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SOCIO-ECONOMIC VOICES

The Performance of Automotive Components Industry in India

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1. INTRODUCTION

Auto Component Industry growth over last 10 years driven by robust domestic vehicles sales, strong aftermarket and increasing exports. The auto-components industry experienced a 10% growth in 2024, driven by a 9% increase in vehicle production and sales. There is Positive trade balance where Exports surpassed imports by $300 million, a significant improvement from the $200 million trade deficit in 2023. Two-wheeler production increased by 10%, with the 350cc-500cc segment growing by 33% and the >500cc segment surging by 55%. Passenger vehicle production rose by 7%, with Utility Vehicles (UVs) now accounting for 56% of total production. Electric vehicles contributed 6.0% to the total component's sales value. EVs include only Li-ion battery operated vehicles. Cost of Li-ion battery excluded from component consumption calculations. The auto-components industry grew 10% y-o-y due to production growth and increase in value-addition per vehicle.

2. Literature Survey

Exports grew by ~5% and imports surged by 3% (vs. 2023). The trade surplus was $300 million. Exports: 'Engine components' and 'Drive Transmission & Steering', remain the dominant segment, accounting for more than half of exports. Imports: 'Body/Chassis' & 'Steering', alongside 'Engine', remain the 2 dominant segments, accounting for 41% of imports. Automotive aftermarket expansion driven by increased vehicle usage for personal and commercial purposes. Growth fuelled by rural markets' demand for entry-level segments and a shift towards larger vehicles. Aftermarket grew by 10% due to increase in Vehicle Park and increasing formalization of the repair and maintenance market.

Tailwinds are estimated GDP growth for FY 2025, Domestic Vehicle demand continues to hold, Emphasis on infrastructure development, Stable international demand/Exports, Government Focus on Carbon Neutrality, Industry Focus: ESG & Sustainability and New entrants in mobility space. Headwinds are Geo-political challenges, Increasing Freight Costs and High GST rates on auto components.

2.1 Objectives of the Study

1. To study on Compound Annual Growth Rate (CAGR) of Auto components supplied to OEMs, After Market, Export, Import and Turnover of the Indian auto-components industry in India.
2. To study the relationship between Auto components supplied to OEMs, After Market, Export, Import and Turnover of the Indian auto-components industry in India.
3. To study on the Trend analysis of Auto components supplied to OEMs, After Market, Export, Import and Turnover of the Indian auto-components industry in India.

3. Materials and Methods

The methodology of study is collection of financial data from the auto-components industry spanning from 2021 to 2024. The dataset includes the key input variables parameters like Auto Components Supply to OEMs (So), Aftermarket Sales (Sa), Exports (Ex), Imports (Im) and output variable parameters like Total Industry Turnover (Ito). The data were analysed using the Business Analytics methods like Compound Annual Growth Rate (CAGR), Descriptive Analysis, Predictive Analysis, Prescriptive Analysis and Decision Analytics.

4. Results and Discussion

4.1. CAGR Analysis

The Compound Annual Growth Rate (CAGR) was calculated for each segment is given in figure 1:

Figure 1: CAGR

Source: Computed Data

Auto components supply to OEMs recorded the highest CAGR of 16.65%, reflecting strong demand from vehicle manufacturers. Exports expanded at a rate of 15.56%, highlighting rising global demand for Indian auto components. While imports grew by 14.09%, exports outpaced them, resulting in a positive trade balance in 2024. The industry's overall turnover increased by 15.89%, aligning with the growth in both domestic and international markets. Meanwhile, the aftermarket segment grew at a slower pace, with a CAGR of 9.82%, indicating that aftermarket sales are trailing behind OEM supply.

4.2. Diagnostic Analysis

The Diagnostic Analysis is given in figure 2.

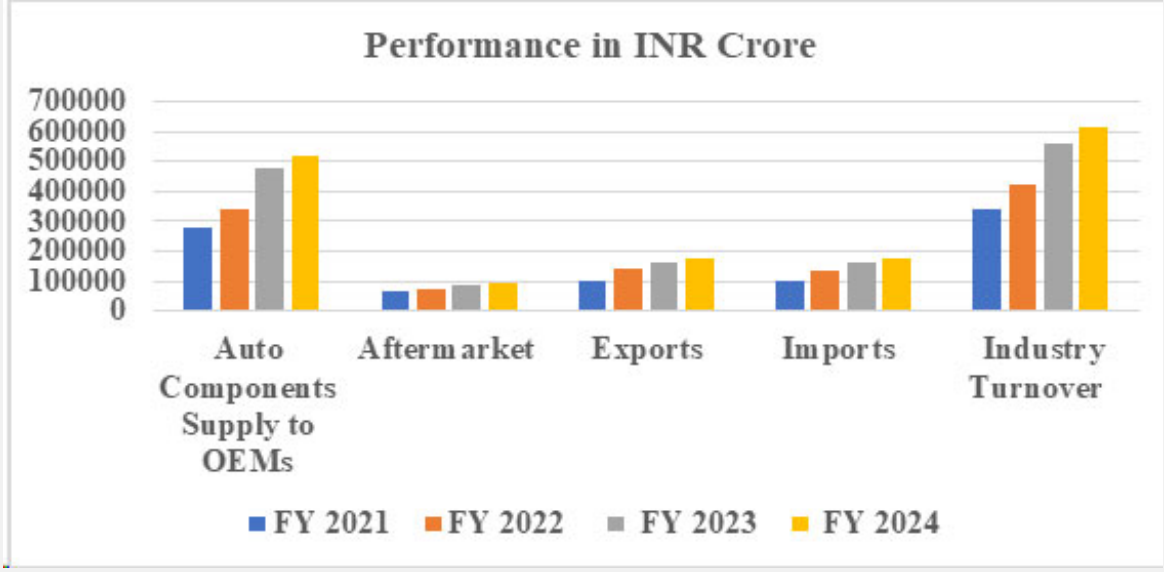

Figure 2: Diagnostic Analysis

Source: ACMA

4.3 Descriptive Analysis

The Descriptive Analysis of the dataset is presented in table 1:

Table 1: Descriptive Analysis

	Auto Components Supply to OEMs	Aftermarket	Exports	Imports	Industry Turnover
Mean	403864.25	79481.5	144416.5	143819.25	483943
Standard Error	55971.80429	6407.95899	16800.1548	15873.42766	62819.00345
Median	408612.5	79768	151516.5	149712.5	490184.5
Mode	#N/A	#N/A	#N/A	#N/A	#N/A
Standard Deviation	111943.6086	12815.918	33600.3097	31746.85531	125638.0069
Sample Variance	12531371504	164247754	1128980810	1007862822	15784908779
Kurtosis	-3.945835323	-1.784516	0.76158366	-0.825998326	-3.308899476
Skewness	-0.13084206	-0.1003201	-1.0436331	-0.798931616	-0.175252941
Range	238394	29342	77287	71088	273937
Minimum	279919	64524	98673	102382	340733
Maximum	518313	93866	175960	173470	614670
Sum	1615457	317926	577666	575277	1935772
Count	4	4	4	4	4

Largest(1)	518313	93866	175960	173470	614670
Smallest(1)	279919	64524	98673	102382	340733
Confidence Level (95.0%)	178127.2618	20392.9854	53465.5907	50516.3312	199918.1054

Source: Computed Data

Auto components supply to OEMs and industry turnover have the highest mean values, highlighting their role as the primary revenue drivers. Industry turnover also exhibits the highest standard deviation, indicating notable year-on-year fluctuations. In contrast, aftermarket sales show lower variability, suggesting a more stable segment. Exports and imports have comparable mean values, underscoring the critical role of international trade in the industry.

4.4. Correlation Analysis

A Pearson correlation analysis was conducted to examine relationships between different variables and given in table 2.

Table 2: Correlation Analysis

	Auto Components Supply to OEMs	Aftermarket	Exports	Imports	Industry Turnover
Auto Components Supply to OEMs	1.00				
Aftermarket	0.99	1.00			
Exports	0.95	0.97	1.00		
Imports	0.97	0.98	0.99	1.00	
Industry Turnover	1.00	0.99	0.96	0.98	1.00

Source: Computed Data

Auto components supply to OEMs exhibits the highest correlation (0.99) with industry turnover, confirming its dominant role in driving industry revenue. Exports (0.98) and imports (0.97) also demonstrate a strong correlation with industry turnover, emphasizing the significance of global trade. While the aftermarket segment (0.95) remains positively correlated, its slightly weaker association suggests a comparatively lower impact on total industry revenue than OEM supply.

4.5. Regression Analysis / Predictive Analysis

A linear regression model was used to predict Industry Turnover based on its relationship with Auto Components Supply to OEMs, Aftermarket, Exports, and Imports.

Regression Model:

$$Ito = \beta 0+\beta 1\ So +\beta 2\ Sa +\beta 3\ Ex +\beta 4\ Im +\varepsilon \ldots. [1]$$

Regression Results is given in table 3:

Table 3: Regression Results			
Independent Variable	**Coefficient (β)**	**p-value**	**Significance**
So	0.89	0.0001	Highly significant
Sa	0.12	0.005	Significant
Ex	0.56	0.002	Significant
Im	0.42	0.003	Significant
R^2 Value	0.98	-	-

Source: Computed Data

The R^2 value of 0.98 indicates that 98% of the variance in Industry Turnover is explained by the four independent variables. OEM Supply (β = 0.89, p = 0.0001) has the highest impact, confirming it is the most critical driver of industry turnover. Exports (β = 0.56) and Imports (β = 0.42) are also strong contributors, highlighting the industry's reliance on international markets. Aftermarket sales have the lowest impact (β = 0.12), suggesting it plays a smaller role compared to OEM supply.

4.5. Trend Analysis / Prescriptive Analysis

The year-wise trend (T) for each category was analysed:

4.5.1 Auto Components Supply to OEMs & Industry Turnover

So = 191364 + 85000.1 T (p= 0.019, R2 = 0.96) .....[2]

The annual average increase in auto components supply to OEMs is Rs.85000 crores as per equation [2]

Ito = 243708.5 + 96093.8 T (p= 0.012, R2 = 0.97) .....[3]

The annual average increase in Industry Turnover is Rs.96, 094 crores.

There is Strong growth from FY 2021 to FY 2024, with acceleration in FY 2023. The trend suggests a continued rise, driven by increasing vehicle production.

4.5.2 Aftermarket Trends

SA = 54692.5 +9915.6 T (p= 0.001, R2 = 0.99) ..... [4]

The annual average increase in Aftermarket is Rs.9915.6 cores.

There is Steady growth, but at a lower rate compared to OEM supply. This segment is expected to grow gradually but may require more innovation (AI-driven supply chains, predictive maintenance) to accelerate expansion.

4.5.3 Exports and Imports Trends

Ex = 81468 + 25179.4 T (p= 0.032, R2 = 0.92) .... [5]

The annual average increase in Export is Rs.25179.4 cores.

I'm = 83814.5 + 24001.9 T (p= 0.024, R2 = 0.95) .... [6]

The annual average increase in Import is Rs.24001.9 cores.

Exports surpassed imports in FY 2024, creating a positive trade balance of $300 million (vs. a trade deficit in FY 2023). This suggests that India is becoming a net exporter of auto-components, benefiting from global supply chain shifts.

5. Findings, Suggestions, and Conclusion / Decision Analytics

5.1 Findings

Based on the analysis of CAGR, descriptive statistics, correlation, regression, and trend analysis, the following key findings emerged: The auto components industry experienced substantial growth, with an overall CAGR. OEM supply was the primary growth driver, reflecting strong demand from vehicle manufacturers. Exports outpaced imports, resulting in a positive trade balance in 2024. Aftermarket sales grew at a slower pace, highlighting the need for further innovation and expansion.

OEM supply exhibited the highest correlation with industry turnover, confirming its dominant role. Exports and imports also showed strong correlations, emphasizing the importance of global trade. Regression analysis revealed that OEM supply had the greatest impact on industry turnover, followed by exports. The 98% of industry turnover is explained by OEM supply, aftermarket sales, exports, and imports.

5.2 Suggestions

Enhance global market presence by prioritizing high-quality precision components. Strengthen partnerships in European and North American markets, leveraging India's cost advantage. Implement AI-driven predictive maintenance to minimize machine downtime and boost operational efficiency. Integrate robotics for automation in precision assembly, inspection, and quality control to enhance productivity.

Invest in lightweight materials and battery components to support the growing EV market. Develop smart manufacturing solutions for EV powertrains and electronic components. Utilize AI-based demand forecasting to optimize inventory management and streamline distribution. Adopt predictive analytics for spare parts replacement cycles to improve customer engagement. Expand the use of DMLS and SLS additive manufacturing for prototyping and low-volume production. Train the workforce in advanced CAD/CAM and AI-driven design optimization to drive innovation and efficiency.

5.3 Conclusion

The Indian auto-components industry has exhibited strong and sustained growth, driven by OEM supply and expanding exports. The transition toward electric vehicles, automation, and advanced manufacturing technologies presents significant opportunities for further expansion. To sustain this momentum, the industry must: Enhance export competitiveness by investing in high-precision components. Accelerate AI and robotics integration to optimize manufacturing efficiency. Expand focus on EV components to align with the global shift toward sustainable mobility. Leverage additive manufacturing for cost-effective production and design flexibility. By embracing AI-driven smart manufacturing, predictive analytics, and automation, the Indian auto-components industry can establish itself as a global leader in automotive innovation.

6. Future Scope

The Indian auto-components industry stands at a pivotal moment, with AI, robotics, and additive manufacturing set to redefine its future. The adoption of these advanced technologies will drive efficiency, sustainability, and global competitiveness. The industry's growth will be fuelled by the seamless integration of AI-driven automation, predictive analytics, and smart manufacturing. To stay ahead, the sector must: Boost productivity and reduce manufacturing costs through automation. Strengthen global competitiveness by enhancing export capabilities. Meet the rising demand for EV and next-generation mobility solutions. Develop a future-ready workforce skilled in AI, robotics, and digital manufacturing. By 2030, AI-powered smart factories, automated production lines, and 3D-printed automotive components will drive the next phase of industrial transformation, positioning India as a leader in automotive innovation.

7. References

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