpt.com/c/67935027-fdac-8013-b583-329cb1a00751>

**3. Annual Reports of Companies:** Access company-specific financial metrics, such as revenue, profit, and balance sheets. Example: BASF, Siemens, Volkswagen etc. annual reports (available on their official websites).

**4. German Federal Statistical Office (Destatis):** Provides comprehensive economic and industrial statistics. Website: <https://www.destatis.de>

**5. Bundesbank (German Central Bank):** Offers insights into Germany's financial markets and economic conditions. Website: <https://www.bundesbank.de>

**6. World Bank Data:** Economic indicators and industrial performance comparisons globally. Website: <https://data.worldbank.org>