



**Final Report
ON**

**“Financial indicators analysis of selected German
manufacturing companies”**

Submitted to:

Md. Erfan

Assistant Professor

**Department of Computer science and engineering
University of Barishal**

Submitted by:

Md. Mahafuzur Rahman

ID: 01-044-08

Date of submission: 12-08-2024

Title

“Financial performance analysis of selected German manufacturing companies”

Table of Contents

Introduction:	1
Challenges:	2
Data Availability and Access:	2
Complex Accounting Practices:	2
Economic and Industry Factors:	2
Financial Statement Limitations:	2
Time Constraints:	3
Data and Methodology	4
Data:	4
Methodology:	4
Data Analysis and Results	4
Question no.1	4
Question no.2	4
Question no.3	6
Question no.4	7
Question no.5	8
Question no.6	9
Question no.7	10
Question no.8	10
Question no.9	11
Question no.10	12
Conclusion	13

Introduction:

The manufacturing sector in Germany is one of the most critical contributors to the country's economy, renowned for its high productivity, technological innovation, and global competitiveness. Understanding the financial performance of German manufacturing companies is essential for investors, policymakers, and business leaders to assess operational efficiency, profitability, and long-term sustainability. This research aims to analyze the financial performance of a selected German manufacturing company, focusing on its financial health, growth patterns, and challenges within the context of the global market.

The study will utilize financial statements, key performance indicators (KPIs), and ratio analysis to evaluate critical aspects such as profitability, liquidity, solvency, and operational efficiency. By comparing financial performance over a specified period, the research will identify trends, strengths, and weaknesses that may inform strategic decisions for the company's future growth. Additionally, the analysis will provide insights into how external factors, such as global economic conditions, regulatory changes, and market competition, affect the financial performance of the company.

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.

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 Industry 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.

Financial Statement Limitations:

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

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, and Asset 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, Chat gpt, etc.

Data Analysis and Results

Question no.1: What is the average revenue of Volkswagen for 2023?

Answer:

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

average revenue of Volkswagen for 2023 =	13659128146
---	-------------

Formula: =AVERAGE (C26:C29)

Question no.2: Show the percentage of revenue to net income for 'Deutsche Telekom 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.

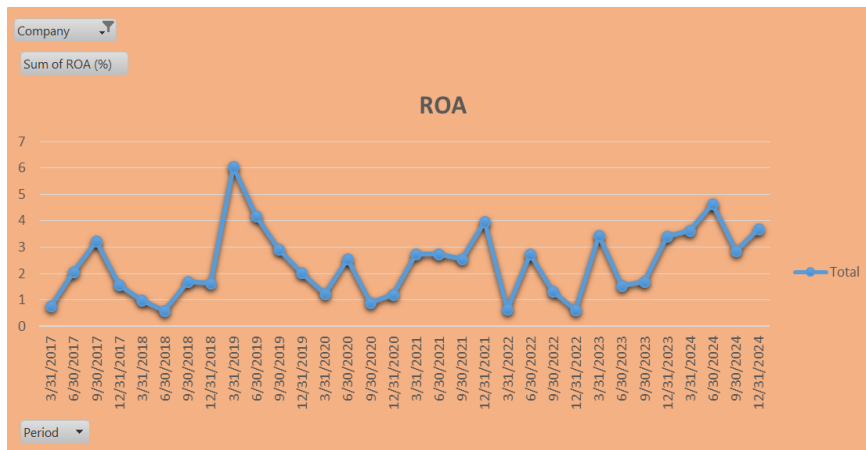
Company	Period	Revenue	Net Income	Percentage of revenue
Deutsche Telekom AG	3/31/2017	13951553720	1348710564	9.67%
Deutsche Telekom AG	6/30/2017	15409119271	924345905.8	6.00%
Deutsche Telekom AG	9/30/2017	14110556301	1163491999	8.25%
Deutsche Telekom AG	12/31/2017	11505351408	1425682028	12.39%
Deutsche 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%

Question no.3: Graphically show the 'Merck KGaA' ROA trend for 2017 to 2024

Answer:

Used pivot table to separate wanted data for graph. The used graph tool to show ROA trend

Company	Merck KGaA
Row Labels	Sum of ROA (%)
3/31/2017	0.779853997
6/30/2017	2.066390162
9/30/2017	3.226156634
12/31/2017	1.567359526
3/31/2018	0.977949
6/30/2018	0.583432655
9/30/2018	1.701921302
12/31/2018	1.635037283
3/31/2019	6.055903707
6/30/2019	4.170382124
9/30/2019	2.931147205
12/31/2019	2.023619793
3/31/2020	1.241932926
6/30/2020	2.562288251
9/30/2020	0.896215697
12/31/2020	1.214285573
3/31/2021	2.722323518
6/30/2021	2.723952986
9/30/2021	2.541619392
12/31/2021	3.970295613
3/31/2022	0.646585017
6/30/2022	2.738603611
9/30/2022	1.31329769
12/31/2022	0.604714405
3/31/2023	3.455089704
6/30/2023	1.538131797
9/30/2023	1.693160283
12/31/2023	3.413829051
3/31/2024	3.617415823
6/30/2024	4.625417238
9/30/2024	2.866690036
12/31/2024	3.693401855



Question no.4: Which company have the highest asset in last quarter of 2024?

Answer:

Used pivot table

Row Labels	Sum of Assets
12/31/2024	804947867692
SAP SE	96053458782
BASF SE	88221659272
Siemens AG	83248031989
Bayer AG	80121015584
Daimler AG	79618978403
Deutsche Bank AG	76222443508
Merck KGaA	65357495789
Porsche AG	62560115073
BMW AG	57427208762
Allianz SE	41830939577
Deutsche Telekom AG	41643539977
Volkswagen AG	32642980976



Question no.5: what is the revenue of all company for 2023 and 2024?

Answer:

Row Labels	Sum of Revenue
+ Allianz SE	109628991415.00
+ BASF SE	108044143312.00
+ Bayer AG	83684156390.00
+ BMW AG	112942825390.00
+ Daimler AG	96772302326.00
+ Deutsche Bank AG	111908208180.00
+ Deutsche Telekom AG	97216949146.00
+ Merck KGaA	123499038495.00
+ Porsche AG	112767193009.00
+ SAP SE	104968767590.00
+ Siemens AG	91631617673.00
+ Volkswagen AG	98960793952.00

Question no.6: compare net income between BMW and Porsche for 2017 to 2024

Answer:

Sum of Net Income	Column Labels 	
Row Labels 	BMW AG	Porsche AG
3/31/2017	1081539894	440184439.5
6/30/2017	526461438.3	1069672005
9/30/2017	1856672009	1113020766
12/31/2017	960184349.6	894091080.3
3/31/2018	743322627.7	1335299860
6/30/2018	1167741135	1382170553
9/30/2018	430192893.6	2139702451
12/31/2018	618883604.9	939711762.4
3/31/2019	1022601951	1676027156
6/30/2019	782523298.9	1857704381
9/30/2019	738019784.6	738896491.2
12/31/2019	1144565565	845076735.9
3/31/2020	1045458883	1358943185
6/30/2020	2732548048	920211365.8
9/30/2020	803442750.4	945409918.5
12/31/2020	962499322.1	1118453310
3/31/2021	742678238	1152213820
6/30/2021	1571388192	908357933.3
9/30/2021	1250503703	1033867668
12/31/2021	1436804767	1489899027
3/31/2022	1123917078	975556879.2
6/30/2022	1399147461	1224040111
9/30/2022	1614997271	1229669587
12/31/2022	1093800017	298030924.1
3/31/2023	2009563555	668545569.7
6/30/2023	1533626886	1226392611
9/30/2023	1804875257	1147104411
12/31/2023	602960048.5	1419961878
3/31/2024	2129654605	744579528.3
6/30/2024	2182113657	1074145603
9/30/2024	2639441820	1241693861
12/31/2024	707968936.5	1500333956

Question no.7: what is the average ROE for 2021

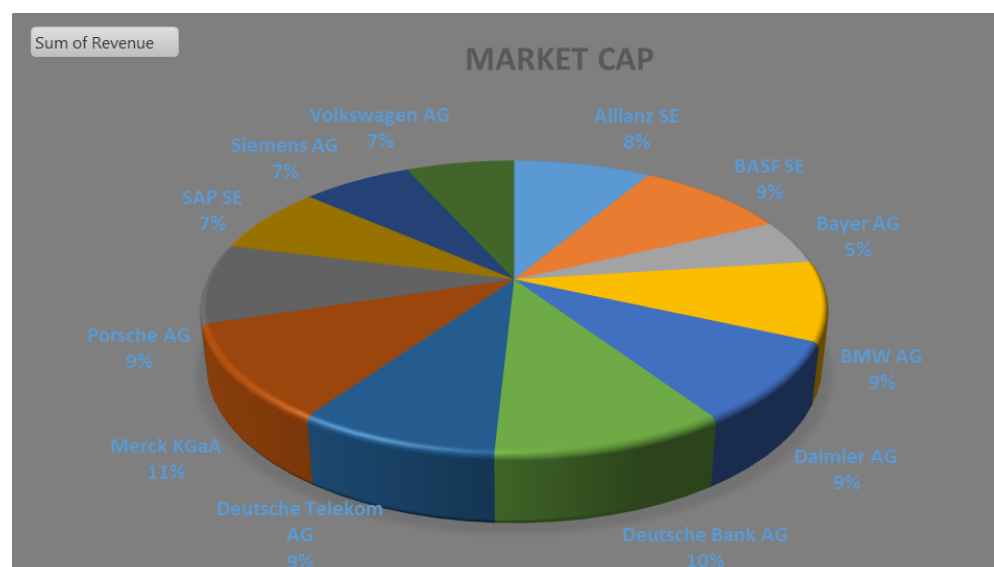
Answer:

Average of ROE (%)	Column Labels												
Row Labels	Allianz SE	BASF SE	Bayer AG	BMW AG	Daimler AG	Deutsche Bank AG	Deutsche Telekom AG	Merck KGaA	Porsche AG	SAP SE	Siemens AG	Volkswagen AG	
3/31/2021	3.318158603	3.14982347	9.33416709	5.314962029	14.38156209	2.176963241	1.752930131	4.814757986	2.754270272	1.733691877	5.223074426	4.010187943	
6/30/2021	7.893783146	5.115213316	3.155698855	8.011078402	3.047917184	0.980479945	2.127540375	3.785003473	2.620195442	1.519179847	5.634655366	2.301374609	
9/30/2021	4.329135364	1.384304888	1.653793789	4.796642602	11.02431133	1.785222349	3.065215849	4.430601873	6.540535831	3.878039728	8.696071832	6.58512162	
12/31/2021	4.872164475	6.439124871	7.872745579	3.55394994	6.277933363	2.421859412	4.29978286	6.64400246	5.376818307	3.392692186	5.049488923	6.679450762	
Average of ROE (%)	5.103310397	4.022116636	5.504101328	5.419158243	8.682930992	1.841131237	2.811367304	4.918591448	4.322954963	2.63090091	6.150822637	4.894033734	

Question no.8: show the market cap of all company in 2024

Answer:

Row Labels	Sum of Revenue
Allianz SE	55973722256
BASF SE	62478340119
Bayer AG	32624013419
BMW AG	57918366766
Daimler AG	58631917149
Deutsche Bank AG	67125687921
Deutsche Telekom AG	57972391873
Merck KGaA	69331938281
Porsche AG	58050114174
SAP SE	49074660307
Siemens AG	44947480163
Volkswagen AG	44324281368



Question no.9: Find the correlation between 'Debt to equity' and 'net income' for Volkswagen AG, BMW AG, Porsche AG.

Answer:

Company	(Multiple Items)			
Row Labels	Sum of Net Income	Sum of Debt to Equity		
3/31/2017	2851122053	3.061696643	Correlation=	-0.313647501
6/30/2017	2318214434	2.925629819		
9/30/2017	5232859076	2.596802993		
12/31/2017	2371165248	2.367570142		
3/31/2018	3370041501	6.005492972		
6/30/2018	3223927085	2.361872456		
9/30/2018	4228091476	4.222748306		
12/31/2018	2855019165	3.209925952		
3/31/2019	4137227590	2.295197366		
6/30/2019	3951312603	3.885706741		
9/30/2019	2783211186	4.289841342		
12/31/2019	3749904276	3.61268764		
3/31/2020	4148172490	4.841008056		
6/30/2020	4163908593	2.024351579		
9/30/2020	3403792611	3.503302858		
12/31/2020	2956609235	4.444580594		
3/31/2021	3032206291	4.334303807		
6/30/2021	3604625068	2.415926526		
9/30/2021	3689100815	5.337155326		
12/31/2021	4636666613	1.930597039		
3/31/2022	4566760411	3.416062684		
6/30/2022	4101972375	3.000354546		
9/30/2022	3733894380	4.63122282		
12/31/2022	1978998985	5.566956764		
3/31/2023	3800687753	5.278567773		
6/30/2023	4422707990	5.145480989		
9/30/2023	4629646830	1.869652091		
12/31/2023	3503971481	2.53410566		
3/31/2024	3913568713	3.366997484		
6/30/2024	4782670006	1.767011755		
9/30/2024	4851726100	2.477010079		
12/31/2024	4315426655	3.017593661		

Formula: =CORREL(B4:B35,C4:C35)

Question no.10: calculate the Deutsche group total net income for 2024

Answer:

Row Labels	Sum of Net Income
Deutsche Bank AG	7609639359
3/31/2024	2333015849
6/30/2024	729847876.9
9/30/2024	2323022170
12/31/2024	2223753463
Deutsche Telekom AG	5952878520
3/31/2024	1007117429
6/30/2024	1238976660
9/30/2024	872767531.7
12/31/2024	2834016899
Grand Total	13562517879

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 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.