

Mahindra & Mahindra

Trends in Mahindra & Mahindra

Mahindra and Mahindra Limited is the most prominent multinational automobile manufacturer in India. It manufactures a wide range of products, including two-wheelers, farm equipment, passenger cars, and commercial vehicles. With a focus on practices that are both environmentally friendly and sustainable, the company has a significant presence in both domestic and international markets. In this report, we'll talk about the current trends in the Mahindra and Mahindra industry as well as the company's financial and operational performance. The expansion of Mahindra and Mahindra's Farm Equipment Sector (FES) has been one of the most important trends in the company's performance over the past few years. Over the past five years, the company's revenues have increased at a CAGR of 10.4% thanks to the FES's consistent performance. Exports have also grown strongly for the FES, with sales increasing by 29% year-over-year in FY21. This development has been driven by a mix of variables, remembering solid interest for farm vehicles for India's country regions, positive government strategies, and the organization's emphasis on development and innovation. Mahindra and Mahindra's FES division is likewise extending its worldwide impression, with a presence in more than 40 nations. The company's increased focus on electric vehicles (EVs) is another trend in its performance. The organization has made critical interests around here, and its EV deals have developed by over 2.5 times in FY21. The e-XUV300, e-KUV100, and e-Verito are just a few of the electric vehicle (EV) models that Mahindra and Mahindra has introduced to the Indian market. In addition, the company is developing EV technology for commercial vehicles and has collaborated with a number of other businesses to investigate emerging opportunities in this sector. Mahindra and Mahindra has set an objective of accomplishing half of its all out deals from EVs by 2030, and is strategically set up to gain by the developing interest for feasible portability arrangements. Mahindra and Mahindra is investing in new technologies like artificial intelligence (AI) and the Internet of Things (IoT) in addition to its focus on electric vehicles.

#The company has launched a number of initiatives in this area, such as a partnership with Microsoft to create a platform for connected vehicles and a new digital platform for FES customers. These initiatives are meant to make the company's operations run more smoothly and give customers a better experience. However, Mahindra and Mahindra has encountered some difficulties in recent years despite these encouraging trends. The COVID-19 pandemic had a significant impact on the business, and in FY21, the company saw a 10% YoY decline in revenues. The pandemic had a significant impact on the company's automotive division, with sales declining 17% year over year. The company has also faced increased competition in the Indian automotive market from new players like Kia and MG Motor, which have entered the market and gained market share.

The well-known Indian multinational corporation Mahindra and Mahindra operates in a variety of sectors, including automotive, aerospace, defense, agriculture, and hospitality. Over the course of more than seven decades, the business has established itself as a market

leader in India. However, there is always room for improvement, just like in any other organization. In this essay, we'll look at some current trends and areas where Mahindra can do better.

Changing Trends:

EVs (electric vehicles): The shift toward electric vehicles is one of the most significant industry trends. Governments and consumers alike are increasingly looking for sustainable transportation options in light of climate change concerns. With the Mahindra e2o and e-Verito, Mahindra and Mahindra have already entered the electric vehicle market. To stay ahead of the competition, the company needs to concentrate on developing electric vehicles that are more advanced and effective.

Self-Driving Vehicles: Another pattern that is quickly picking up speed in the auto business is independent vehicles. Semi-autonomous technology is already being developed, despite the fact that fully autonomous automobiles may not be available for sale for several years. Mahindra and Mahindra need to put resources into innovative work to stay aware of this pattern.

Mobility shared: Shared versatility is one more critical pattern in the transportation business. In urban areas, car- and ride-sharing services are gaining in popularity. Mahindra and Mahindra can capitalize on this trend by creating vehicles that are more cost-effective and effective and suitable for shared mobility services.

Improvement Needs:

Image of the Brand: Even though Mahindra and Mahindra is a well-known brand in India, the perception of the brand could be improved. The company is known for making cars that are strong and reliable, but it needs to focus on making designs that are more stylish and up-to-date in order to attract younger customers.

Digital Revolution:

Mahindra and Mahindra can also do better in digital transformation. The organization needs to put resources into computerized innovation to smooth out its activities and further develop client experience. Mahindra and Mahindra can cut costs, increase customer engagement, and improve supply chain management by developing digital solutions.

Worldwide Development:

Despite the fact that Mahindra and Mahindra is a major player in the Indian market, the business needs to expand its global reach. The business already has a presence in countries like South Africa, Australia, and the United States. However, Mahindra and Mahindra must increase its investments in marketing and distribution to compete with other international players and raise brand awareness.

Diversification of Products:

Lastly, Mahindra and Mahindra could benefit from product portfolio diversification. The business has already entered a number of new markets, including the hospitality, aerospace, and defense sectors. Nonetheless, to decrease reliance on the auto area, the organization could consider extending further into different enterprises.

The Indian multinational automobile manufacturer Mahindra and Mahindra Limited (M&M) has its headquarters in Mumbai, India. In India, the company is a major manufacturer of SUVs, tractors, and commercial vehicles. Since its inception in 1945, M&M has established itself as a reputable brand in the Indian market. However, the company has recently encountered difficulties in terms of product segmentation and profitability. In this examination, we will talk about the patterns in benefit and item fragment in which M&M can get to the next level.

Trends in Profitability:

M&M's profitability has been decreasing over time. The business reported a net profit of INR 3,613 crores in FY2021, a decrease of 21.5 percent from the previous year. The operating profit margin of the business has also been decreasing. The operating profit margin decreased from 12.8% in FY2020 to 8.5% in FY2021. The COVID-19 pandemic, rising commodity prices, high input costs, and the decline in profitability are all possible causes.

M&M must concentrate on cost reduction, product development, and operational effectiveness in order to increase profitability. The business can look into a variety of ways to cut costs, such as reducing waste, improving supply chain management, and rationalizing expenses. By investing in research and development, M&M can also focus on product innovation and develop new and improved products that meet shifting customer requirements. Implementing lean manufacturing techniques, enhancing inventory management, and shortening lead times are all ways to increase operational efficiency.

Trends in Product Segments:

SUVs, tractors, and commercial vehicles are just a few of the many items in M&M's product line. However, the company has encountered difficulties in particular product categories. The passenger vehicle segment is one of these categories. Over the years, M&M has seen a decline in sales of passenger cars. The company sold 82,564 passenger cars in FY2021, a 35.3% decrease from the previous year. The COVID-19 pandemic, increased competition, and shifting customer preferences all contribute to the decline in passenger vehicle sales.

M&M must concentrate on product innovation, customer experience, and marketing in order to strengthen its position in the passenger vehicle market. The business is able to develop new and improved products that meet the shifting requirements of customers. M&M can likewise zero in on upgrading the client experience by giving better after-deals administrations and offering more customized items. The company's position in the passenger car market can be strengthened by marketing. M&M can take on inventive showcasing techniques to make brand mindfulness and further develop client commitment.

Another item fragment that M&M can zero in on is electric vehicles (EVs). EVs are becoming more and more popular all over the world, and India is no exception. By 2030, the Indian government intends to achieve a 30% EV penetration rate. M&M can focus on developing and launching electric vehicles in the Indian market by utilizing its automotive expertise. The organization has previously sent off its electric SUV, the eKUV100, and can keep on growing its EV portfolio.

One of India's leading automobile manufacturers, Mahindra and Mahindra (M&M) has a significant presence in both the commercial and passenger vehicle markets. In recent years, the stock performance of the company has been subpar, and the share price and product segments could be improved in several ways. Offering electric vehicles (EVs) is one area in which M&M can make improvements. The company has been slow to enter the electric vehicle market, and its current offerings are not up to par with those of other companies in the industry. M&M ought to concentrate on making more advanced electric vehicles that can compete with Tesla and other leading EV manufacturers. This would necessitate significant research and development expenditures as well as strategic alliances with technology and battery companies.

Another region where M&M can improve is in its global extension endeavors. The business has a significant presence in India, but it has had difficulty entering other markets. M&M ought to concentrate on forming alliances with local distributors and manufacturers in important markets like Latin America, Africa, and Southeast Asia. This would assist the business in expanding its customer base and establishing a foothold in these markets.

M&M ought to concentrate on improving the performance and quality of its commercial vehicles in terms of its core products. The business has a significant presence in this market, but it is now up against a growing number of rivals. M&M ought to concentrate on making vehicles that are more effective and dependable so that they can compete with Tata Motors and Ashok Leyland. In addition to focusing on customer feedback and satisfaction, this would necessitate significant investments in research and development.

M&M also has room for growth in the passenger vehicle market. The organization has attempted to rival other driving players, like Maruti Suzuki and Hyundai. M&M ought to concentrate on creating vehicles that are more stylish and loaded with features and can appeal to younger, wealthier customers. This would necessitate significant investment in design and innovation, in addition to a focus on the establishment of effective distribution and marketing channels.

Last but not least, M&M ought to concentrate on enhancing its manufacturing procedures and supply chain. The company should concentrate on implementing lean manufacturing principles and enhancing its supply chain management because it has come under increasing pressure to cut costs and increase efficiency. The company's bottom line would rise as a result of this, as would customer satisfaction and loyalty.

One of India's leading automakers, Mahindra and Mahindra (M&M) offers a wide range of products across a variety of market segments. However, the company has faced difficulties in recent years as a result of growing competition and shifting consumer preferences. As a result, maintaining the company's position in the market necessitates determining the

trends in segmentation as well as the product segments in which it can make improvements. According to the report provided, this essay will discuss the trends in segmentation and product segments where M&M can improve. The shift toward electric vehicles (EVs) is one of the major segmentation trends. The public authority's push towards electric portability, combined with rising fuel costs and expanding ecological worries, has prompted a flood popular for EVs. M&M, on the other hand, has been slow to adopt this trend, offering only a few electric models in its line of products. To meet the growing market demand, the company must therefore concentrate on the development of electric vehicles. In addition, the report suggests that M&M can develop electric commercial vehicles by utilizing its strong position in the commercial vehicle market, which may represent an untapped market for the company.

The rising demand for SUVs and crossovers is another segmentation trend. As indicated by the report, SUVs and hybrids represent around 40% of the Indian traveler vehicle market. In any case, M&M has a restricted presence in this fragment, with a couple of models like the XUV500 and Scorpio. As a result, in order to meet the growing demand, the company must expand its SUV product line. Besides, the report recommends that M&M can zero in on the top notch SUV fragment, which is right now overwhelmed by unfamiliar brands.

Besides, the report features the pattern of digitalization in the auto business. Customers are now looking for more digital features in their vehicles as technology adoption increases. In this way, M&M needs to zero in on the improvement of computerized highlights like associated vehicle innovation, high level infotainment frameworks, and driver help frameworks. Additionally, the report proposes that M&M can use its current assets in the horticulture and development gear portion to foster computerized answers for work vehicles and other homestead hardware.

As far as item portions, the report proposes that M&M can work on its presence in the extravagance vehicle section. Automobili Pininfarina, M&M's luxury brand, currently only offers one model, the Battista, which has not yet been released. To meet the growing demand for high-end automobiles, the business must therefore expand its luxury product line. Also, the report recommends that M&M can use its current skill in plan and designing to foster extravagance vehicles with special elements and plans.

One more item fragment in which M&M can improve is the bike section. The report features the developing interest for electric bikes, particularly in metropolitan regions. However, M&M has a small number of models under the "Jawa" brand name in the two-wheeler market. Thusly, the organization needs to zero in on the advancement of electric bikes to take special care of the rising interest on the lookout. Additionally, the report suggests that M&M can expand its presence in the two-wheeler market by utilizing its existing distribution network.

In the Indian automotive industry, Mahindra and Mahindra is a major player. From tractors to electric cars, the business offers a wide range of goods and services. Stakeholders of Mahindra and Mahindra include the company's employees, clients, investors, suppliers, and the general public.

Employees:

Mahindra and Mahindra has a huge labor force of north of 33,000 representatives. The following areas can be emphasized by the company to strengthen its relationships with its employees:

Development of employees:

By offering career advancement opportunities, mentoring, and training programs, Mahindra and Mahindra can make an investment in employee development. Employees will benefit from this in terms of skill development and motivation.

Life balance at work:

By encouraging a culture of work-life balance and introducing flexible working hours, the company can help its employees achieve a better work-life balance. Employees will benefit from this by lessening stress and achieving a healthy work-life balance.

Inclusion and diversity:

The organization can advance variety and consideration by establishing an inviting climate for workers from different foundations. Employees will feel appreciated as a result, and the workplace will be improved.

Customers:

Customers of Mahindra and Mahindra include individuals, businesses, and government agencies of all kinds. The company can concentrate on the following aspects in order to strengthen its relationship with its clients:

Service to customers:

By responding to inquiries and complaints promptly and effectively, the company can improve its customer service. Customers' confidence and loyalty will be enhanced as a result.

Quality of the item:

In order to meet customer expectations, Mahindra and Mahindra can concentrate on raising the quality of its products. This will assist with building a positive standing for the organization and increment client unwaveringness.

Innovation:

The business can concentrate on innovation to create new goods and services that cater to the shifting requirements of its clients. As a result, customer loyalty will rise and the company will be able to maintain its lead over its rivals.

Investors:

Individual investors, institutional investors, and mutual funds are among the many investors in Mahindra and Mahindra. The company can concentrate on the following aspects in order to strengthen its relationship with its investors:

monetary performance:

By increasing revenue and profits, the business can concentrate on improving its financial performance. Investors will be attracted and retained by this.

Transparency:

Mahindra and Mahindra can further develop straightforwardness by giving standard reports on its monetary execution and activities. This will assist financial backers with pursuing informed choices.

Social obligation:

By investing in sustainable and socially responsible practices, the company can concentrate on social responsibility. This will assist with drawing in socially dependable financial backers.

Suppliers:

There are numerous local and international suppliers in Mahindra and Mahindra's extensive supplier network. The company can concentrate on the following areas in order to strengthen its relationship with its suppliers:

Good business practices:

The organization can guarantee fair exchange rehearses by paying providers on time and giving fair costs to labor and products. With suppliers, this will help build trust and loyalty.

Collaboration:

Mahindra and Mahindra can team up with its providers to work on the nature of labor and products. The business will be able to provide its customers with high-quality goods thanks to this.

Sustainability:

By encouraging suppliers to use environmentally friendly methods, the business can focus on sustainability. As a result, the business will gain a positive reputation and customers who care about the environment.

Community:

Mahindra and Mahindra has an obligation to the more extensive local area wherein it works. The company can focus on the following areas to improve its community relations:

Social responsibility at work:

By investing in community development programs, the company can concentrate on its commitment to corporate social responsibility. This will enhance the community's quality of life and contribute to the company's positive reputation.

Mahindra & Mahindra P&L

Mahindra

is a group of businesses that operate in a variety of markets and industries. Mahindra leads the automotive, aerospace, agricultural, information technology, logistics, real estate, retail, and renewable energy industries with more than 200,000 employees. The consolidated profits and losses of the company's various segments served as the foundation for the profitability statement for the fiscal year that ended on March 31, 2021. The year's consolidated revenue was Rs. 2,41,339 Cr., addressing a 7.2% increment over the earlier year. The combined EBITDA was Rs. 37,957 Cr., representing an increase of 11.1% over the prior year. The company made Rs. 18,179 Cr., representing an increase of 7.9% over the year before. The car portion detailed an income of Rs. 1,13,883 Cr., representing an increase of 4.9% over the year before. Rs. was the EBITDA. 18,012 Cr., representing an increase of 11.3% compared to the previous year. Rs. was the net profit. 8,840 Cr., representing an increase of 7.8 percent over the prior year. New products and services, cost reduction, and portfolio restructuring helped the segment. The aerospace division reported Rs in revenue. 7,723 Cr., representing an increase of 12.8% over the prior year. Rs. was the EBITDA. 1,457 Cr., addressing a 9.7% lessening over the earlier year. The net benefit was Rs. 922 Cr., addressing a 5.2% decline over the earlier year. The company used portfolio restructuring and cost optimization to mitigate the impact of the global aviation slowdown on the segment. The agricultural division reported Rs in revenue. 37,424 Cr., indicating an increase of 1.9% over the previous year. The EBITDA was Rs. 5,426 Cr., representing a decrease of 0.6% compared to the previous year. Rs. was the net profit. 2,260 Cr., addressing a 7.7% diminishing over the earlier year. The fragment was impacted by the lull in the worldwide agrarian area, and the organization turned to cost streamlining and portfolio rebuilding to alleviate the effect. The data innovation section detailed an income of Rs. 20,945 Cr., representing an increase of 13.3% over the prior year. Rs. was the EBITDA. 6,019 Cr., representing an increase of 20.9% over the prior year. Rs. was the net profit. 3,072 Cr., representing an increase of 16.0% over the prior year. The strong demand for IT services and products helped the segment, and the company increased its margins by optimizing costs and reorganizing its portfolio. The operations section detailed an income of Rs. 10,311 Cr., addressing a 12.3% increment over the earlier year. Rs. was the EBITDA. 1,945 Cr., addressing a 6.2% expansion over the earlier year. The net benefit was Rs. 1,074 Cr., addressing a 13.3% expansion over the earlier year. The growth of the e-commerce and logistics markets helped the segment, and the company benefited from portfolio restructuring and cost optimization. The land section detailed an income of Rs. 5,511 Cr., addressing a 7.4% expansion over the earlier year. Rs. was the EBITDA. 563 Cr., representing a decrease of 9.6% compared to the previous year. The net benefit was Rs. 276 Cr., representing a decrease of 3.8% compared to the previous year. The company used portfolio reorganization and cost optimization to lessen the impact of the real estate market slowdown on the segment. Revenue from the retail segment was Rs. 6,841 Cr., representing an increase of 15.2% over the prior year. Rs. was the EBITDA. 817 Cr.,

representing a decrease of 14.8% compared to the previous year. The net benefit was Rs. 415 Cr., representing a decrease of 15.2% compared to the previous year. The company used cost optimization and portfolio restructuring to mitigate the impact of the slowdown in consumer spending on the segment. The renewable energy division reported Rs in revenue. 5,424 Cr., addressing a 9.2% increment over the earlier year. Rs. was the EBITDA. 1,326 Cr., representing an increase of 9.4 percent over the prior year. Rs. was the net profit. 704 Cr., representing an increase of 3.2% over the year before. The growth of the renewable energy industry helped the segment, and the company benefited from portfolio restructuring and cost optimization. Overall, the profitability statement for Mahindra's fiscal year that ended on March 31, 2021 shows that all of the company's segments have grown consistently. The organization had the option to accomplish this development by carrying out cost advancement and portfolio rebuilding techniques, which permitted it to moderate the effect of the lull in the worldwide economy. The company's future profitability is likely to be driven by its focus on innovation and cost reduction.

```
import pandas as pd
from statistics import stdev
from statistics import mean
from numpy import NAN as nan
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
from sklearn.linear_model import LinearRegression
import statistics as stats
import os

df = pd.read_csv(r'C:\Users\Anonymous\Downloads\ProfitLoss_ (1).csv')
pd.set_option('display.max_columns',None)
df
```

	Year	Revenue From Operations	Less: Excise Duty	\
0	202203	57,445.97	0	
1	202103	44,629.87	0	
2	202003	45,487.78	0	
3	201903	53,614.00	0	
4	201803	49,444.99	759.44	
5	201703	47,383.74	3,330.24	
6	201603	43,638.90	2,763.83	

	Revenue From Operations(Net)	Other Income	Total Revenue	EXPENSES:
0	57,445.97	2,075.90	59,521.87	NaN
1	44,629.87	1,199.48	45,829.35	NaN
2	45,487.78	1,667.81	47,155.59	NaN
3	53,614.00	1,688.97	55,302.97	NaN

4	48,685.55	1,036.36	49,721.91	NaN
5	44,053.50	1,345.46	45,398.96	NaN
6	40,875.07	849.93	41,725.00	NaN

Cost of Material Consumed \

0	40,506.15
1	28,023.51
2	22,873.74
3	27,095.07
4	23,265.31
5	21,129.65
6	19,364.88

Internally Manufactured Intermediates or Components Consumed \

0	0
1	0
2	0
3	0
4	0
5	0
6	0

Purchases of Stock-in-Trade \

0	2,374.82
1	2,518.70
2	8,349.36
3	12,111.61
4	10,674.47
5	10,893.63
6	10,409.26

Changes in Inventories of Finished Goods, Work-in-Progress and Stock-in-Trade \

0	-539.40
1	-365.62
2	409.49
3	-950.19
4	194.87
5	57.87

6	-257.97
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	Employee Benefits / Salaries & other Staff Cost	Finance Cost	\
0	3,305.96	223.00	
1	3,251.95	396.31	
2	2,880.08	113.23	
3	2,980.22	113.39	
4	2,840.89	112.20	
5	2,714.43	159.59	
6	2,348.72	186.05	

	Depreciation and Amortization	Other Expenses	Total Expenses	\
0	2,451.06	4,756.15	53,077.74	
1	2,369.92	4,243.85	40,438.62	
2	2,222.63	5,177.05	42,025.58	
3	1,860.40	5,737.73	48,948.23	
4	1,479.42	5,485.99	44,053.15	
5	1,526.38	4,743.26	41,224.81	
6	1,068.10	4,390.24	37,509.28	

	Profit Before Exceptional Items and Tax	Exceptional Items Before Tax	\
0		6,444.13	-
208.67			
1		5,390.73	-
3,087.28			
2		5,130.01	-
2,013.98			
3		6,354.74	-
29.73			
4		5,668.76	
433.61			
5		4,174.15	
548.46			
6		4,215.72	
68.74			

	Profit Before Extraordinary Items and Tax	Prior Year Adjustments	\
0	6,235.46	0	
1	2,303.45	0	
2	3,116.03	0	
3	6,325.01	0	
4	6,102.37	0	

5	4,722.61	0
6	4,284.46	0

	Other Adjustments Before Tax	Extraordinary Items Before Tax	\
0	0	0	0
1	0	0	0
2	0	0	0
3	0	0	0
4	0	0	0
5	0	0	0
6	0	0	0

	Profit Before Tax	Tax Expenses	Current Tax	Deferred Tax	\
0	6,235.46	1,300.24	1,099.72	211.11	
1	2,303.45	1,319.29	1,328.89	-9.60	
2	3,116.03	1,785.48	996.98	788.50	
3	6,325.01	1,528.97	1,344.19	358.75	
4	6,102.37	1,746.36	1,213.46	518.22	
5	4,722.61	1,079.22	1,003.94	75.28	
6	4,284.46	1,079.89	825.69	254.20	

	Other Tax Adjustments Entitlement	Current Tax - MAT / MAT Credit	\
0	-10.59	0	0
1	0.00	0	0
2	0.00	0	0
3	-173.97	0	0
4	14.68	0	0
5	0.00	0	0
6	0.00	0	0

	Fringe Benefits Previous Year	Tax Provision for Wealth Tax	Adjust for
0	0	0	0
-10.59	0	0	0
1	0	0	0
0.00	0	0	0
2	0	0	0
0.00	0	0	0

3	0	0
-173.97		
4	0	0
14.68		
5	0	0
0.00		
6	0	0
0.00		

	Others	Profit After Tax	Pre-acquisition Profit	\
0	-10.59	4,935.22	0	
1	0.00	984.16	0	
2	0.00	1,330.55	0	
3	-173.97	4,796.04	0	
4	14.68	4,356.01	0	
5	0.00	3,643.39	0	
6	0.00	3,204.57	0	

	Profit After Pre-acquisition Profit	Extraordinary Items	After Tax \
0	4,935.22		0
1	984.16		0
2	1,330.55		0
3	4,796.04		0
4	4,356.01		0
5	3,643.39		0
6	3,204.57		0

	Profit/(Loss) for the period from Continuing Operations \
0	4,935.22
1	984.16
2	1,330.55
3	4,796.04
4	4,356.01
5	3,643.39
6	3,204.57

	Discontinued Operations Profit / (Loss) from Discontinuing Operations \
0	0
0	
1	0

0	
2	0
0	
3	0
0	
4	0
0	
5	0
0	
6	0
0	

	Tax Expense of Discontinuing Operations	Accounting Changes	\
0	0	0	
1	0	0	
2	0	0	
3	0	0	
4	0	0	
5	0	0	
6	0	0	

	Profit Attributable to Shareholders	Adjustments to Net Income	\
0	4,935.22	0.00	
1	984.16	0.00	
2	1,330.55	0.00	
3	4,796.04	0.00	
4	4,356.01	0.00	
5	3,643.39	0.00	
6	3,204.57	-64.59	

	Interim Preference Dividend	Proposed / Final Preference	
	Dividend	\	
0	0	0	
1	0	0	
2	0	0	
3	0	0	
4	0	0	
5	0	0	
6	0	0	

	Prior Year Preference Dividend Paid	Preference Dividend	\
0	0	0	

1		0	0
2		0	0
3		0	0
4		0	0
5		0	0
6		0	0

Preference Dividend Tax Profit Attributable to Ordinary
Shareholders \

0	0
4,935.22	
1	0
984.16	
2	0
1,330.55	
3	0
4,796.04	
4	0
4,356.01	
5	0
3,643.39	
6	0
3,139.98	

	Others	Transfer from Reserves	Unappropriated Profits Brought Forward \
0	-10.59	0	
1	0.00	0	
2	0.00	0	
3	-173.97	0	
4	14.68	0	
5	0.00	0	
6	0.00	0	
0			

Reserves \	Profits Available for Appropriation	Dividend	Transfer to
0	4,935.22	0	
1	984.16	0	
2	1,330.55	0	
3	4,796.04	0	

0		
4	4,356.01	0
0		
5	3,643.39	0
0		
6	3,139.98	0
0		

	Dividend Tax Capitalization for Bonus Issue \	
0	0	0
1	0	0
2	0	0
3	0	0
4	0	0
5	0	0
6	0	0

	Unappropriated Profits Carried Forward Other Comprehensive Income :	
\		
0	4,935.22	NaN
1	984.16	NaN
2	1,330.55	NaN
3	4,796.04	NaN
4	4,356.01	NaN
5	3,643.39	NaN
6	3,139.98	NaN

	Other Comprehensive Income That Will Not Be Reclassified to Profit	
Or Loss \		
0	71.78	
1	-55.92	
2	-8.71	
3	-9.58	
4	3.76	
5	-3.09	
6	6.89	

Other Comprehensive Income That Will Be Reclassified to Profit Or Loss :		
0		3.80
1		-2.80
2		-23.39
3		21.93
4		-13.93
5		5.67
6		22.87

Other Comprehensive Income no Specification : Non-Controlling Interests \		
0		0
0		0
1		0
0		0
2		0
0		0
3		0
0		0
4		0
0		0
5		0
0		0
6		0
0		0

Total Comprehensive Income for the Year		Earning Per Share -
Basic \		
0	5,010.80	41.28
1	925.44	8.24
2	1,298.45	11.16
3	4,808.39	40.29
4	4,345.84	36.64
5	3,645.97	30.69

6 3,234.33 53.05

Earning Per Share - Diluted	Dividend Per Share	Interim 1	Interim 2
41.13	NaN	0	0
8.21	NaN	0	0
11.12	NaN	0	0
40.13	NaN	0	0
36.47	NaN	0	0
30.54	NaN	0	0
52.80	NaN	0	0

	Interim 3	Interim 4	Special	Final	Total	Dividend	Per Share	\
0	0	0	0	11.55			11.55	
1	0	0	0	8.75			8.75	
2	0	0	0	2.35			2.35	
3	0	0	0	8.50			8.50	
4	0	0	0	7.50			7.50	
5	0	0	0	13.00			13.00	
6	0	0	0	12.00			12.00	

	Dividend Percentage	Interim 1.1	Interim 2.1	Interim 3.1	Interim
4.1 \ 0	NaN	0	0	0	
0					
1	NaN	0	0	0	
0					
2	NaN	0	0	0	
0					
3	NaN	0	0	0	
0					
4	NaN	0	0	0	
0					
5	NaN	0	0	0	
0					
6	NaN	0	0	0	
0					

	Special.1	Final.1	Total Dividend	Percentage	Total Dividend	\
0	0	11.55		231	1,435.89	
1	0	8.75		175	1,045.42	

2	0	2.35	47	280.02
3	0	8.50	170	1,012.85
4	0	7.50	150	932.39
5	0	13.00	260	807.42
6	0	12.00	240	745.31

Preference Dividend.1 Weighted Average Number of Shares in Issue - Basic \

0	0
119.54	
1	0
119.38	
2	0
119.22	
3	0
119.05	
4	0
118.89	
5	0
118.71	
6	0
59.19	

Weighted Average Number of Shares in Issue - Diluted \

0	120.00
1	119.89
2	119.68
3	119.52
4	119.43
5	119.31
6	59.46

Interim Dividend Amount Final Dividend Amount Special Dividend Amount \

0	0	1,435.89
0		
1	0	1,045.42
0		
2	0	280.02
0		
3	0	1,012.85
0		
4	0	932.39
0		
5	0	807.42
0		
6	0	745.31
0		

Dividend Amount Calculated Other Dividend Amount

```
0          0          0
1          0          0
2          0          0
3          0          0
4          0          0
5          0          0
6          0          0

df.shape

(7, 91)

df.info()

<class 'pandas.core.frame.DataFrame'>
RangeIndex: 7 entries, 0 to 6
Data columns (total 91 columns):
 #   Column      Non-Null Count   Dtype  
 --- 
 0   Year        7 non-null       int64  
 1   Revenue From Operations 7 non-null       object 
 2   Less: Excise Duty     7 non-null       object 
 3   Revenue From Operations(Net) 7 non-null       object 
 4   Other Income        7 non-null       object 
 5   Total Revenue       7 non-null       object 
 6   EXPENSES:           7 non-null       float64 
 7   Cost of Material Consumed 7 non-null       object 
 8   Internally Manufactured Intermediates or Components Consumed 7 non-null       int64  
 9   Purchases of Stock-in-Trade 7 non-null       object 
 10  Changes in Inventories of Finished Goods, Work-in-Progress and Stock-in-Trade 7 non-null       float64 
 11  Employee Benefits / Salaries & other Staff Cost 7 non-null       object 
 12  Finance Cost        7 non-null       float64 
 13  Depreciation and Amortization 7 non-null       object 
 14  Other Expenses       7 non-null       object
```

```
15 Total Expenses
7 non-null    object
16 Profit Before Exceptional Items and Tax
7 non-null    object
17 Exceptional Items Before Tax
7 non-null    object
18 Profit Before Extraordinary Items and Tax
7 non-null    object
19 Prior Year Adjustments
7 non-null    int64
20 Other Adjustments Before Tax
7 non-null    int64
21 Extraordinary Items Before Tax
7 non-null    int64
22 Profit Before Tax
7 non-null    object
23 Tax Expenses
7 non-null    object
24 Current Tax
7 non-null    object
25 Deferred Tax
7 non-null    float64
26 Other Tax Adjustments
7 non-null    float64
27 Current Tax - MAT / MAT Credit Entitlement
7 non-null    int64
28 Fringe Benefits Tax
7 non-null    int64
29 Provision for Wealth Tax
7 non-null    int64
30 Adjust for Previous Year
7 non-null    float64
31 Others
7 non-null    float64
32 Profit After Tax
7 non-null    object
33 Pre-acquisition Profit
7 non-null    int64
34 Profit After Pre-acquisition Profit
7 non-null    object
35 Extraordinary Items After Tax
7 non-null    int64
36 Profit/(Loss) for the period from Continuing Operations
7 non-null    object
37 Discontinued Operations
7 non-null    int64
38 Profit / (Loss) from Discontinuing Operations
7 non-null    int64
39 Tax Expense of Discontinuing Operations
7 non-null    int64
```

```
40 Accounting Changes
7 non-null      int64
41 Profit Attributable to Shareholders
7 non-null      object
42 Adjustments to Net Income
7 non-null      float64
43 Interim Preference Dividend
7 non-null      int64
44 Proposed / Final Preference Dividend
7 non-null      int64
45 Prior Year Preference Dividend Paid
7 non-null      int64
46 Preference Dividend
7 non-null      int64
47 Preference Dividend Tax
7 non-null      int64
48 Profit Attributable to Ordinary Shareholders
7 non-null      object
49 Others
7 non-null      float64
50 Transfer from Reserves
7 non-null      int64
51 Unappropriated Profits Brought Forward
7 non-null      int64
52 Profits Available for Appropriation
7 non-null      object
53 Dividend
7 non-null      int64
54 Transfer to Reserves
7 non-null      int64
55 Dividend Tax
7 non-null      int64
56 Capitalization for Bonus Issue
7 non-null      int64
57 Unappropriated Profits Carried Forward
7 non-null      object
58 Other Comprehensive Income :
0 non-null      float64
59 Other Comprehensive Income That Will Not Be Reclassified to
Profit Or Loss    7 non-null      float64
60 Other Comprehensive Income That Will Be Reclassified to Profit
Or Loss :        7 non-null      float64
61 Other Comprehensive Income no Specification :
7 non-null      int64
62 Non-Controlling Interests
7 non-null      int64
63 Total Comprehensive Income for the Year
7 non-null      object
64 Earning Per Share - Basic
7 non-null      float64
```

```
65 Earning Per Share - Diluted
7 non-null      float64
66 Dividend Per Share
0 non-null      float64
67 Interim 1
7 non-null      int64
68 Interim 2
7 non-null      int64
69 Interim 3
7 non-null      int64
70 Interim 4
7 non-null      int64
71 Special
7 non-null      int64
72 Final
7 non-null      float64
73 Total Dividend Per Share
7 non-null      float64
74 Dividend Percentage
0 non-null      float64
75 Interim 1.1
7 non-null      int64
76 Interim 2.1
7 non-null      int64
77 Interim 3.1
7 non-null      int64
78 Interim 4.1
7 non-null      int64
79 Special.1
7 non-null      int64
80 Final.1
7 non-null      float64
81 Total Dividend Percentage
7 non-null      int64
82 Total Dividend
7 non-null      object
83 Preference Dividend.1
7 non-null      int64
84 Weighted Average Number of Shares in Issue - Basic
7 non-null      float64
85 Weighted Average Number of Shares in Issue - Diluted
7 non-null      float64
86 Interim Dividend Amount
7 non-null      int64
87 Final Dividend Amount
7 non-null      object
88 Special Dividend Amount
7 non-null      int64
89 Dividend Amount Calculated
7 non-null      int64
```

```
90 Other Dividend Amount
7 non-null      int64
dtypes: float64(21), int64(43), object(27)
memory usage: 5.1+ KB

df.isnull().sum()

Year          0
Revenue From Operations 0
Less: Excise Duty 0
Revenue From Operations(Net) 0
Other Income 0
..
Interim Dividend Amount 0
Final Dividend Amount 0
Special Dividend Amount 0
Dividend Amount Calculated 0
Other Dividend Amount 0
Length: 91, dtype: int64

df.columns

Index(['Year', 'Revenue From Operations', 'Less: Excise Duty',
       'Revenue From Operations(Net)', 'Other Income', 'Total Revenue',
       'EXPENSES:', 'Cost of Material Consumed',
       'Internally Manufactured Intermediates or Components Consumed',
       'Purchases of Stock-in-Trade',
       'Changes in Inventories of Finished Goods, Work-in-Progress and Stock-in-Trade',
       'Employee Benefits / Salaries & other Staff Cost', 'Finance Cost',
       'Depreciation and Amortization', 'Other Expenses', 'Total Expenses',
       'Profit Before Exceptional Items and Tax',
       'Exceptional Items Before Tax',
       'Profit Before Extraordinary Items and Tax', 'Prior Year Adjustments',
       'Other Adjustments Before Tax', 'Extraordinary Items Before Tax',
       'Profit Before Tax', 'Tax Expenses', 'Current Tax', 'Deferred Tax',
       'Other Tax Adjustments', 'Current Tax - MAT / MAT Credit Entitlement',
       'Fringe Benefits Tax', 'Provision for Wealth Tax',
       'Adjust for Previous Year', 'Others', 'Profit After Tax',
       'Pre-acquisition Profit', 'Profit After Pre-acquisition Profit',
       'Extraordinary Items After Tax',
       'Profit/(Loss) for the period from Continuing Operations',
```

```

'Discontinued Operations',
'Profit / (Loss) from Discontinuing Operations',
'Tax Expense of Discontinuing Operations', 'Accounting
Changes',
'Profit Attributable to Shareholders', 'Adjustments to Net
Income',
'Interim Preference Dividend', 'Proposed / Final Preference
Dividend',
'Prior Year Preference Dividend Paid', 'Preference Dividend',
'Preference Dividend Tax',
'Profit Attributable to Ordinary Shareholders', 'Others',
'Transfer from Reserves', 'Unappropriated Profits Brought
Forward',
'Profits Available for Appropriation', 'Dividend',
'Transfer to Reserves', 'Dividend Tax',
'Capitalization for Bonus Issue',
'Unappropriated Profits Carried Forward',
'Other Comprehensive Income :',
'Other Comprehensive Income That Will Not Be Reclassified to
Profit Or Loss',
'Other Comprehensive Income That Will Be Reclassified to
Profit Or Loss :',
'Other Comprehensive Income no Specification :',
'Non-Controlling Interests', 'Total Comprehensive Income for
the Year',
'Earning Per Share - Basic', 'Earning Per Share - Diluted',
'Dividend Per Share', 'Interim 1', 'Interim 2', 'Interim 3',
'Interim 4', 'Special', 'Final', 'Total Dividend Per Share',
'Dividend Percentage', 'Interim 1.1', 'Interim 2.1', 'Interim
3.1',
'Interim 4.1', 'Special.1', 'Final.1', 'Total Dividend
Percentage',
'Total Dividend', 'Preference Dividend.1',
'Weighted Average Number of Shares in Issue - Basic',
'Weighted Average Number of Shares in Issue - Diluted',
'Interim Dividend Amount', 'Final Dividend Amount',
'Special Dividend Amount', 'Dividend Amount Calculated',
'Other Dividend Amount'],
dtype='object')

```

```
df[["Total Expenses","Profit After Tax"]].describe(include="all")
```

	Total Expenses	Profit After Tax
count	7	7
unique	7	7
top	53,077.74	4,935.22
freq	1	1

```
df[["Profit After Tax","Profit Before Exceptional Items and
Tax"]].describe(include="all")
```

```

    Profit After Tax Profit Before Exceptional Items and Tax
count                7                      7
unique               7                      7
top                 4,935.22                  6,444.13
freq                 1                         1

df[["Profit After Tax","Profit / (Loss) from Discontinuing
Operations"]].describe(include="all")

    Profit After Tax  Profit / (Loss) from Discontinuing Operations
count                7                      7.0
unique               7                      NaN
top                 4,935.22                  NaN
freq                 1                      NaN
mean                 NaN                     0.0
std                  NaN                     0.0
min                  NaN                     0.0
25%                 NaN                     0.0
50%                 NaN                     0.0
75%                 NaN                     0.0
max                 NaN                     0.0

df[["Profit After Tax","Tax Expenses"]].describe(include="all")

    Profit After Tax  Tax Expenses
count                7                      7
unique               7                      7
top                 4,935.22                  1,300.24
freq                 1                      1

df[["Profit After Tax","Profit/(Loss) for the period from Continuing
Operations"]].describe(include="all")

    Profit After Tax \
count                7
unique               7
top                 4,935.22
freq                 1

    Profit/(Loss) for the period from Continuing Operations
count                7
unique               7
top                 4,935.22
freq                 1

df[["Profit After Tax","Profit Attributable to
Shareholders"]].describe(include="all")

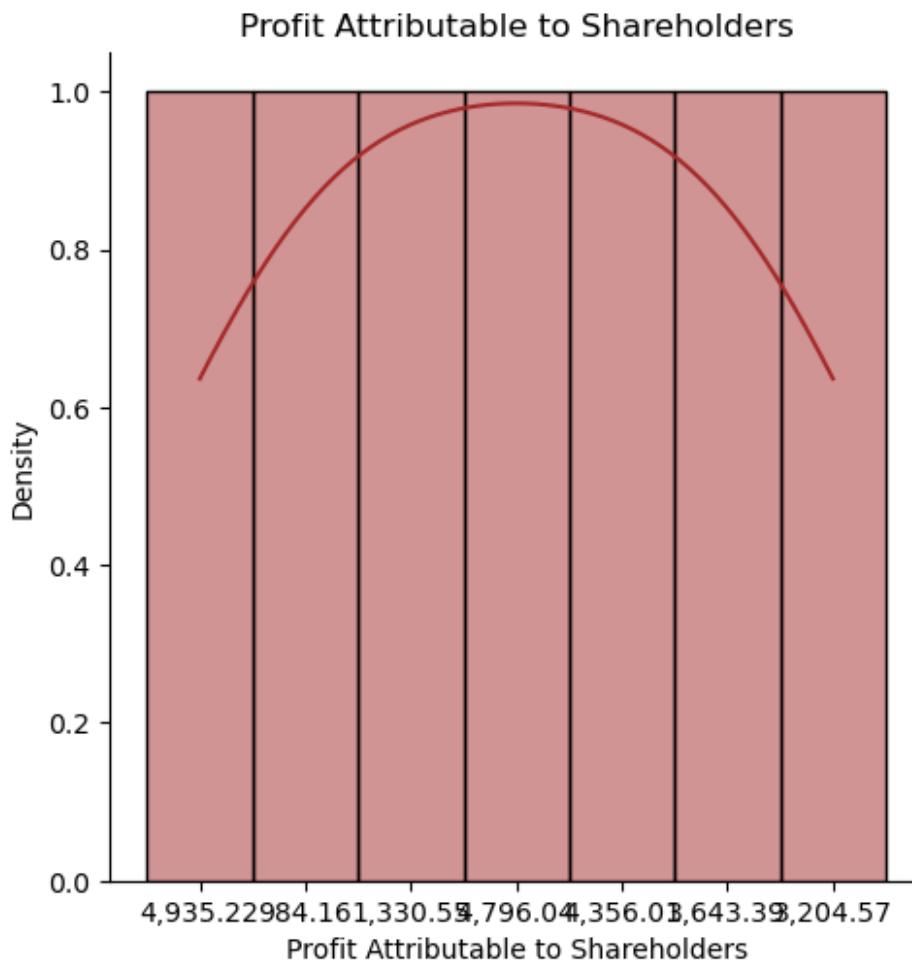
    Profit After Tax  Profit Attributable to Shareholders
count                7                      7
unique               7                      7

```

```
top      4,935.22      4,935.22
freq         1             1
```

Profit Attributable to Shareholders

```
sns.displot(df['Profit Attributable to Shareholders'], kde=True,
color='brown')
plt.xlabel('Profit Attributable to Shareholders')
plt.ylabel('Density')
plt.title('Profit Attributable to Shareholders')
plt.show()
```



```
# Filter the relevant columns
data = df[['Year', 'Profit Attributable to Shareholders']]

# Set the figure size
plt.figure(figsize=(10, 6))

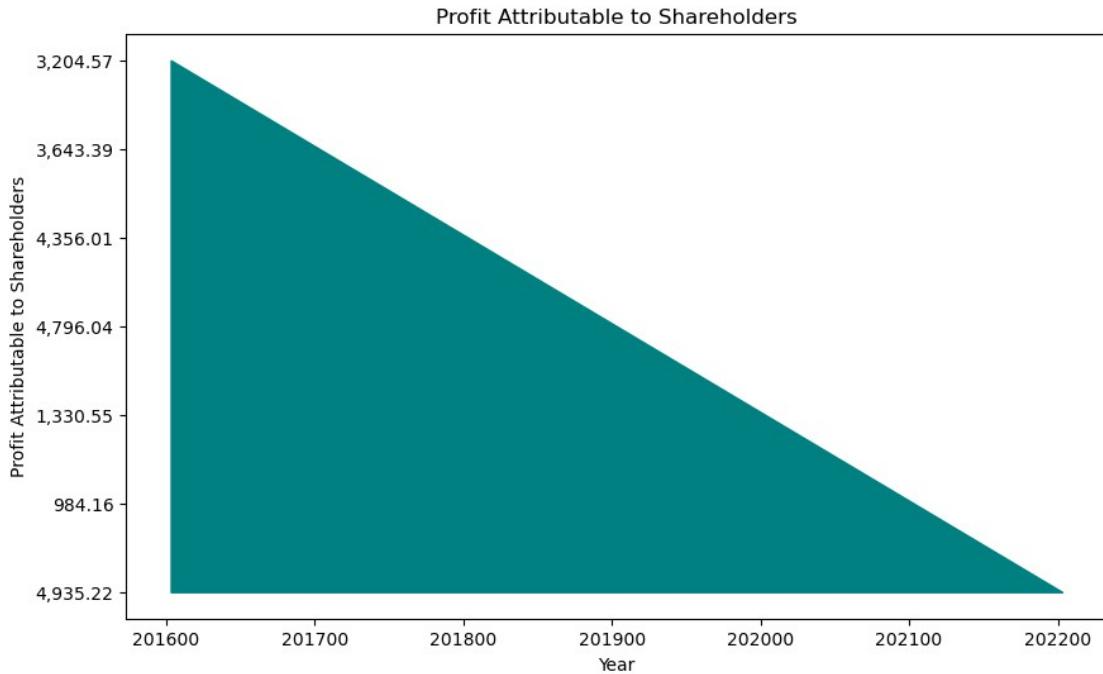
# Create the area plot using fill_between
plt.fill_between(data['Year'], data['Profit Attributable to Shareholders'], color='teal')
```

```

# Set the title and axis labels
plt.title('Profit Attributable to Shareholders')
plt.xlabel('Year')
plt.ylabel('Profit Attributable to Shareholders')

plt.show()

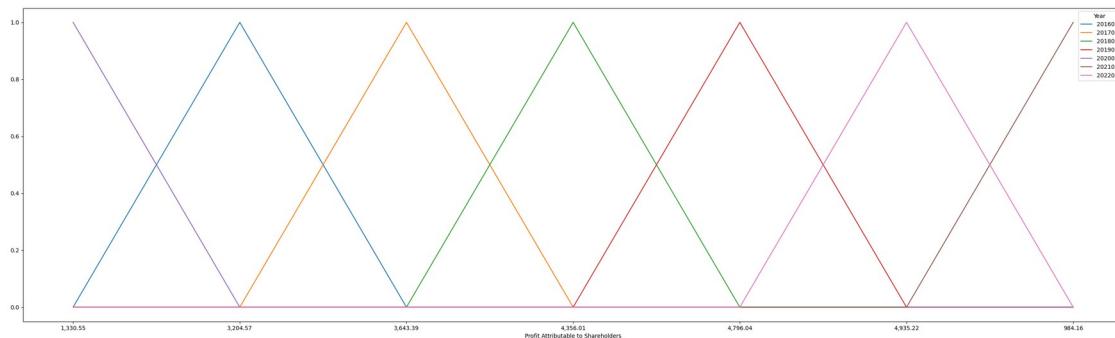
```



```

pd.crosstab(df['Profit Attributable to Shareholders'],df['Year']).plot(kind='line', figsize=(35, 10))
<AxesSubplot:xlabel='Profit Attributable to Shareholders'>

```

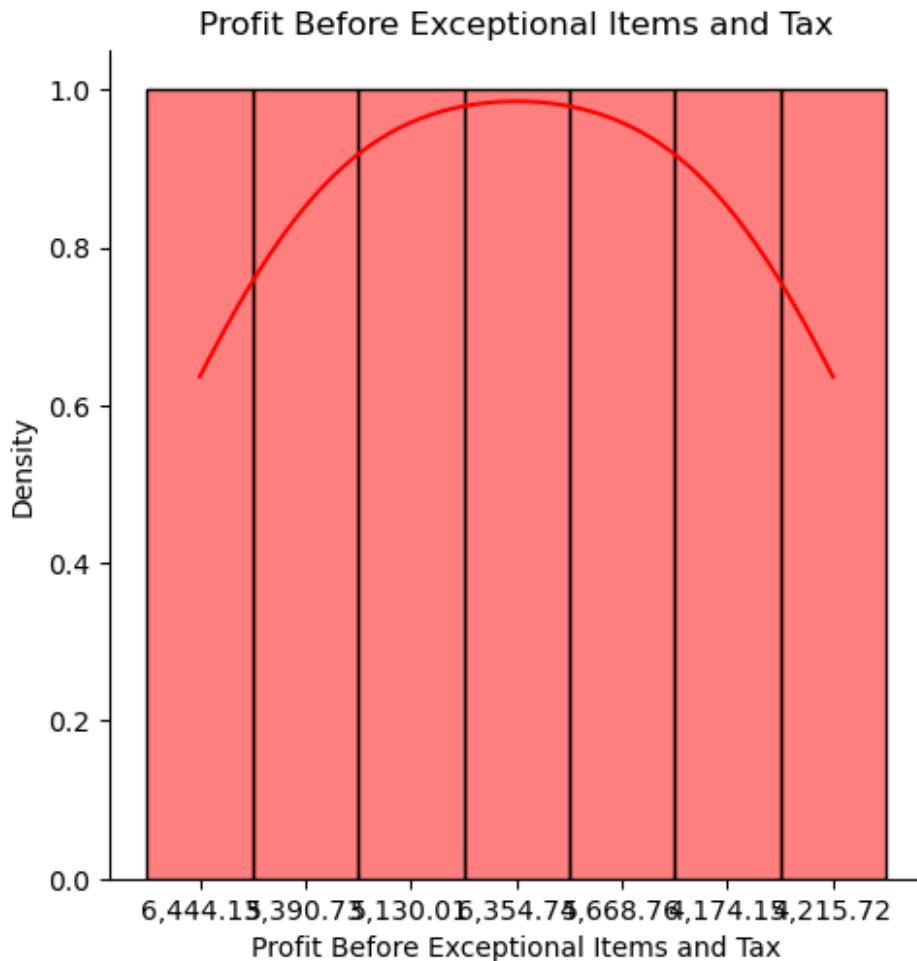


Over the last few years, the company's revenue has increased, and we can see that 2022 will be significantly higher than the previous year. The profit attributable to shareholders in 2022 is 4,935.22, almost five times the previous year's (2021) profit of 984.16. Earnings fluctuate in the early days, with a high of 4,796.04 in 2019 and a low of 1,330.55 in 2020. But overall, it shows an upward trend in earnings over the past decade. It is important to note that the chart only provides information on profit and not the underlying factors that

contributed to this trend. Other factors such as company sales, expenses and economic conditions may have also influenced this trend.

Profit Before Exceptional Items and Tax

```
sns.displot(df['Profit Before Exceptional Items and Tax'], kde=True,  
color='red')  
plt.xlabel('Profit Before Exceptional Items and Tax')  
plt.ylabel('Density')  
plt.title('Profit Before Exceptional Items and Tax')  
plt.show()
```



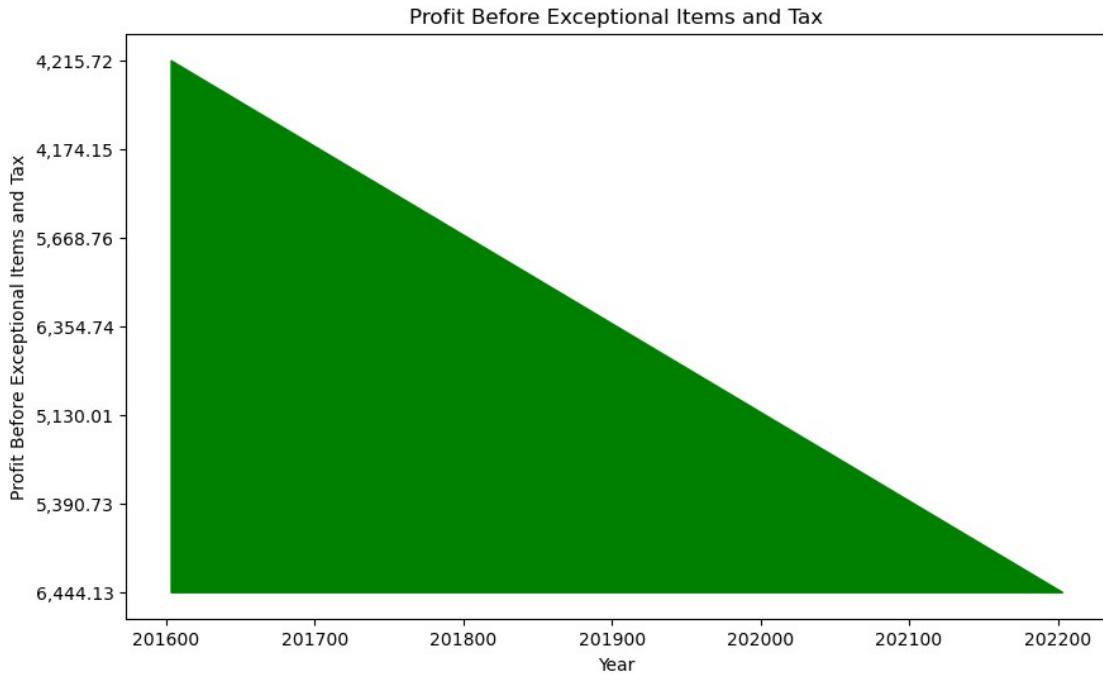
```
# Filter the relevant columns  
data = df[['Year', 'Profit Before Exceptional Items and Tax']]  
  
# Set the figure size  
plt.figure(figsize=(10, 6))  
  
# Create the area plot using fill_between  
plt.fill_between(data['Year'], data['Profit Before Exceptional Items and Tax'], color='green')
```

```

# Set the title and axis labels
plt.title('Profit Before Exceptional Items and Tax')
plt.xlabel('Year')
plt.ylabel('Profit Before Exceptional Items and Tax')

plt.show()

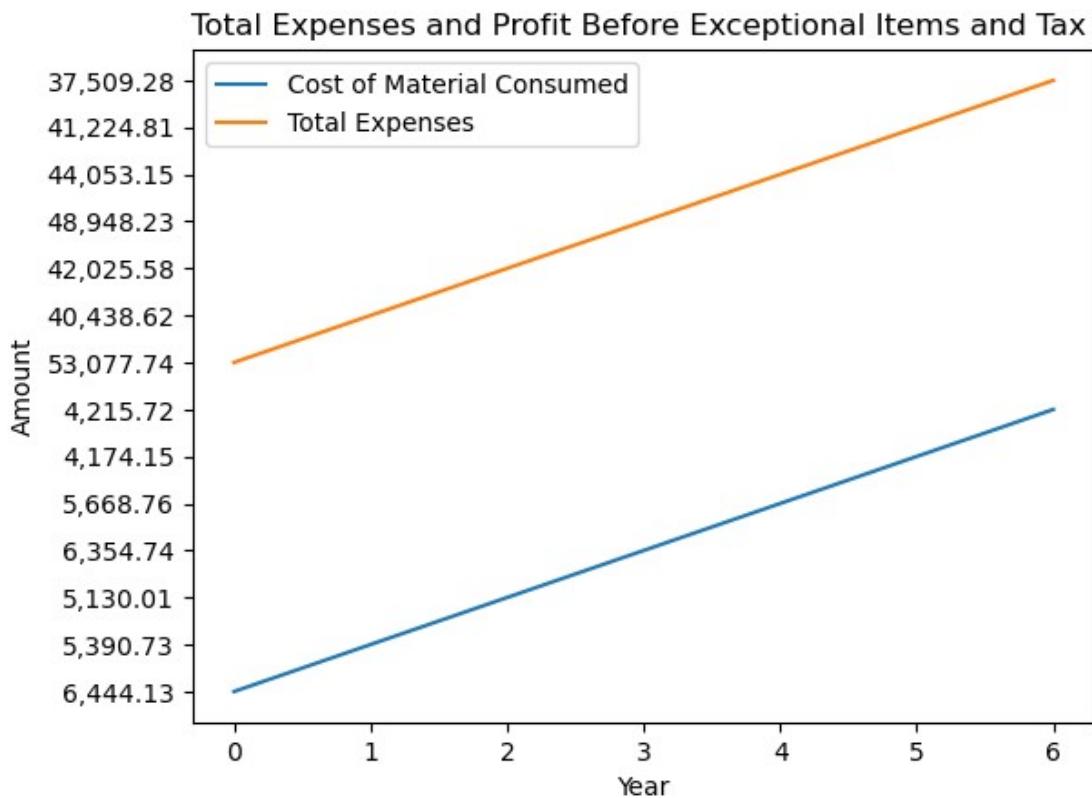
```



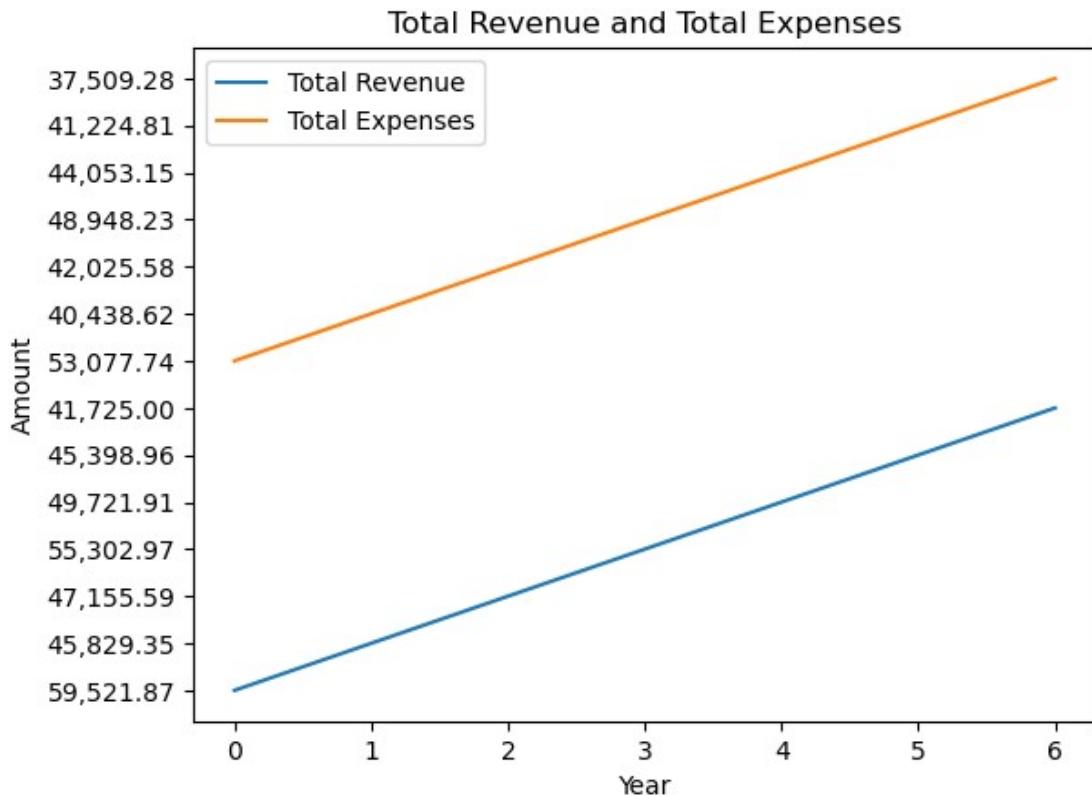
```

plt.plot(df['Profit Before Exceptional Items and Tax'], label='Cost of
Material Consumed')
plt.plot(df['Total Expenses'], label='Total Expenses')
plt.xlabel('Year')
plt.ylabel('Amount')
plt.title('Total Expenses and Profit Before Exceptional Items and Tax
')
plt.legend()
plt.show()

```



```
plt.plot(df['Total Revenue'], label='Total Revenue')
plt.plot(df['Total Expenses'], label='Total Expenses')
plt.xlabel('Year')
plt.ylabel('Amount')
plt.title('Total Revenue and Total Expenses')
plt.legend()
plt.show()
```

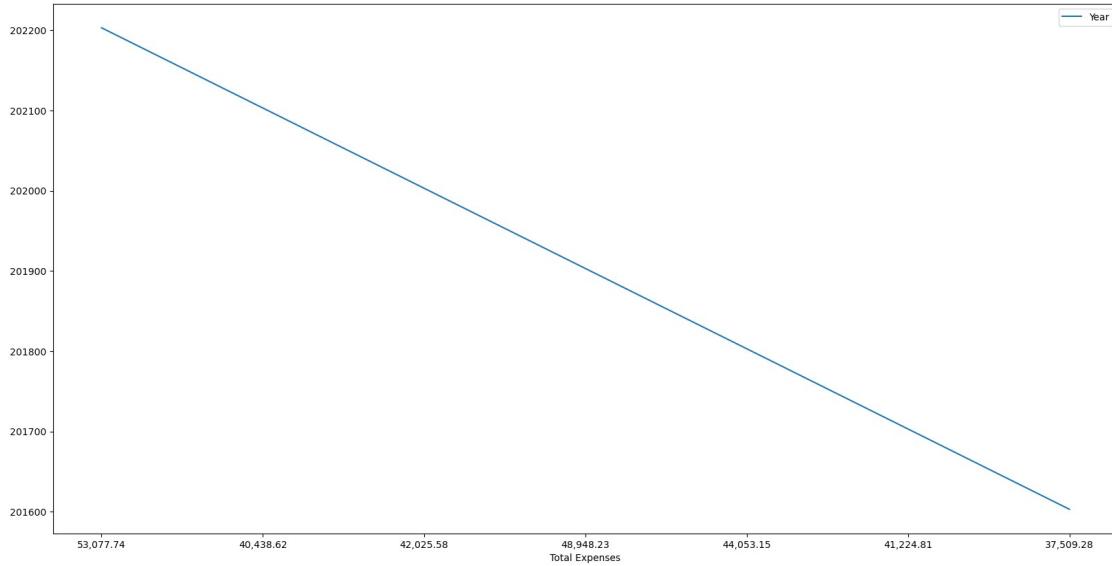


Mahindra & Mahindra Ltd's total turnover has increased over the past decade, with the company's turnover increasing from 41,725.00 million in 2015 to 59,521.87 million in 2022. The company's revenue growth has been fairly consistent, with the exception of a slight dip in 2020, likely due to the impact his COVID-19 pandemic has had on the global economy. The strong sales increase in 2022 shows that the company has successfully recovered from the pandemic-related slowdown and is on track to continue to grow. Revenue growth is positive, but note that the growth rate varies from year to year. For example, the company's revenue grew by 9.4% in 2018, but only by 3.3% in 2019. #Overall, the trendline points to Mahindra & Mahindra Ltd as a growth company with a relatively stable revenue stream. However, like any business, there may be risks and uncertainties that may affect future growth.

Total Expenses

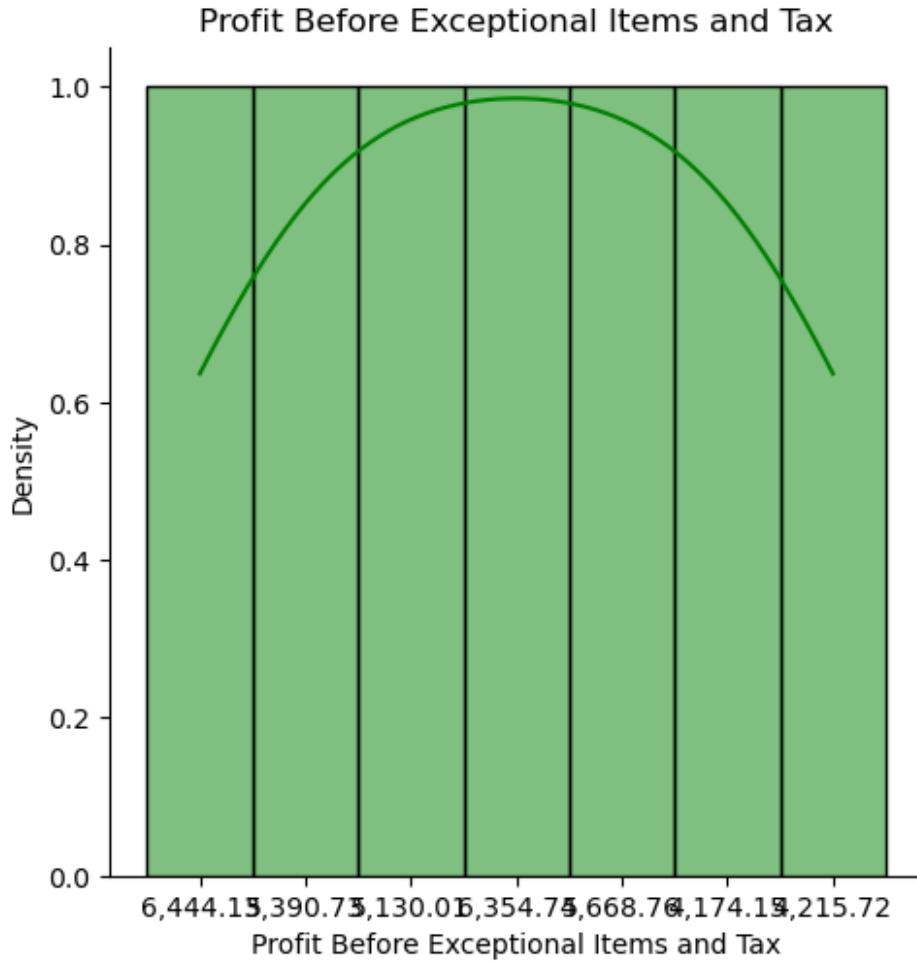
```
df.plot(kind='line', x='Total Expenses', y='Year', figsize=(20,10))
```

```
<AxesSubplot:xlabel='Total Expenses'>
```



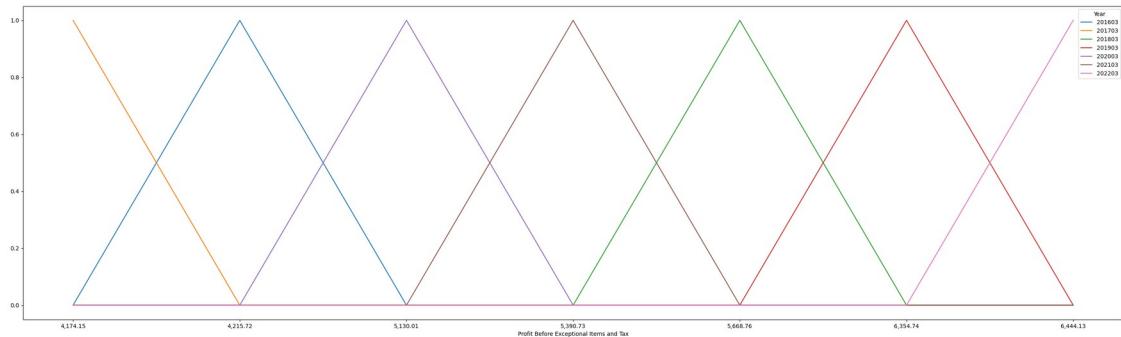
Mahindra & Mahindra Ltd's total spend has been changing year by year, and we can see that there has been a slight upward trend in recent years. 2022 spending is the highest of all the years provided, with a total expenditure of 53,077.74 crore, and 2016 is the lowest with a total expenditure of 37,509.28 crore.

```
sns.displot(df['Profit Before Exceptional Items and Tax'], kde=True,
            color='green')
plt.xlabel('Profit Before Exceptional Items and Tax')
plt.ylabel('Density')
plt.title('Profit Before Exceptional Items and Tax')
plt.show()
```



```
pd.crosstab(df['Profit Before Exceptional Items and Tax'], df['Year']).plot(kind='line', figsize=(35, 10))
```

```
<AxesSubplot:xlabel='Profit Before Exceptional Items and Tax'>
```

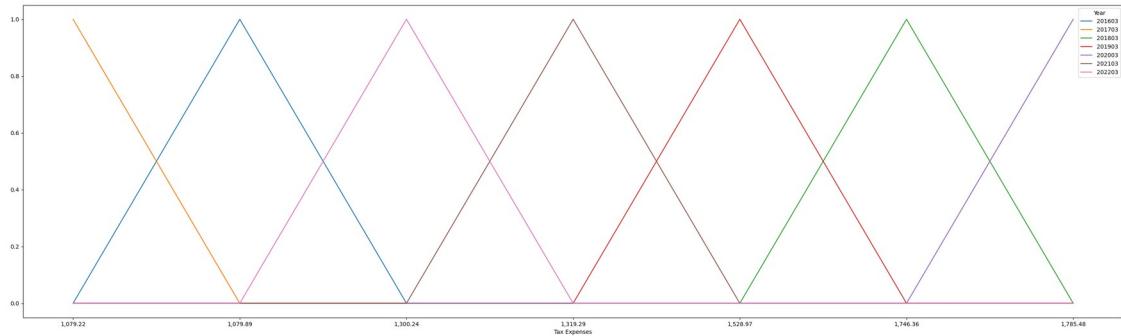


You can see that 'special items and pre-tax income' has generally increased over the years. There are a few exceptions where earnings decline year-over-year. 202103 and 201703. But the overall trend seems positive. Also worth noting that last year's profit, 202203, is the highest of any year on the chart. This may indicate that the company is performing well and is seeing business growth. # However, this analysis is based on limited data and

without additional information on the company's financial performance and industry trends, it is difficult to reach a definitive conclusion.

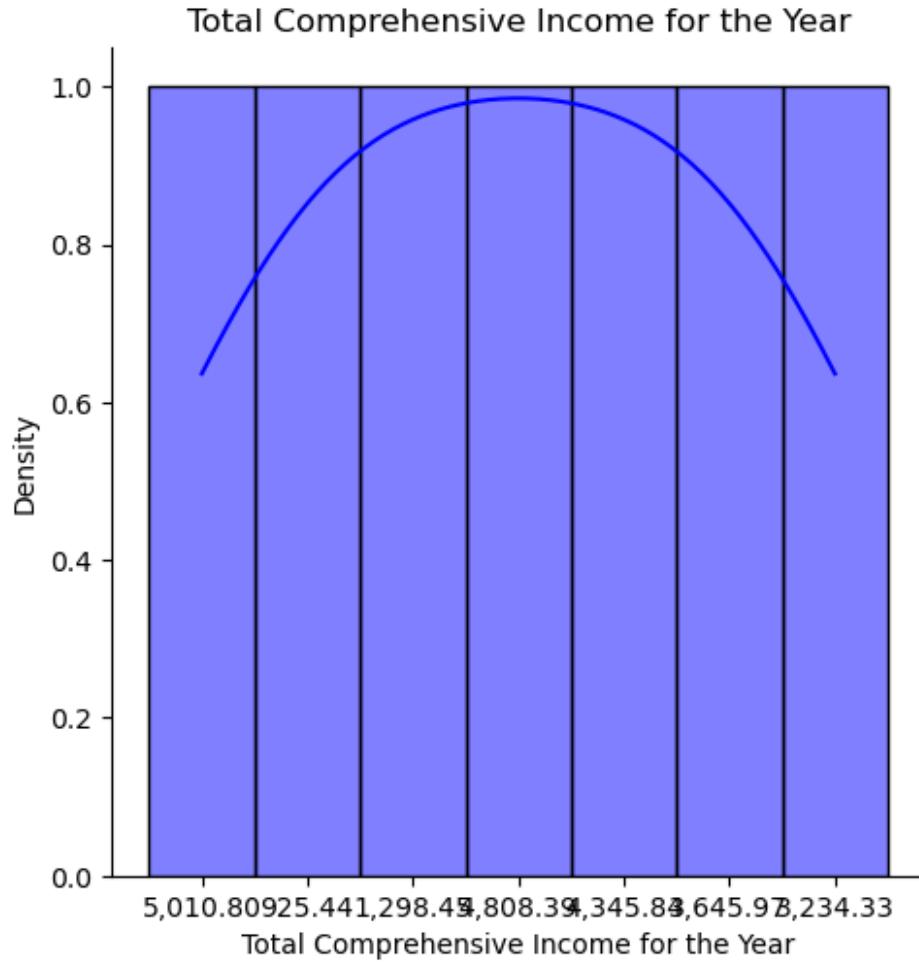
```
pd.crosstab(df[ 'Tax Expenses'],df[ 'Year']).plot(kind='line',figsize=(35, 10))
```

```
<AxesSubplot:xlabel='Tax Expenses'>
```



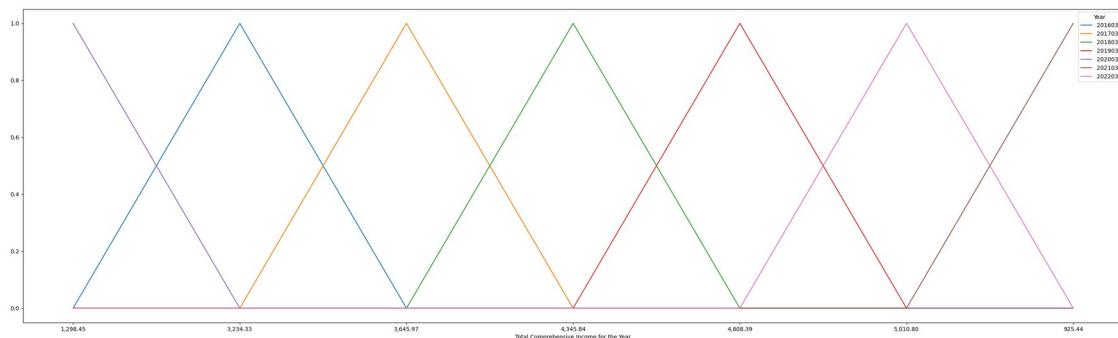
Mahindra & Mahindra Ltd tax charges have fluctuated over the past decade. The tax amount for 2022 was 1,300.24, slightly below the previous year's 1,319.29. Our tax expense for 2020 was higher at 1,785.48 compared to the previous year's expense of 1,528.97. Further analysis of the data shows that Mahindra & Mahindra Ltd's tax expense peaked at 1,746.36 in 2018, the highest expense in the last decade. Since then, spending has been declining, hitting a low of 1,079.22 in 2017. Overall, Mahindra & Mahindra Ltd's tax expense development shows that the company has been able to meet its tax obligations over the past decade. However, a more complete understanding of our financial performance requires further analysis of our financial statements.

```
sns.displot(df['Total Comprehensive Income for the Year'], kde=True,
color='blue')
plt.xlabel('Total Comprehensive Income for the Year')
plt.ylabel('Density')
plt.title('Total Comprehensive Income for the Year')
plt.show()
```



```
pd.crosstab(df['Total Comprehensive Income for the Year'], df['Year']).plot(kind='line', figsize=(35, 10))
```

```
<AxesSubplot:xlabel='Total Comprehensive Income for the Year'>
```



Overall trends:

Mahindra & Mahindra Ltd's

overall performance this year has been on a year-to-year increase, with the exception of a decline in 2021.

Significant increase:

Overall annual results increased significantly from 2013 to 2022. In 2013 it was 3,234.33, but in 2022 it will rise to 5,010.80.

2021 Dips:

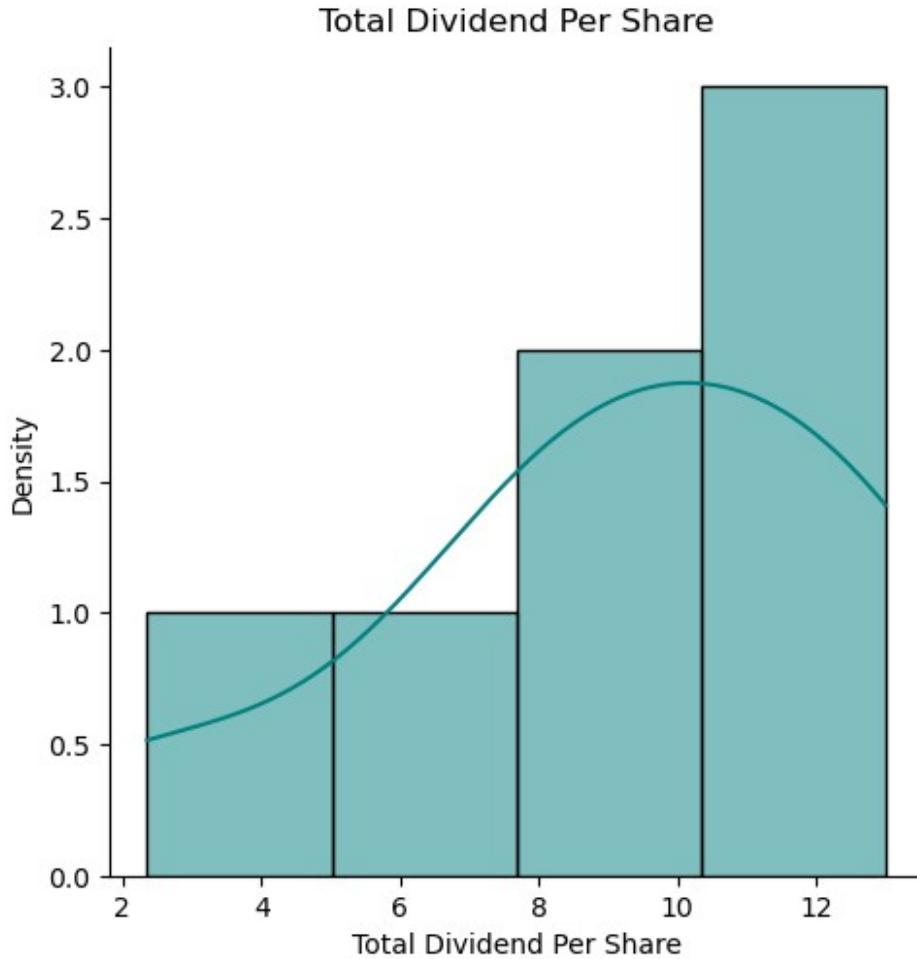
2021 : shows a significant drop in full-year results compared to the previous year (2020). This may be due to the impact of the COVID-19 pandemic on business operations.

#Fluctuation:

#Despite the overall upward trend, there are fluctuations in the overall results for the year. For example, it decreased in 2014, then increased significantly in 2015, and decreased again in 2016. These fluctuations can be due to various factors such as: B. Changes in market conditions, industry trends, or company-specific factors.

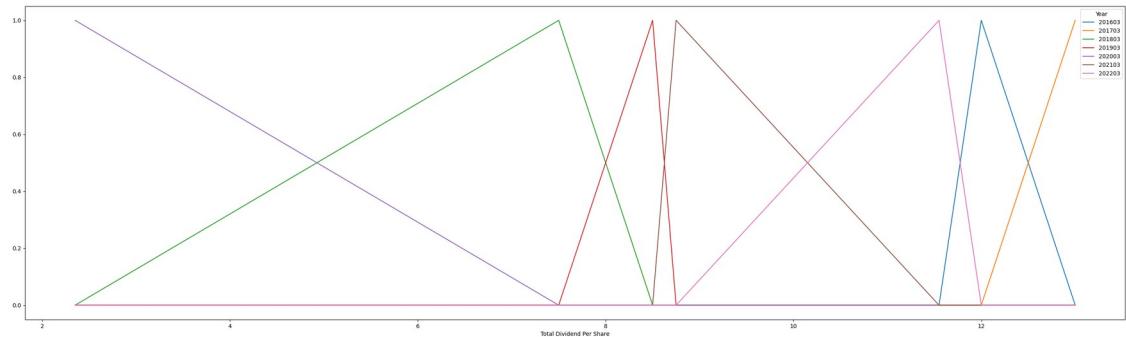
Total Dividend Per Share

```
sns.displot(df['Total Dividend Per Share'], kde=True, color='teal')
plt.xlabel('Total Dividend Per Share')
plt.ylabel('Density')
plt.title('Total Dividend Per Share')
plt.show()
```



```
pd.crosstab(df['Total Dividend Per Share'], df['Year']).plot(kind='line', figsize=(35, 10))

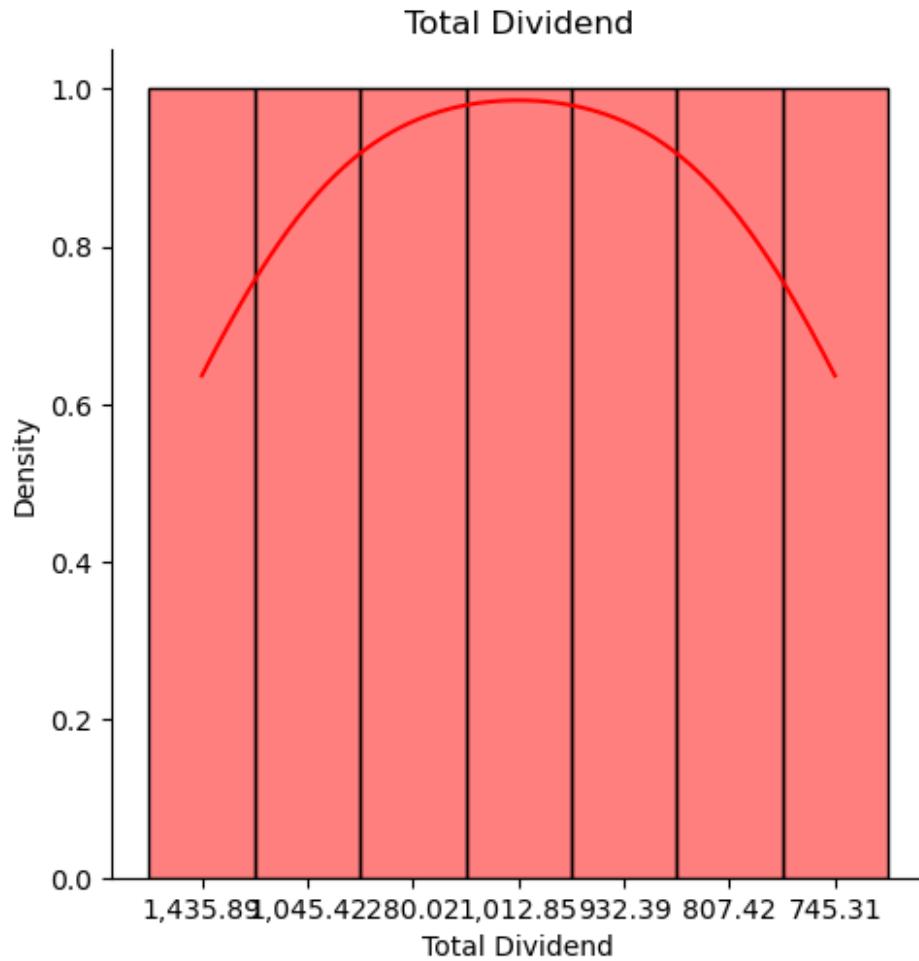
<AxesSubplot:xlabel='Total Dividend Per Share'>
```



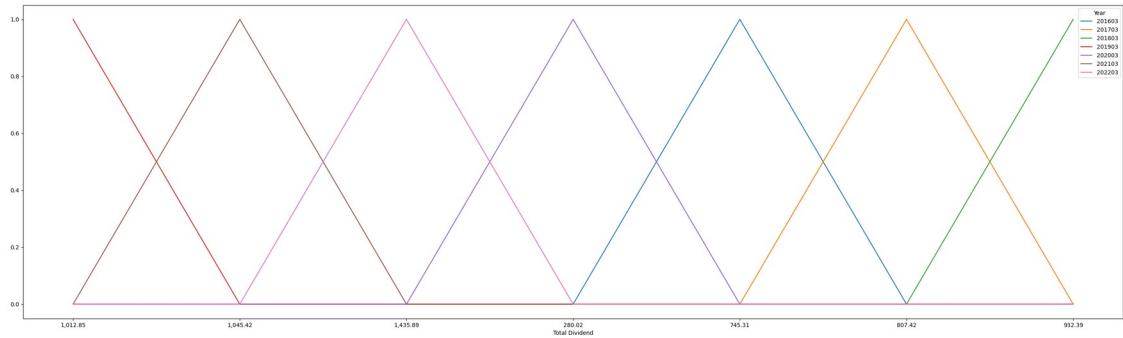
The trendline shows that the dividend per share has fluctuated over the years. The highest dividend he paid was 11.55 per share in 2022 and the lowest in 2020 was 2.35 per share. We can also see that the dividend per share has increased year-over-year, except for the decline in 2020. This shows that the company has been consistently profitable and has been able to increase its dividend payments to shareholders.

Total Dividend

```
sns.displot(df['Total Dividend'], kde=True, color='red')
plt.xlabel('Total Dividend')
plt.ylabel('Density')
plt.title('Total Dividend')
plt.show()
```



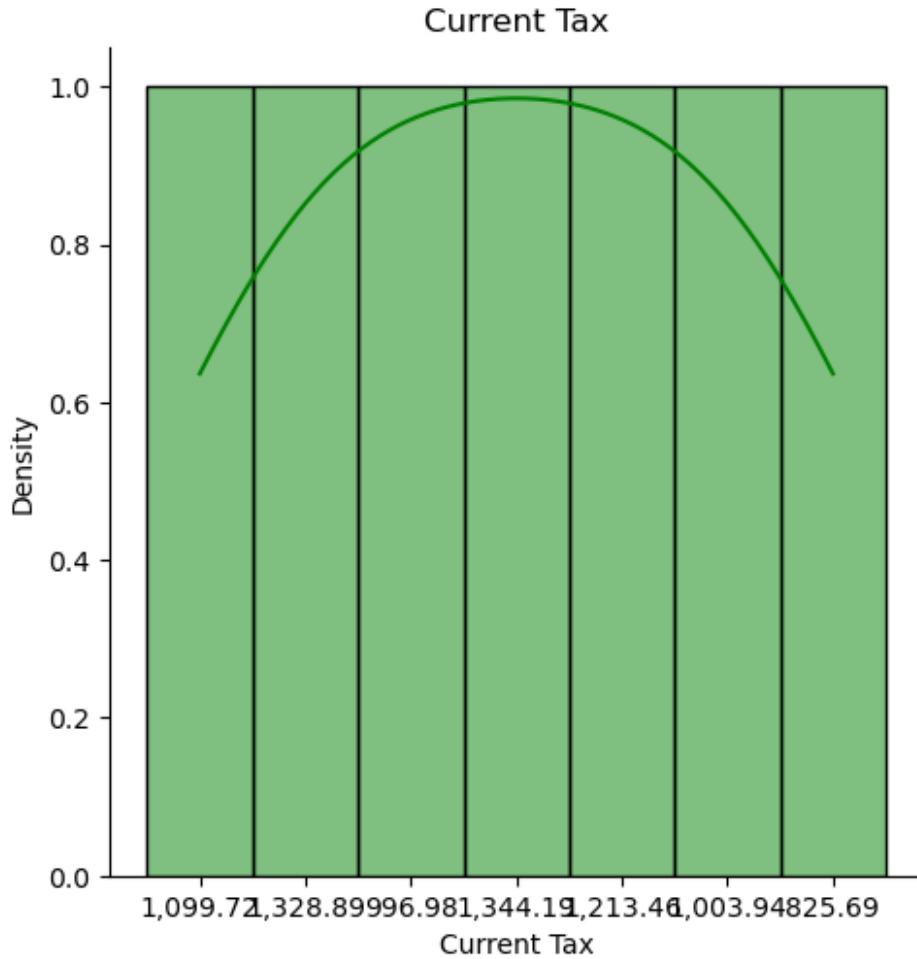
```
pd.crosstab(df['Total
Dividend'],df['Year']).plot(kind='line',figsize=(35, 10))
<AxesSubplot:xlabel='Total Dividend'>
```



Last year's total dividend for 2022 was highest at Rs 1,435.89 crore compared to Rs 1,045.42 crore in 2021 and Rs 2,820 crore in 2020. This is reflected in an increase in dividends. Also, the company has maintained a stable dividend over the past 10 years, with no sharp rises or falls in dividend levels. This demonstrates the company's commitment to maintaining its dividend policy and delivering consistent returns to its shareholders.

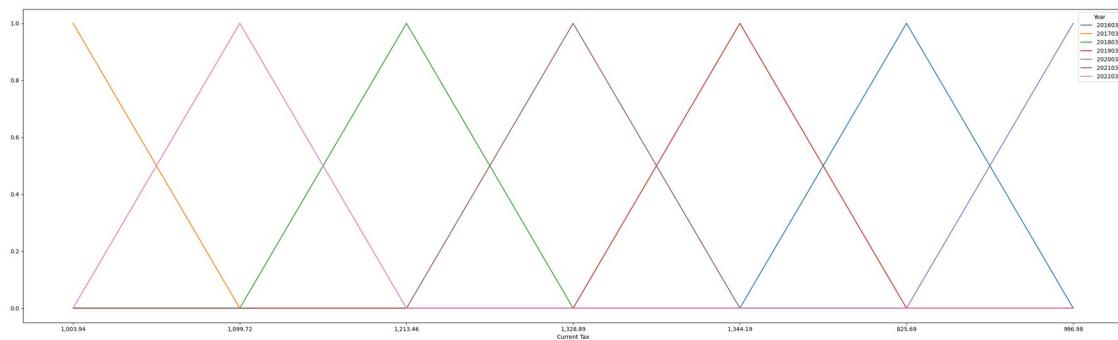
Current Tax

```
sns.displot(df['Current Tax'], kde=True, color='green')
plt.xlabel('Current Tax')
plt.ylabel('Density')
plt.title('Current Tax')
plt.show()
```



```
pd.crosstab(df['Current Tax'], df['Year']).plot(kind='line', figsize=(35, 10))

<AxesSubplot:xlabel='Current Tax'>
```

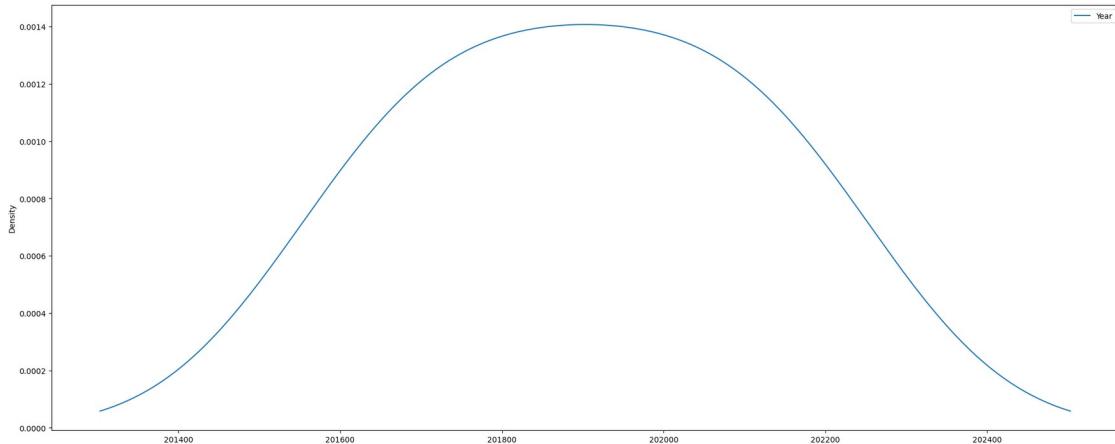


Looking at the current tax trend line, we can see that the value fluctuates over time with no clear upward or downward trend. There is no pattern in the fluctuations, with some years recurring taxes increasing and others decreasing compared to the previous year. It is difficult to draw meaningful conclusions from this limited data set, as other financial measures such as revenues, profits, and expenses must also be considered.

Profit After Tax

```
df.plot(kind='density', x='Profit After Tax', y='Year', figsize=(25, 10))
```

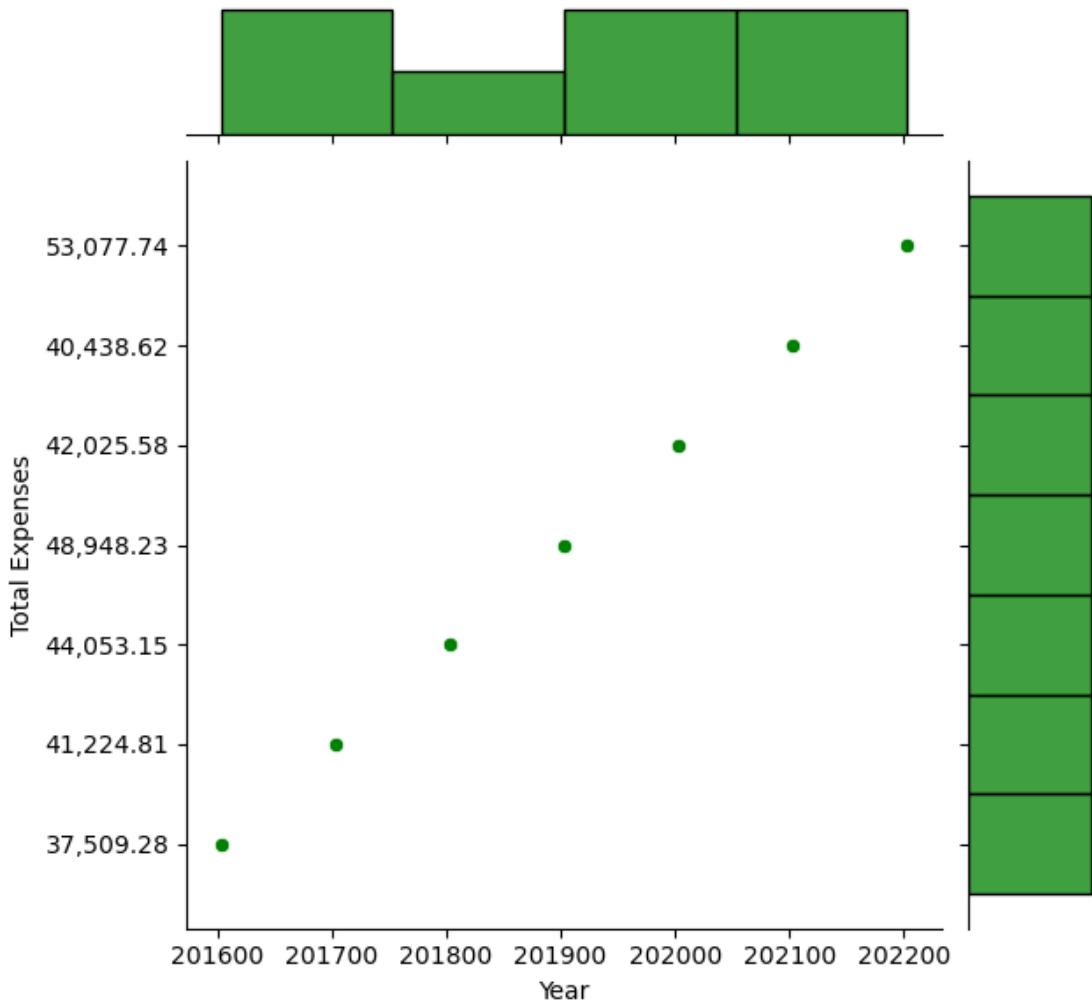
```
<AxesSubplot:ylabel='Density'>
```



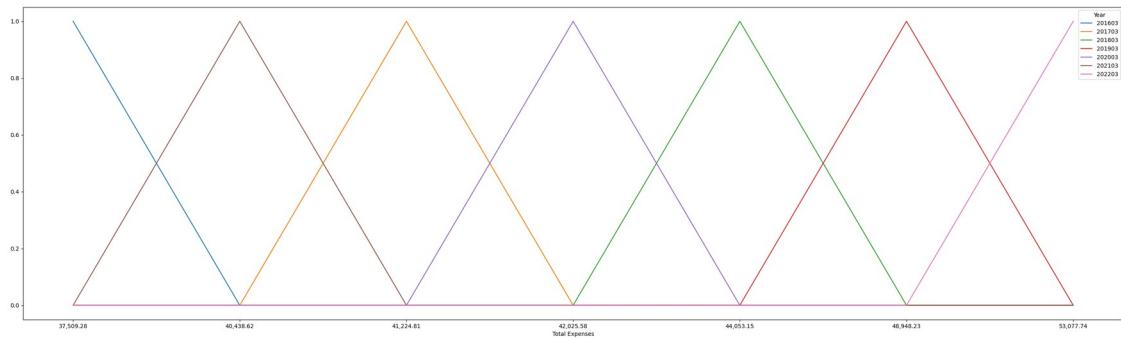
First, the company's earnings have been consistently positive over the past decade, demonstrating its ability to generate profits over the long term. Looking at the trendline, we can see that the company's earnings fluctuate from year to year, with some years showing significantly higher earnings than others. For example, the company's profit after tax for 2022 was Rs 493.522 crore, a significant increase from his Rs 98.416 crore in the previous year. In addition, PAT figures increased from Rs.3,204.57 in 2015 to Rs.4,935.22 in 2022, which shows that the company's profits have increased in recent years.

```
sns.jointplot(x='Year', y='Total Expenses', data=df, color='green')
```

```
<seaborn.axisgrid.JointGrid at 0x240b93e75b0>
```



```
pd.crosstab(df['Total Expenses'], df['Year']).plot(kind='line', figsize=(35, 10))
<AxesSubplot:xlabel='Total Expenses'>
```

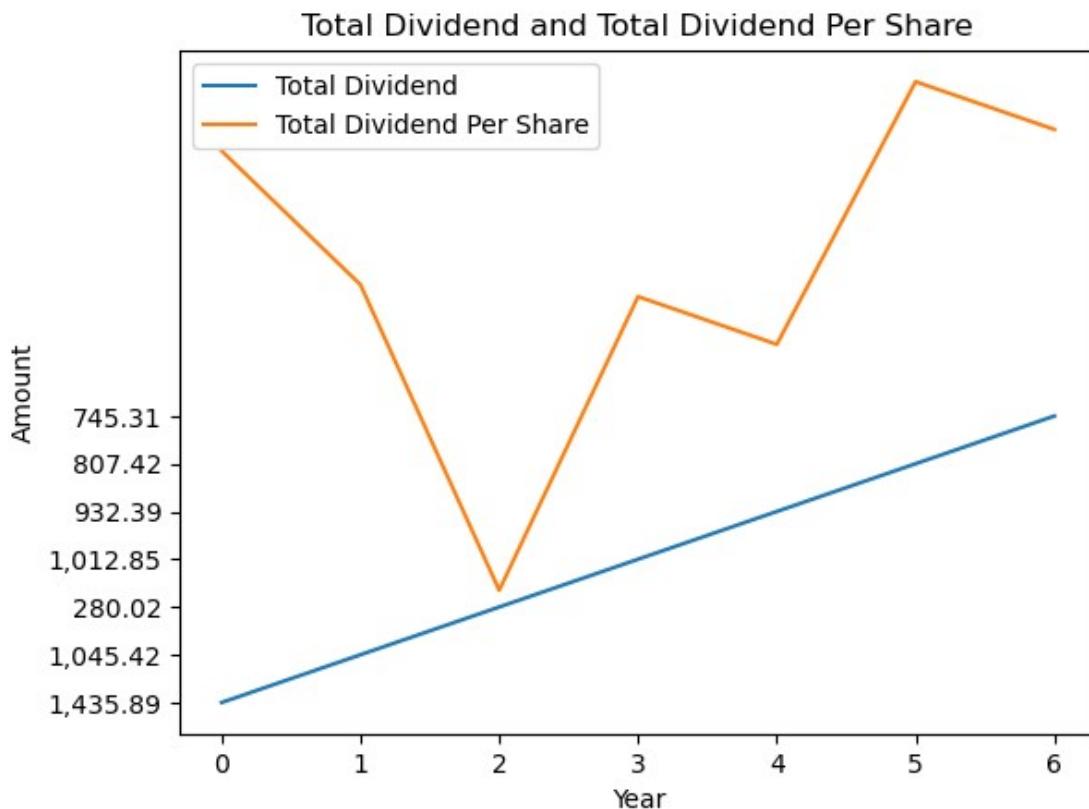


Decade of Mahindra & Mahindra Ltd from 2013 to 2022. It is important to note that the table appears to be incomplete as total spending for some years is missing. The trend line shows that total corporate spending fluctuates from year to year, with spending increasing

in some years and declining in other years. For example, his total spending in 2022 is more than his spending in 2021, and his spending in 2021 is less than his spending in 2020.

Total Dividend and Total Dividend Per Share

```
plt.plot(df['Total Dividend'], label='Total Dividend')
plt.plot(df['Total Dividend Per Share'], label='Total Dividend Per
Share')
plt.xlabel('Year')
plt.ylabel('Amount')
plt.title('Total Dividend and Total Dividend Per Share')
plt.legend()
plt.show()
```



First,

you can see that the total dividend amount is increasing year by year. The company said he paid a dividend of \$1.43589 billion in 2022. This is the highest of any year and the lowest dividend he paid in 2013 was \$280.02 million. This shows that the company is steadily increasing its dividend payments to shareholders.

Second,

we can see that the total dividend per share has also increased year by year. Dividend per share was highest at Rs.13 per share in 2017 and lowest at Rs.2.35 per share in 2020.

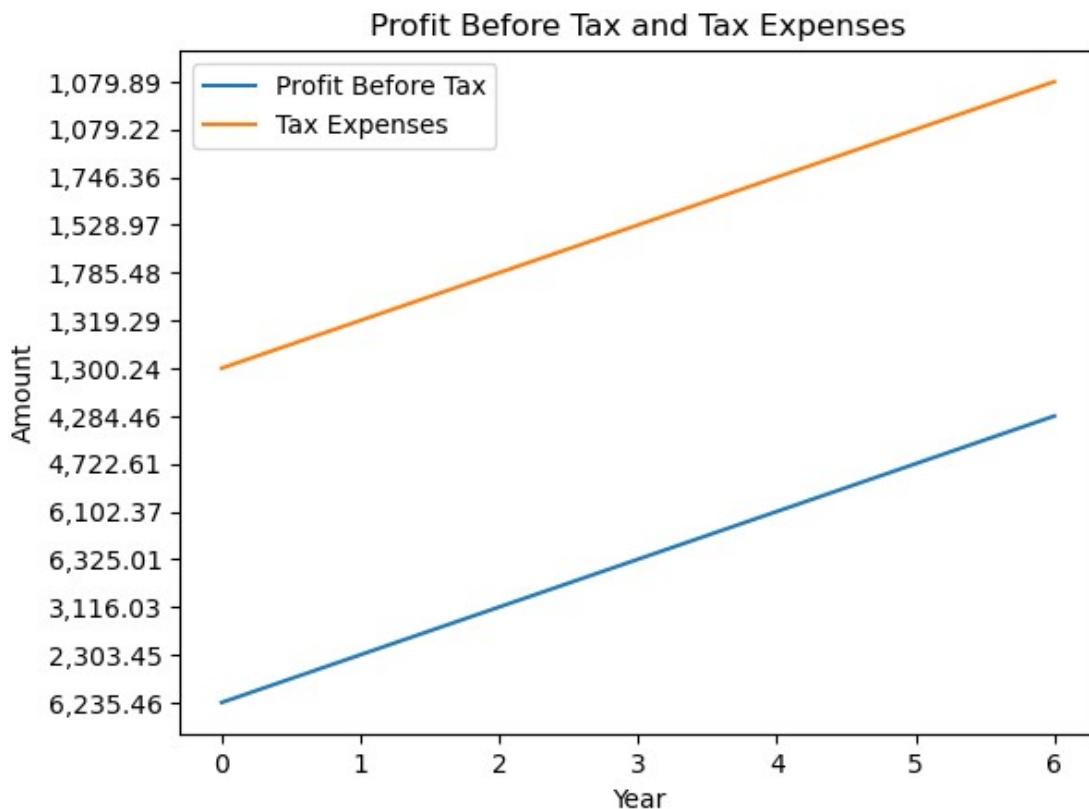
However, the company has maintained a decent dividend payout of over Rs.7 per share for all years except 2020.

Overall,

these trends have made Mahindra & Mahindra Ltd. a shareholder-friendly company that has steadily increased its dividend over the years. This can be seen as a positive signal for investors looking for stable dividend income. However, it is important to note that past performance may not be a guide to future results and investors should also consider other factors before making any investment decision.

Profit Before Tax and Tax Expenses

```
plt.plot(df['Profit Before Tax'], label='Profit Before Tax')
plt.plot(df['Tax Expenses'], label='Tax Expenses')
plt.xlabel('Year')
plt.ylabel('Amount')
plt.title('Profit Before Tax and Tax Expenses')
plt.legend()
plt.show()
```



The data shows that pre-tax earnings have fluctuated over the years. The company's 20203 pre-tax profit increased significantly to his 6,235.46, more than double his 202103 the year before. However, in 202103 the profit before tax was only 2,303.45. This is lower than the 201903 and 201803 values. Meanwhile, the company's tax expense has remained fairly

constant over the years, although it increased slightly in 20203. The company paid him the highest tax expense in 201903 with a value of 1,528.97. #Overall, based on data, Mahindra & Mahindra Ltd's financial performance has been somewhat inconsistent over the years. However, the company has maintained relatively stable tax expenses, demonstrating efficient tax management.

```
plt.plot(df['Profit After Tax'], label='Profit After Tax')
plt.plot(df['Total Expenses'], label='Total Expenses')
plt.xlabel('Year')
plt.ylabel('Amount')
plt.title('Total Revenue and Total Expenses')
plt.legend()
plt.show()
```

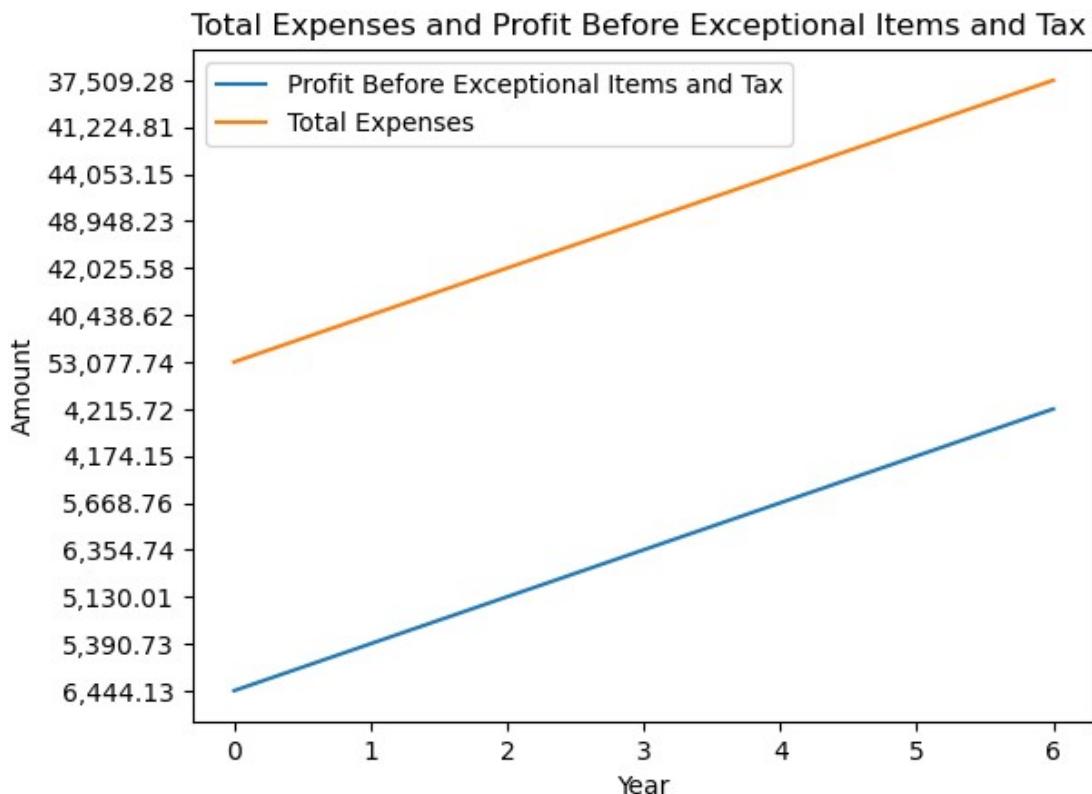


The company's revenue has increased from 41,725.00 in 2015 to 59,521.87 in 2022 over the past decade, demonstrating the growth of the company's business. However, total spending has also increased over the years, and in 2022 he peaked at 53,077.74. This suggests that the company is incurring higher costs to grow its business. Overall, the upward trend in revenue indicates that the company's business is expanding, while the upward trend in expenses indicates that the company needs to manage costs effectively to remain profitable. also shows. Also note that the data he only covers up to 2022 and additional information is needed to understand the company's current financial performance.

```

plt.plot(df['Profit Before Exceptional Items and Tax'], label='Profit Before Exceptional Items and Tax')
plt.plot(df['Total Expenses'], label='Total Expenses')
plt.xlabel('Year')
plt.ylabel('Amount')
plt.title('Total Expenses and Profit Before Exceptional Items and Tax')
plt.legend()
plt.show()

```



Mahindra & Mahindra Ltd's total spend hits a record high of 53,077.74 kroner in 2022, showing a steady increase over the years. This may indicate that the company has invested in new projects and expanded its operations, leading to increased spending. Material cost is an important cost category for a company as it represents the cost of raw materials used in production. You can see that these costs are also increasing year by year. This could indicate that the company has increased production or used more expensive raw materials. Overall, Mahindra & Mahindra Ltd appears to have grown steadily over the years as evidenced by increased costs. However, it is important to note that this analysis is based on limited data and more information is needed to make a more informed assessment of the company's financial health.

You can see that the company's expenses increased steadily from 2013 to 2022 and decreased slightly in 2018. Total expenses in 2022 will reach 53,077.74 units, significantly higher than 37,509.28 units in 2013. On the other hand, the company's pre-tax profit has

fluctuated greatly from year to year and has been volatile for many years. Profit before tax was the highest in 2019 and 2022 at 6,325.01 and 6,235.46 units respectively. In contrast, 2021 pre-tax profit was the lowest at 2,303.45 units. Overall, the trendline shows that the company's expenses are steadily increasing while pre-tax earnings are more volatile. This may indicate that the company is investing heavily in growth and expansion, which can affect profitability. However, the company remains profitable despite rising costs, indicating a relatively stable financial position.

MAHINDRA & MAHINDRA Balance Sheet

The Indian multinational automobile manufacturing company Mahindra & Mahindra Limited (M&M) is based in Mumbai, Maharashtra. Tractors, utility vehicles, commercial vehicles, and passenger vehicles are all made by the company. It also operates in aerospace, information technology, and the hospitality industry. We'll look at Mahindra & Mahindra's balance sheet information for the fiscal years 2020 and 21 in this report.

Assets:

As of March 31, 2021, Mahindra & Mahindra had INR 1,63,554 crores in total assets. This is a 7 percent increase from the previous year. Current assets and non-current assets make up the majority of the company's assets.

Intangible assets:

Property, plant, and equipment (PP&E), intangible assets, and investments are examples of non-current assets held by Mahindra & Mahindra. The company's PP&E was valued at INR 32,870 crores on March 31, 2021, a slight decrease of 2% from the previous year. Depreciation and amortization of existing assets accounted for the majority of the decrease. The value of the company's intangible assets was INR 1,152 crores, down 6% from the previous year. The amortization of existing intangible assets accounted for the majority of the decrease.

Long-term investments in subsidiaries, joint ventures, and associates are among the investments made by Mahindra & Mahindra. The company's investments were worth INR 46,835 crores as of March 31, 2021, up 16% from the previous year. The primary cause of the increase was a rise in the value of investments in subsidiaries.

Assets at present:

Inventory, trade receivables, cash and cash equivalents, and other current assets make up the company's current assets. The company's inventories were worth INR 20,769 crores as of March 31, 2021, up 8% from the previous year. The primary cause of the rise was an increase in vehicle and tractor production. The organization's exchange receivables were esteemed at INR 16,263 crores, a reduction of 5% over the earlier year. The company's improved collection efforts were primarily to blame for the drop.

The value of Mahindra & Mahindra's cash and cash equivalents increased by 97% from the previous year to INR 12,200 crores. The increment was fundamentally because of an expansion in the organization's working incomes. The value of the company's other current assets was INR 1,535 crore, up 29% from the previous year. The majority of the rise was attributable to an increase in the value of customer and dealer advances and loans.

Liabilities:

The complete liabilities of Mahindra and Mahindra as of Walk 31, 2021, were INR 1,04,249 crores. This addresses an increment of 7% over the earlier year. The organization's liabilities are basically partitioned into current and non-current liabilities.

Unfunded obligations:

Mahindra and Mahindra's non-current liabilities incorporate long haul borrowings, rent liabilities, conceded charge liabilities, and other non-current liabilities. As of Walk 31, 2021, the organization's drawn out borrowings were esteemed at INR 29,570 crores, an increment of 7% over the earlier year. The increment was basically because of the issuance of new obligation to support the organization's tasks. The organization's rent liabilities were esteemed at INR 2,760 crores, an increment of 33%

```
import matplotlib.pyplot as plt
import seaborn as sns
import pandas as pd
df = pd.read_csv(r'C:\Users\Anonymous\Downloads\BalanceSheet_.csv')
pd.set_option('display.max_columns',None)
df
```

	Year	Share Capital	Equity Authorised	Preference Capital	
Authorised	\				
0	202203	598.30	9050		
1500					
1	202103	597.39	4050		
0					
2	202003	596.52	4050		
0					
3	201903	595.80	4050		
0					
4	201803	594.97	4050		
0					
5	201703	296.81	600		
0					
6	201603	296.32	600		
0					
7	201503	295.70	600		
0					
8	201403	295.16	600		
0					
9	201303	295.16	600		
0					
	Unclassified	Authorised	Equity Issued	Equity Subscribed	\
0		0	598.30	598.30	

1	0	597.38	597.38
2	0	621.60	621.60
3	0	621.60	621.60
4	0	621.60	621.60
5	0	310.55	310.55
6	0	310.55	296.32
7	25	310.55	295.70
8	0	307.95	307.95
9	0	295.16	295.16

	Equity Called Up	Less : Equity Calls in Arrears	Equity Forfeited
\ 0	598.30	0.00	0
1	597.38	0.00	0
2	596.52	0.00	0
3	595.80	0.00	0
4	594.97	0.00	0
5	296.81	0.00	0
6	296.32	0.00	0
7	295.70	0.00	0
8	307.95	12.79	0
9	295.16	0.00	0

Up	Equity Paid Up	Adjustments to equity	Preference Capital Paid
\ 0	598.30	0	0
1	597.39	0	0
2	596.52	0	0
3	595.80	0	0
4	594.97	0	0
5	296.81	0	0
6	296.32	0	0

7	295.70	0	0
8	295.16	0	0
9	295.16	0	0

	Convertible Preference Share Paid Up \
0	0
1	0
2	0
3	0
4	0
5	0
6	0
7	0
8	0
9	0

	Non-convertible Preference Share Paid UP	Unclassified Shares Paid Up \
0	0	0
1	0	0
2	0	0
3	0	0
4	0	0
5	0	0
6	0	0
7	0	0
8	0	0
9	0	0

	Reserves Total	TOTAL RESERVES EXCLUDING REVALUATION RESERVE \
0	38362.65	38362.65
1	34353.61	34353.61
2	33871.32	33871.32
3	33613.43	33613.43
4	29699.07	29699.07

5	26488.81		26488.81
6	22126.85		22126.85
7	18959.39		18948.60
8	16496.03		16485.24
9	14363.76		14352.92

	Capital Reserves	General Reserves	Share Premium	\
0	346.10	1742.36	2628.34	
1	346.10	1739.26	2513.99	
2	346.00	1732.83	2387.59	
3	346.00	1730.54	2274.15	
4	346.00	1730.45	2160.94	
5	346.00	1730.38	2383.59	
6	10.13	1730.36	2334.02	
7	10.13	1730.44	2280.44	
8	10.13	1706.63	2233.43	
9	10.13	1821.04	2233.55	

	Investment Allowance Reserve	Debenture Redemption Reserve	Reserve \
0	0		50.64
1	0		50.64
2	0		50.64
3	0		50.64
4	0		36.26
5	0		21.88
6	0		7.50
7	0		105.01
8	0		88.22
9	0		71.43

	Capital Redemption Reserve	Debt Redemption Reserve	Amalgamation Reserve \
0	0		0
0			
1	0		0
0			
2	0		0
0			
3	0		0
0			
4	0		0
0			
5	0		0
0			
6	0		0
0			
7	0		0
0			
8	0		0
0			

9
0

0

0

	Taxation Reserve	Exchange Fluctuation Reserve	\
0	0	0.00	
1	0	0.00	
2	0	0.00	
3	0	0.00	
4	0	0.00	
5	0	0.00	
6	0	0.00	
7	0	-79.58	
8	0	-121.01	
9	0	-94.51	

	Foreign Exchange Earnings Reserve	Exchange Profit / Allowance Reserve	\
0		0	
0		0	
1		0	
0		0	
2		0	
0		0	
3		0	
0		0	
4		0	
0		0	
5		0	
0		0	
6		0	
0		0	
7		0	
0		0	
8		0	
0		0	
9		0	
0		0	

	Deferred Credit Reserve	Contingency Reserve	Development Rebate Reserve	\
0		0	0	
0		0	0	
1		0	0	
0		0	0	
2		0	0	
0		0	0	
3		0	0	
0		0	0	
4		0	0	
0		0	0	

5	0	0
6	0	0
7	0	0
8	0	0
9	0	0
0		

	Special Reserve	Special Appropriation to Projects	Statutory Reserves \
0	0	0	0
1	0	0	0
2	0	0	0
3	0	0	0
4	0	0	0
5	0	0	0
6	0	0	0
7	0	0	0
8	0	0	0
9	0	0	0
0			

	Reserve for Bad and Doubtful Debt	Investment Fluctuation	Reserve \
0	0	0.00	0
1	0	0.00	1
2	0	0.00	2
3	0	0.00	3
4	0	0.00	4
5	0	0.00	5
6	0	0.00	6

7	0	64.59
8	0	130.74
9	0	277.98

	Profit & Loss Account Balance	Other Reserves	TOTAL REVALUATION
RESERVE \			
0	33413.25	181.96	
0.00			
1	29463.69	239.93	
0.00			
2	29102.00	252.26	
0.00			
3	28966.71	245.39	
0.00			
4	25205.82	219.60	
0.00			
5	21781.37	225.59	
0.00			
6	17904.67	140.17	
0.00			
7	14749.51	88.06	
10.79			
8	12324.71	112.39	
10.79			
9	9951.92	81.38	
10.84			

	Fixed Asset Revaluation Reserve	Investment Revaluation Reserve \
0	0.00	0
1	0.00	0
2	0.00	0
3	0.00	0
4	0.00	0
5	0.00	0
6	0.00	0
7	10.79	0
8	10.79	0
9	10.84	0

	Other Revaluation Reserve	Equity Share Warrants	Equity
Application Money \			
0	0	0	
0			
1	0	0	
0			

2	0	0
3	0	0
0	0	0
4	0	0
0	0	0
5	0	0
0	0	0
6	0	0
0	0	0
7	0	0
0	0	0
8	0	0
0	0	0
9	0	0
0	0	0

	Total Shareholders Funds	Secured Loans	Convertible Debentures	\
0	38960.95	496.48	0	
1	34951.00	94.25	0	
2	34467.84	0.00	0	
3	34209.23	0.00	0	
4	30294.04	0.00	0	
5	26785.62	12.20	0	
6	22423.17	0.00	0	
7	19255.09	0.00	0	
8	16791.19	294.10	0	
9	14658.92	266.67	0	

	Non Convertible Debentures	Partly Convertible Debentures	\
0	0.00	0	
1	0.00	0	
2	0.00	0	
3	0.00	0	
4	0.00	0	
5	0.00	0	
6	0.00	0	
7	0.00	0	
8	133.34	0	
9	266.67	0	

	Less : Debentures Calls in arrears	Term Loans	Institutions	\
0	0	0	0	
1	0	0	0	
2	0	0	0	
3	0	0	0	
4	0	0	0	
5	0	0	0	
6	0	0	0	
7	0	0	0	

8		0	0
9		0	0

	Term Loans	Banks	Term Loans	Others	Borrowings from Government of
India \					
0	0.00		0		
0					
1	0.00		0		
0					
2	0.00		0		
0					
3	0.00		0		
0					
4	0.00		0		
0					
5	0.00		0		
0					
6	0.00		0		
0					
7	0.00		0		
0					
8	160.71		0		
0					
9	0.00		0		
0					

	Deferred Credit / Hire Purchase	Bridge Loans \
0	0	0
1	0	0
2	0	0
3	0	0
4	0	0
5	0	0
6	0	0
7	0	0
8	0	0
9	0	0

	Cash Credit /Packing Credit / Bills Discounted	Working Capital
Advances \		
0		0
0		
1		0
0		
2		0
0		
3		0
0		
4		0
0		

5		0
0		0
6		0
0		0
7		0
0		0
8		0
0		0
9		0
0		0

	Interest Accured & Due	Debenture/Bonds-Application Money	\
0	0	0	0
1	0	0	0
2	0	0	0
3	0	0	0
4	0	0	0
5	0	0	0
6	0	0	0
7	0	0	0
8	0	0	0
9	0	0	0

	Short Term Borrowings-Secured	\
0	496.48	
1	94.25	
2	0.00	
3	0.00	
4	0.00	
5	12.20	
6	0.00	
7	0.00	
8	0.05	
9	0.00	

	Current Maturites of long term Borrowings-Secured	Secured Loans
Others	\	
0		0
0		0
1		0
0		0
2		0
0		0
3		0
0		0
4		0
0		0
5		0
0		0
6		0

0							
7							0
0							0
8							0
0							0
9							0
0							0

	Unsecured Loans	Debentures / Bonds	Accrued Interest	\
0	6237.07	3467.38	0	
1	7692.07	3463.75	0	
2	3026.91	973.96	0	
3	2571.34	973.84	0	
4	2958.08	973.72	0	
5	2838.88	973.62	0	
6	2916.92	500.00	0	
7	3728.46	500.00	0	
8	3751.23	500.00	0	
9	3221.92	0.00	0	

	Loans from Group Cos	Loans from Banks	Loans from Institutions	
Advances \				
0	0	1841.67	0	
0	0	3050.00	0	
1	0	413.48	0	
0	0	387.28	0	
2	0	402.66	0	
0	0	344.66	0	
3	0	0.00	0	
0	0	937.50	0	
4	0	1797.45	0	
0	0	1740.20	0	
5	0			
0				

	Loans from GOI / PSUs	Deferred Liabilities	Deferred Tax	Loan \
0	0	0	0.0	
1	0	0	0.0	
2	0	0	68.8	
3	0	0	0.0	
4	0	0	0.0	
5	0	0	0.0	

6	0	0	0.0
7	0	0	0.0
8	0	0	0.0
9	0	0	0.0

	Commercial Paper	Debenture/Bonds-Application Money.	1 \
0	0	0	
1	0	0	
2	0	0	
3	0	0	
4	0	0	
5	0	0	
6	0	0	
7	0	0	
8	0	0	
9	0	0	

	Short Term Borrowings-Unsecured	\
0	80.81	
1	93.79	
2	900.00	
3	448.54	
4	668.47	
5	526.68	
6	348.13	
7	106.25	
8	0.69	
9	54.63	

	Current Maturites of long term Borrowings-Unsecured	\
0	315.45	
1	528.25	
2	94.88	
3	91.02	
4	93.71	
5	78.21	
6	1073.37	
7	1108.08	
8	300.17	
9	261.52	

	Unsecured Loans	Others	TOTAL DEPOSITS	Fixed Deposits	\
0	531.76		0.00	0.00	
1	556.28		0.00	0.00	
2	575.79		0.00	0.00	
3	670.66		0.00	0.00	
4	819.52		0.00	0.00	
5	915.71		0.00	0.00	
6	995.42		0.00	0.00	
7	1054.94		21.69	21.69	

8	1094.21	58.71	58.71	
9	1117.64	47.93	47.93	
	Intercorporate Deposits	Security Deposits	Directors Deposits	\
0	0	0	0	
1	0	0	0	
2	0	0	0	
3	0	0	0	
4	0	0	0	
5	0	0	0	
6	0	0	0	
7	0	0	0	
8	0	0	0	
9	0	0	0	
	Share Deposits	Other Deposits	Total Debt	Other Liabilities \
0	0	0	6733.55	1807.41
1	0	0	7786.32	1905.25
2	0	0	3026.91	1621.20
3	0	0	2571.34	1621.85
4	0	0	2958.08	1350.50
5	0	0	2851.08	1314.66
6	0	0	2916.92	1276.58
7	0	0	3728.46	1221.68
8	0	0	4045.33	1096.60
9	0	0	3488.59	856.99
	Other Long Term Liabilities	Long Term Provisions	Others \	
0	894.75	912.66	0	
1	889.83	1015.42	0	
2	698.22	922.98	0	
3	604.92	1016.93	0	
4	488.69	861.81	0	
5	490.21	824.45	0	
6	620.34	656.24	0	
7	614.34	607.34	0	
8	586.27	510.33	0	
9	415.40	441.59	0	
	Total Liabilities	APPLICATION OF FUNDS :	Gross Block	Goodwill
Patent \	47501.91	NaN	30846.02	0
5487.92				
1	44642.57	NaN	27311.86	0
5539.73				
2	39115.95	NaN	22666.25	0
4947.38				
3	38402.42	NaN	20518.32	0
4360.69				
4	34602.62	NaN	16877.99	0

2625.70					
5	30951.36		NaN	15477.27	0
2068.29					
6	26616.67		NaN	13798.59	0
1498.69					
7	24205.23		NaN	11738.51	0
0.00					
8	21933.12		NaN	10796.12	0
606.90					
9	19004.50		NaN	9005.78	0
0.00					

\	Technical Know-how	Leasehold Land	Freehold Land	Railway Sidings
0	0.00	510.74	329.83	0
1	0.00	415.45	273.57	0
2	0.00	117.99	271.71	0
3	0.00	0.00	271.96	0
4	0.00	0.00	262.39	0
5	0.00	0.00	261.68	0
6	0.00	0.00	267.76	0
7	0.00	107.50	267.22	0
8	2.58	63.34	264.62	0
9	4.34	63.34	139.27	0

\	Buildings	Ponds & Reservoirs	Water supply / tubewells
0	4336.99	0	0
1	3533.56	0	0
2	2164.34	0	0
3	1917.73	0	0
4	1860.31	0	0
5	1714.78	0	0
6	1620.67	0	0
7	1514.18	0	0
8	1425.28	0	0
9	1338.49	0	0

\	Plant and Machinery	Ships / Vessels	Electrical Installations / Fittings
---	---------------------	-----------------	-------------------------------------

0	18852.34	0
0		
1	16326.97	0
0		
2	14072.06	0
0		
3	13025.89	0
0		
4	11195.53	0
0		
5	10494.99	0
0		
6	9579.57	0
0		
7	8405.37	0
0		
8	7689.00	0
0		
9	6354.12	0
0		

	Factory Equipments	Furniture and Fixtures	Office Equipments
Computers \			
0	0	253.23	201.34
0			
1	0	247.28	193.29
0			
2	0	209.25	131.20
0			
3	0	193.95	120.29
0			
4	0	202.64	123.70
0			
5	0	193.22	114.90
0			
6	0	178.09	102.37
0			
7	0	176.43	99.40
0			
8	0	165.19	87.04
0			
9	0	148.16	69.51
0			

\	Lab and R & D Equipment	Medical Equipment and Surgical Instrument	
0	0		0
1	0		0

2	0	0
3	0	0
4	0	0
5	0	0
6	0	0
7	0	0
8	0	0
9	0	0

	Vehicles	Transmission and Distribution Equipment	Wind Turbines	\
0	419.69	0	0	
1	468.30	0	0	
2	464.35	0	0	
3	434.65	0	0	
4	410.85	0	0	
5	384.53	0	0	
6	338.99	0	0	
7	302.33	0	0	
8	274.00	0	0	
9	226.45	0	0	

Assets \	Aircraft and Helicopters	Estates and Development	Other Fixed
0	57.22	0	
396.72			
1	57.22	0	
256.49			
2	103.46	0	
184.51			
3	103.46	0	
89.70			
4	103.46	0	
93.41			
5	103.46	0	
141.42			
6	103.46	0	
108.99			
7	103.46	0	
762.62			
8	103.46	0	
114.71			

9	56.82	0
605.28		

	Less : Accumulated Depreciation	Goodwill.1	PATENT	Technical
Know-how.1 \				
0	16297.40	0	3012.88	
0.00				
1	15300.56	0	3292.39	
0.00				
2	12271.66	0	2611.59	
0.00				
3	10436.57	0	1909.27	
0.00				
4	9018.58	0	1294.13	
0.00				
5	7706.23	0	858.55	
0.00				
6	6202.60	0	467.74	
0.00				
7	5809.05	0	0.00	
0.00				
8	4919.17	0	460.68	
2.58				
9	4047.92	0	0.00	
3.09				

	Leasehold Land.1	Freehold Land.1	Railway Sidings.1	
Buildings.1 \				
0	16.21	0	0	1162.75
1	10.16	0	0	1037.70
2	1.86	0	0	615.68
3	0.00	0	0	534.75
4	0.00	0	0	483.71
5	0.00	0	0	434.27
6	0.00	0	0	374.08
7	7.45	0	0	337.20
8	6.37	0	0	292.87
9	5.69	0	0	253.20

Ponds & Reservoirs.	1	Water supply / tubewells.	1	Plant and
Machinery.	1	\		
0	0		0	
11284.01				
1	0		0	
10187.31				
2	0		0	
8428.27				
3	0		0	
7432.84				
4	0		0	
6691.34				
5	0		0	
5870.39				
6	0		0	
4915.29				
7	0		0	
4511.82				
8	0		0	
3833.18				
9	0		0	
3193.35				

Ships / Vessels.	1	Electrical Installations / Fittings.	1	\
0	0		0	
1	0		0	
2	0		0	
3	0		0	
4	0		0	
5	0		0	
6	0		0	
7	0		0	
8	0		0	
9	0		0	

Factory Equipments.	1	Furniture and Fixtures.	1	Office Equipments.	1
\					
0	0		190.71		161.92
1	0		181.91		155.10
2	0		147.46		98.84
3	0		134.66		90.72
4	0		135.45		91.36
5	0		120.95		80.45

6	0	103.39	64.70
7	0	100.15	61.24
8	0	79.19	32.85
9	0	69.51	26.87

0	Computers.1	Lab and R & D Equipment.1	\
1	0	0	
2	0	0	
3	0	0	
4	0	0	
5	0	0	
6	0	0	
7	0	0	
8	0	0	
9	0	0	

0	Medical Equipment and Surgical Instrument.1	Vehicles.1	\
1	0	283.75	
2	0	281.99	
3	0	239.02	
4	0	224.00	
5	0	217.63	
6	0	198.15	
7	0	165.90	
8	0	145.58	
9	0	108.97	
		89.65	

0	Transmission and Distribution Equipment.1	Wind Turbines.1	\
1	0	0	
2	0	0	
3	0	0	
4	0	0	
5	0	0	
6	0	0	
7	0	0	
8	0	0	
9	0	0	

0	Aircraft and Helicopters.1	Estates and Development.1	\
1	46.08	0	
2	43.45	0	
	60.99	0	

3	36.25	0
4	31.44	0
5	26.63	0
6	21.82	0
7	17.01	0
8	12.20	0
9	6.83	0

	Other Fixed Assets.1	Less:Impairment of Assets	Net Block
Goodwill.2 \			
0	139.09	0	14548.62
0	110.55	0	12011.30
0	67.95	0	10394.59
0	74.08	0	10081.75
0	73.52	0	7859.41
0	116.84	0	7771.04
0	89.68	0	7595.99
0	628.60	0	5929.46
0	90.28	0	5876.95
0	399.73	0	4957.86
0			

	PATENT.1	Technical Know-how.2	Leasehold Land.2	Freehold
Land.2 \				
0	2475.04	0.00	494.53	329.83
1	2247.34	0.00	405.29	273.57
2	2335.79	0.00	116.13	271.71
3	2451.42	0.00	0.00	271.96
4	1331.57	0.00	0.00	262.39
5	1209.74	0.00	0.00	261.68
6	1030.95	0.00	0.00	267.76
7	0.00	0.00	100.05	267.22

8	146.22	0.00	56.97	264.62
9	0.00	1.25	57.65	139.27

	Railway Sidings.2	Buildings.2	Ponds & Reservoirs.2	\
0	0	3174.24	0	
1	0	2495.86	0	
2	0	1548.66	0	
3	0	1382.98	0	
4	0	1376.60	0	
5	0	1280.51	0	
6	0	1246.59	0	
7	0	1176.98	0	
8	0	1132.41	0	
9	0	1085.29	0	

	Water supply / tubewells.2	Plant and Machinery.2	Ships /
Vessels.2	\		
0	0	7568.33	
0	0	6139.66	
1	0	5643.79	
0	0	5593.05	
2	0	4504.19	
0	0	4624.60	
3	0	4664.28	
0	0	3893.55	
4	0	3855.82	
0	0	3160.77	
5	0		
6	0		
7	0		
8	0		
9	0		
0	0		

	Electrical Installations / Fittings.2	Factory Equipments.2	\
0	0	0	
1	0	0	
2	0	0	
3	0	0	
4	0	0	
5	0	0	
6	0	0	
7	0	0	
8	0	0	

9

0

0

	Furniture and Fixtures.2	Office Equipments.2	Computers.2	\
0	62.52	39.42	0	
1	65.37	38.19	0	
2	61.79	32.36	0	
3	59.29	29.57	0	
4	67.19	32.34	0	
5	72.27	34.45	0	
6	74.70	37.67	0	
7	76.28	38.16	0	
8	86.00	54.19	0	
9	78.65	42.64	0	

Lab and R & D Equipment.2 Medical Equipment and Surgical Instrument.2 \

0	0
0	0
1	0
0	0
2	0
0	0
3	0
0	0
4	0
0	0
5	0
0	0
6	0
0	0
7	0
0	0
8	0
0	0
9	0
0	0

Vehicles.2 Transmission and Distribution Equipment.2 Wind Turbines.2 \

0	135.94	0
0	186.31	0
1	225.33	0
0	210.65	0
4	193.22	0
0	186.38	0

0			
6	173.09		0
0			
7	156.75		0
0			
8	165.03		0
0			
9	136.80		0
0			

0	Aircraft and Helicopters.2	Estates and Development.2	\
1	11.14		0
2	13.77		0
3	42.47		0
4	67.21		0
5	72.02		0
6	76.83		0
7	81.64		0
8	86.45		0
9	91.26		0
0	49.99		0

0	Other Fixed Assets.2	Lease Adjustment	Asset Transferred	\
1	257.63	0	0	
2	145.94	0	0	
3	116.56	0	0	
4	15.62	0	0	
5	19.89	0	0	
6	24.58	0	0	
7	19.31	0	0	
8	134.02	0	0	
9	24.43	0	0	
0	205.55	0	0	

0	Capital Work in Progress	Capital Advances	Pre-operative
1	Expenditure \		
2	5018.17	0	
3			
4	6125.46	0	
5			
6	4009.46	0	
7			
8	2419.79	0	
9			
0	3128.71	0	
1			
2	2040.40	0	
3			
4	1562.15	0	
5			
6			
7			
8			
9			
0			

7	2178.76	0
0		
8	1228.44	0
0		
9	863.48	0
0		

Development Expenses	Assets in Transit	Other Capital Work in Progress \
0	0	0
5018.17		
1	0	0
6125.46		
2	0	0
4009.46		
3	0	0
2419.79		
4	0	0
3128.71		
5	0	0
2040.40		
6	0	0
1562.15		
7	0	0
2178.76		
8	0	0
1228.44		
9	0	0
863.48		

Producing Properties	Investments	Quoted Government Securities \
0	0	4.99
1	0	0.00
2	0	0.00
3	0	0.00
4	0	0.00
5	0	1.93
6	0	1.94
7	0	9.93
8	0	11.22
9	0	1.90

Unquoted Government Securities	Quoted Equity	Unquoted Equity \
0	1251.73	15897.94
1	1251.73	15293.40
2	1251.74	14416.46
3	0.00	12222.05
4	0.00	9669.12
5	0.00	8617.38
6	0.00	6051.23

7		0.00	4206.38	5949.39	
8		0.00	3388.32	4860.78	
9		0.00	3845.87	4910.62	
	Quoted Debentures/Bonds	Unquoted Debentures/Bonds	Quoted Units	Units	\
0	31.09	0.00	6760.77		
1	129.63	0.00	4358.84		
2	243.64	0.00	1474.70		
3	160.54	0.00	2034.14		
4	252.80	0.00	2549.45		
5	20.25	210.83	2275.73		
6	42.73	0.00	0.00		
7	47.37	0.00	0.00		
8	57.37	0.00	10.00		
9	78.23	465.29	10.00		
	Unquoted Units	Preference Shares	Joint Venture / Partnerships	Units	\
0	24.75	460.58		0	
1	11.75	451.60		0	
2	7.88	959.13		0	
3	3.90	853.90		0	
4	2.31	850.98		0	
5	2.21	846.08		0	
6	1723.52	56.08		0	
7	1435.01	75.33		0	
8	1047.94	70.33		0	
9	573.90	85.64		0	
	Application Money	Other Investments		Units	\
0	0	1105.20			
1	0	2.31			
2	0	471.31			
3	0	2301.36			
4	0	2647.32			
5	0	2610.04			
6	0	2123.37			
7	0	1847.20			
8	0	2035.14			
9	0	2160.84			
	Less : Prov. for diminution in value of investment			Units	\
0		5953.09			
1		5256.20			
2		4139.85			
3		789.09			
4		321.07			
5		348.07			
6		126.07			
7		432.45			
8		101.25			

9

298.83

	Current Assets, Loans & Advances	Inventories	Raw Materials \
0	NaN	5882.85	2461.44
1	NaN	4782.97	1919.70
2	NaN	3400.91	1018.29
3	NaN	3839.27	997.12
4	NaN	2701.69	871.28
5	NaN	2758.01	738.10
6	NaN	2687.93	645.12
7	NaN	2437.57	664.90
8	NaN	2803.63	756.32
9	NaN	2419.77	696.61

Work-in Progress Goods \	Contract WIP / Site under development	Finished
0 136.83		0
3086.02		
1 249.08		0
2434.37		
2 126.81		0
2011.87		
3 126.35		0
2387.57		
4 93.37		0
1494.47		
5 89.51		0
1687.47		
6 95.53		0
1702.24		
7 90.93		0
1471.96		
8 113.42		0
1744.23		
9 80.69		0
1346.35		

	Stores and Spares	Investment as Stock_in_Trade	Stock on hire \
0 124.97		0	0
1 109.45		0	0
2 72.54		0	0
3 68.97		0	0
4 64.22		0	0
5 64.24		0	0
6 53.21		0	0
7 49.83		0	0
8 46.16		0	0
9 39.03		0	0

Packing Materials Goods-in transit Other Inventory Sundry

Debtors \			
0	0	0.00	73.59
3035.11			
1	0	0.00	70.37
2202.82			
2	0	116.02	55.38
2998.98			
3	0	203.66	55.60
3946.30			
4	0	130.49	47.86
3172.98			
5	0	135.28	43.41
2938.84			
6	0	154.03	37.80
2511.64			
7	0	120.65	39.30
2558.03			
8	0	106.12	37.38
2509.84			
9	0	220.29	36.80
2208.35			

Debtors more than Six months	Debtors Others \
0	0.00 3263.33
1	0.00 2431.18
2	0.00 3157.28
3	0.00 4015.84
4	0.00 3222.23
5	0.00 2986.30
6	0.00 2570.11
7	102.50 2501.67
8	122.48 2457.73
9	132.97 2142.55

Less : Provisions for Doubtful Debts	Cash and Bank	Balance with
Bank \		
0	228.22	3650.53
401.87		
1	228.36	6395.21
678.95		
2	158.30	4236.51
1417.14		
3	69.54	3731.66
1735.15		
4	49.25	2893.73
1099.51		
5	47.46	1687.48
196.66		
6	58.47	2287.03
272.68		

7		46.14	2064.77
254.08			
8		70.37	2950.39
489.43			
9		67.17	1781.41
661.15			

	Term Deposit with Banks	Cash in hand / others	Loans and Advances
\			
0	3177.87	70.79	5447.15
1	5675.24	41.02	2941.48
2	2803.11	16.26	2315.44
3	1698.40	298.11	3569.87
4	1602.26	191.96	3774.39
5	1156.04	334.78	1616.97
6	1622.78	391.57	1763.10
7	1419.09	391.60	1302.42
8	1927.92	533.04	1432.94
9	725.52	394.74	1271.94

	Bills Receivable	Loans to Subsidiary	\
0	0	0.00	
1	0	0.00	
2	0	0.00	
3	0	0.00	
4	0	0.00	
5	0	0.00	
6	0	0.00	
7	0	0.00	
8	0	0.00	
9	0	89.48	

	Loans to Group / Associate Companies	Loans to Others	\
0	0	1845.52	
1	0	290.44	
2	0	523.27	
3	0	684.65	
4	0	986.41	
5	0	517.76	

6		0	504.27
7		0	217.70
8		0	305.86
9		0	36.38

	Deposits with Government	Intercorporate Deposits	.1	Deposits
Others \				
0	0			0
21.21				
1	0			0
27.62				
2	0			0
24.44				
3	0			0
26.66				
4	0			0
26.73				
5	0			0
21.27				
6	0			0
21.04				
7	0			0
0.00				
8	0			0
29.63				
9	0			0
0.00				

	Advance	Tax	Pre-paid expenses	Advances to suppliers	\
0	0		0		0
1	0		0		0
2	0		0		0
3	0		0		0
4	0		0		0
5	0		0		0
6	0		0		0
7	0		0		0
8	0		0		0
9	86		0		0

	Advances for capital goods	Advances recoverable in cash or kind	\
0	0		0
1	0		0
2	0		0
3	0		0
4	0		0
5	0		0
6	0		0
7	0		0
8	0		0

9	0	0
---	---	---

Less : Provision for Doubtful Advances	Interest Accrued on	
Investments \		
0	0.00	
151.57		
1	5.98	
241.92		
2	11.25	
164.86		
3	11.25	
166.22		
4	11.25	
161.41		
5	11.25	
116.40		
6	23.93	
136.92		
7	40.22	
109.99		
8	40.24	
83.22		
9	41.75	
65.91		

Application money pending allotment	Other Current Assets	\
0	0	3428.85
1	0	2387.48
2	0	1614.12
3	0	2703.59
4	0	2611.09
5	0	972.79
6	0	1124.80
7	0	1014.95
8	0	1054.47
9	0	1035.92

Total Current Assets	Less : Current Liabilities and Provisions	\
0	18015.64	NaN
1	16322.48	NaN
2	12951.84	NaN
3	15087.10	NaN
4	12542.79	NaN
5	9001.30	NaN
6	9249.70	NaN
7	8362.79	NaN
8	9696.80	NaN
9	7681.47	NaN

Current Liabilities	Sundry Creditors	Creditors for Goods	\
---------------------	------------------	---------------------	---

0	17167.47	11959.02	11959.02
1	14593.02	9802.48	9802.48
2	9166.02	6273.10	6273.10
3	12905.84	8802.03	8802.03
4	11634.91	7756.48	7756.48
5	8256.69	6151.98	6151.98
6	7824.44	6018.60	6018.60
7	6298.50	4790.02	4790.02
8	6902.19	5320.95	5320.95
9	6370.36	4812.41	4812.41

	Creditors for Capital Goods	Creditors for Finance	Creditors for
Others \			
0	0	0	0
0	0	0	0
1	0	0	0
0	0	0	0
2	0	0	0
0	0	0	0
3	0	0	0
0	0	0	0
4	0	0	0
0	0	0	0
5	0	0	0
0	0	0	0
6	0	0	0
0	0	0	0
7	0	0	0
0	0	0	0
8	0	0	0
0	0	0	0
9	0	0	0
0	0	0	0

	Acceptances	Application Money.1	Warrants Application Money	\
0	934.52	0	0	0
1	840.24	0	0	0
2	512.73	0	0	0
3	876.12	0	0	0
4	846.92	0	0	0
5	729.10	0	0	0
6	656.11	0	0	0
7	575.43	0	0	0
8	747.85	0	0	0
9	767.30	0	0	0

	Bank Overdraft / Short term credit	\
0	0	0
1	0	0
2	0	0

3	0
4	0
5	0
6	0
7	0
8	0
9	0

	Advances from Customers / Credit balances \
0	0.00
1	0.00
2	0.00
3	0.00
4	314.52
5	224.11
6	412.08
7	255.04
8	255.91
9	215.07

	Due to Subsidiary / Group Companies	Trade and Other deposits \
0	0	0.07
1	0	0.09
2	0	0.10
3	0	0.17
4	0	0.50
5	0	0.84
6	0	0.97
7	0	0.79
8	0	0.43
9	0	0.70

	Unclaimed Dividend	Interest Accrued	But Not Due	Other
	Liabilities.1 \			
0	17.16		182.65	
4074.05				
1	18.43		189.14	
3742.64				
2	19.87		20.83	
2339.39				
3	19.91		20.98	
3186.63				
4	19.72		22.75	
2674.02				
5	17.48		21.85	
1111.33				
6	15.48		6.66	
714.54				
7	0.00		18.31	
658.91				

8	0.00	23.78
553.27		
9	0.00	25.30
549.58		

	Provisions	Provision for Tax	Provision for Fringe Benefit	Tax	\
0	760.08	306.47		0	
1	879.24	387.00		0	
2	811.92	216.36		0	
3	754.67	200.00		0	
4	931.93	264.54		0	
5	760.27	194.79		0	
6	598.38	189.84		0	
7	1461.44	252.34		0	
8	1563.69	254.28		0	
9	1463.88	255.61		0	

	Provision for Corporate Dividend	Tax	Provision for Gratuity	\
0		0.00		0
1		0.00		0
2		0.00		0
3		0.00		0
4		0.00		0
5		0.00		0
6		0.00		0
7		101.58		0
8		103.56		0
9		92.98		0

	Provision for Dividend	Provision for Interim Dividend	\
0	0.00		0
1	0.00		0
2	0.00		0
3	0.00		0
4	0.00		0
5	0.00		0
6	0.00		0
7	745.31		0
8	862.25		0
9	798.17		0

	Provision for Contingencies	Provision for depreciation in investment	\
0		0	
1		0	
2		0	
3		0	

0
4 0
0 0
5 0
0 0
6 0
0 0
7 0
0 0
8 0
0 0
9 0
0

	Other Provisions	Total Current Liabilities	Net Current Assets	\
0	453.61	17927.55	88.09	
1	492.24	15472.26	850.22	
2	595.56	9977.94	2973.90	
3	554.67	13660.51	1426.59	
4	667.39	12566.84	-24.05	
5	565.48	9016.96	-15.66	
6	408.54	8422.82	826.88	
7	362.21	7759.94	602.85	
8	343.60	8465.88	1230.92	
9	317.12	7834.24	-152.77	

	Miscellaneous Expenses not written off	Discount on issue of shares	\
0	0	0	0
1	0	0	0
2	0	0	0
3	0	0	0
4	0	0	0
5	0	0	0
6	0	0	0
7	0	0	0
8	0	0	0
9	0	0	0

	Discount on issue of Debentures	Preliminary Expenses	\
0	0	0	
1	0	0	
2	0	0	
3	0	0	
4	0	0	
5	0	0	
6	0	0	
7	0	0	
8	0	0	
9	0	0	

	Deferred revenue expenses	Pre-operative/Trial run Expenses	\
0	0	0	
1	0	0	
2	0	0	
3	0	0	
4	0	0	
5	0	0	
6	0	0	
7	0	0	
8	0	0	
9	0	0	

	Promoter's Expenses	Debenture/Share Issue expenses	\
0	0	0	
1	0	0	
2	0	0	
3	0	0	
4	0	0	
5	0	0	
6	0	0	
7	0	0	
8	0	0	
9	0	0	

	Royalty/License fees/ Technical Knowhow	\
0	0	
1	0	
2	0	
3	0	
4	0	
5	0	
6	0	
7	0	
8	0	
9	0	

	Financial charges / Expenses not written off	\
0	0	

1	0
2	0
3	0
4	0
5	0
6	0
7	0
8	0
9	0

0	Other Miscellaneous expenditure not written off \ 0
1	0
2	0
3	0
4	0
5	0
6	0
7	0
8	0
9	0

0	Less: Misc.Expenditure written off during the year Deferred Tax Assets \ 0
1	412.18 0
2	482.99 0
3	422.97 0
4	1664.03 0
5	1473.54 0
6	1824.84 0
7	979.59 0
8	311.02 0
9	273.69 0
	239.27 0

0	Deferred Tax Liability 2112.98 Net Deferred Tax -1700.80 Other Assets \ 4438.02
1	1932.65 -1449.66 5322.64
2	1831.14 -1408.17 3208.04
3	2298.16 -634.13 3092.39

4	1750.78	-277.24	3332.82
5	1570.00	254.84	2992.34
6	1439.67	-460.08	3544.33
7	1290.72	-979.70	3335.70
8	1163.34	-889.65	3106.61
9	854.12	-614.85	2117.32

	Long-Term Loans and Advances	Other Non-Current Assets	Others.1	\
0	3134.89	1303.13	0	
1	3777.92	1544.72	0	
2	1554.52	1653.52	0	
3	1359.29	1733.10	0	
4	1192.96	2139.86	0	
5	902.60	2089.74	0	
6	3534.33	10.00	0	
7	3232.26	103.44	0	
8	3018.12	88.49	0	
9	2087.47	29.85	0	

	Total Assets	Contingent Liabilities	Claims not acknowledged as debt	\
0	47501.91	2363.00		
1	44642.57	3350.63		
2	39115.95	3391.74		
3	38402.42	3215.81		
4	34602.62	3236.64		
5	30951.36	4303.30		
6	26616.67	3551.15		
7	24205.23	4067.04		
8	21933.12	831.20		
9	19004.50	2022.91		
0				

	Guarantees undertaken	Letter of Credit	Bills Discounted	\
0	0.00	0	0.00	
1	0.00	0	0.00	
2	0.00	0	0.00	
3	0.00	0	0.00	
4	0.00	0	0.00	
5	0.00	0	0.00	
6	0.00	0	0.00	

7	1344.48	0	0.00
8	831.20	0	0.00
9	87.20	0	57.56

	Disputed Sales Tax	Disputed Income Tax	Disputed Excise Duty	\
0	0	959.43	1256.99	
1	0	942.62	2306.22	
2	0	1364.74	1993.91	
3	0	1208.91	0.00	
4	0	968.60	0.00	
5	0	738.44	0.00	
6	0	676.86	0.00	
7	0	680.14	0.00	
8	0	0.00	0.00	
9	0	314.62	1526.09	

	Other Disputed Claims	Uncalled Liability on Shares	Others.2
0	0.00	0.0	146.58
1	0.00	0.0	101.79
2	33.09	0.0	0.00
3	2006.90	0.0	0.00
4	2268.04	0.0	0.00
5	3564.86	0.0	0.00
6	2874.29	0.0	0.00
7	2031.92	10.5	0.00
8	0.00	0.0	0.00
9	26.94	10.5	0.00

df.shape

(10, 291)

df.info()

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 10 entries, 0 to 9
Columns: 291 entries, Year to Others.2
dtypes: float64(143), int64(148)
memory usage: 22.9 KB
```

df.isnull().sum()

Year	0
Share Capital	0
Equity Authorised	0
Preference Capital Authorised	0
Unclassified Authorised	0
	.
Disputed Income Tax	0
Disputed Excise Duty	0
Other Disputed Claims	0

```
Uncalled Liability on Shares      0  
Others.2                         0  
Length: 291, dtype: int64
```

```
df.describe()
```

	Year	Share Capital	Equity Authorised	\
count	10.000000	10.000000	10.000000	
mean	201753.000000	446.213000	2825.000000	
std	302.765035	158.520731	2779.013614	
min	201303.000000	295.160000	600.000000	
25%	201528.000000	295.855000	600.000000	
50%	201753.000000	445.890000	2325.000000	
75%	201978.000000	596.340000	4050.000000	
max	202203.000000	598.300000	9050.000000	

	Preference Capital	Authorised	Unclassified	Authorised	Equity
Issued \					
count		10.000000			10.000000
10.000000					
mean		150.000000			2.500000
459.524000					
std		474.341649			7.905694
161.120695					
min		0.000000			0.000000
295.160000					
25%		0.000000			0.000000
310.550000					
50%		0.000000			0.000000
453.965000					
75%		0.000000			0.000000
615.775000					
max		1500.000000			25.000000
621.600000					

	Equity Subscribed	Equity Called Up	Less : Equity Calls in
Arrears \			
count	10.000000	10.000000	
10.000000			
mean	456.616000	447.491000	
1.279000			
std	164.195575	157.211708	
4.044553			
min	295.160000	295.160000	
0.000000			
25%	299.227500	296.442500	
0.000000			
50%	453.965000	451.460000	
0.000000			
75%	615.775000	596.340000	

0.000000
max 621.600000 598.300000
12.790000

	Equity	Forfeited	Equity Paid Up	Adjustments to equity	\
count	10.0		10.000000		10.0
mean	0.0		446.213000		0.0
std	0.0		158.520731		0.0
min	0.0		295.160000		0.0
25%	0.0		295.855000		0.0
50%	0.0		445.890000		0.0
75%	0.0		596.340000		0.0
max	0.0		598.300000		0.0

	Preference Capital	Paid Up	Convertible Preference Share	Paid Up	\
Up					\
count		10.0			
10.0					
mean		0.0			
0.0					
std		0.0			
0.0					
min		0.0			
0.0					
25%		0.0			
0.0					
50%		0.0			
0.0					
75%		0.0			
0.0					
max		0.0			
0.0					

	Non-convertible Preference Share	Paid Up	UP	Unclassified Shares	\
Paid Up					\
count			10.0		
10.0					
mean			0.0		
0.0					
std			0.0		
0.0					
min			0.0		
0.0					
25%			0.0		
0.0					
50%			0.0		
0.0					
75%			0.0		
0.0					
max			0.0		

0.0

	Reserves Total	TOTAL RESERVES EXCLUDING REVALUATION RESERVE	\
count	10.000000		10.000000
mean	26833.492000		26830.250000
std	8431.514179		8435.885494
min	14363.760000		14352.920000
25%	19751.255000		19743.162500
50%	28093.940000		28093.940000
75%	33806.847500		33806.847500
max	38362.650000		38362.650000
	Capital Reserves	General Reserves	Share Premium \
count	10.000000	10.000000	10.000000
mean	211.672000	1739.429000	2343.004000
std	173.45974	30.171484	141.483316
min	10.13000	1706.630000	2160.940000
25%	10.13000	1730.395000	2243.700000
50%	346.00000	1730.495000	2307.230000
75%	346.00000	1737.652500	2386.590000
max	346.10000	1821.040000	2628.340000
	Investment Allowance Reserve	Debenture Redemption Reserve	\
count		10.0	10.000000
mean		0.0	53.286000
std		0.0	29.108124
min		0.0	7.500000
25%		0.0	39.855000
50%		0.0	50.640000
75%		0.0	66.232500
max		0.0	105.010000
	Capital Redemption Reserve	Debt Redemption Reserve	\
count	10.0		10.0
mean	0.0		0.0
std	0.0		0.0
min	0.0		0.0
25%	0.0		0.0
50%	0.0		0.0
75%	0.0		0.0
max	0.0		0.0
	Amalgamation Reserve	Taxation Reserve	Exchange Fluctuation
Reserve \			
count	10.0	10.0	
10.000000			
mean	0.0	0.0	-
29.510000			
std	0.0	0.0	
48.534221			

min	0.0	0.0
121.010000		-
25%	0.0	0.0
59.685000		-
50%	0.0	0.0
0.000000		
75%	0.0	0.0
0.000000		
max	0.0	0.0
0.000000		

	Foreign Exchange Reserve	Earnings Reserve	Exchange Profit / Allowance
Reserve \			
count		10.0	
10.0			
mean		0.0	
0.0			
std		0.0	
0.0			
min		0.0	
0.0			
25%		0.0	
0.0			
50%		0.0	
0.0			
75%		0.0	
0.0			
max		0.0	
0.0			

	Deferred Credit Reserve	Contingency Reserve \
count	10.0	10.0
mean	0.0	0.0
std	0.0	0.0
min	0.0	0.0
25%	0.0	0.0
50%	0.0	0.0
75%	0.0	0.0
max	0.0	0.0

	Development Reserve	Rebate Reserve	Special Reserve \
count		10.0	10.0
mean		0.0	0.0
std		0.0	0.0
min		0.0	0.0
25%		0.0	0.0
50%		0.0	0.0
75%		0.0	0.0
max		0.0	0.0

	Special Appropriation to Projects	Statutory Reserves	\
count	10.0	10.0	
mean	0.0	0.0	
std	0.0	0.0	
min	0.0	0.0	
25%	0.0	0.0	
50%	0.0	0.0	
75%	0.0	0.0	
max	0.0	0.0	

Reserve \	Reserve for Bad and Doubtful Debt	Investment Fluctuation
count	10.0	
10.000000		
mean	0.0	
47.331000		
std	0.0	
91.975516		
min	0.0	
0.000000		
25%	0.0	
0.000000		
50%	0.0	
0.000000		
75%	0.0	
48.442500		
max	0.0	
277.980000		

	Profit & Loss Account Balance	Other Reserves \
count	10.000000	10.000000
mean	22286.365000	178.673000
std	8182.340261	67.542755
min	9951.920000	81.380000
25%	15538.300000	119.335000
50%	23493.595000	200.780000
75%	29068.177500	236.345000
max	33413.250000	252.260000

	TOTAL REVALUATION RESERVE	Fixed Asset Revaluation Reserve \
count	10.000000	10.000000
mean	3.242000	3.242000
std	5.220134	5.220134
min	0.000000	0.000000
25%	0.000000	0.000000
50%	0.000000	0.000000
75%	8.092500	8.092500
max	10.840000	10.840000

	Investment Revaluation Reserve	Other Revaluation Reserve \
--	--------------------------------	-----------------------------

count	10.0	10.0
mean	0.0	0.0
std	0.0	0.0
min	0.0	0.0
25%	0.0	0.0
50%	0.0	0.0
75%	0.0	0.0
max	0.0	0.0

Equity	Share	Warrants	Equity	Application	Money	\
count		10.0			10.0	
mean		0.0			0.0	
std		0.0			0.0	
min		0.0			0.0	
25%		0.0			0.0	
50%		0.0			0.0	
75%		0.0			0.0	
max		0.0			0.0	

Total	Shareholders Funds	Secured Loans	Convertible Debentures	
\				
count	10.000000	10.000000		10.0
mean	27279.705000	116.370000		0.0
std	8573.808487	175.661361		0.0
min	14658.920000	0.000000		0.0
25%	20047.110000	0.000000		0.0
50%	28539.830000	6.100000		0.0
75%	34403.187500	223.565000		0.0
max	38960.950000	496.480000		0.0

Non Convertible Debentures	Partly Convertible Debentures	\
count	10.000000	10.0
mean	40.001000	0.0
std	89.994842	0.0
min	0.000000	0.0
25%	0.000000	0.0
50%	0.000000	0.0
75%	0.000000	0.0
max	266.670000	0.0

Less : Debentures Calls in arrears Term Loans Institutions \

count		10.0	10.0
mean		0.0	0.0
std		0.0	0.0
min		0.0	0.0
25%		0.0	0.0
50%		0.0	0.0
75%		0.0	0.0
max		0.0	0.0

	Term Loans	Banks	Term Loans	Others	\
count	10.000000		10.0		
mean	16.071000		0.0		
std	50.820964		0.0		
min	0.000000		0.0		
25%	0.000000		0.0		
50%	0.000000		0.0		
75%	0.000000		0.0		
max	160.710000		0.0		

	Borrowings from Government of India	Deferred Credit / Hire Purchase	\
count		10.0	
10.0		0.0	
mean		0.0	
std		0.0	
min		0.0	
0.0		0.0	
25%		0.0	
0.0		0.0	
50%		0.0	
0.0		0.0	
75%		0.0	
0.0		0.0	
max		0.0	
0.0		0.0	

	Bridge Loans	Cash Credit /Packing Credit / Bills Discounted	\
count	10.0		10.0
mean	0.0		0.0
std	0.0		0.0
min	0.0		0.0
25%	0.0		0.0
50%	0.0		0.0
75%	0.0		0.0
max	0.0		0.0

	Working Capital Advances	Interest Accured & Due	\
count	10.0	10.0	

mean	0.0	0.0
std	0.0	0.0
min	0.0	0.0
25%	0.0	0.0
50%	0.0	0.0
75%	0.0	0.0
max	0.0	0.0

Debenture/Bonds-Application Money Short Term Borrowings-
Secured \

count	10.0
10.000000	
mean	60.298000
std	156.050493
min	0.000000
25%	0.000000
50%	0.000000
75%	0.000000
9.162500	
max	0.0
496.480000	

Current Maturites of long term Borrowings-Secured \

count	10.0
mean	0.0
std	0.0
min	0.0
25%	0.0
50%	0.0
75%	0.0
max	0.0

Secured Loans Others Unsecured Loans Debentures / Bonds \

count	10.0	10.000000	10.000000
mean	0.0	3894.288000	1232.627000
std	0.0	1695.090117	1218.816543
min	0.0	2571.340000	0.000000
25%	0.0	2927.210000	500.000000
50%	0.0	3124.415000	973.670000
75%	0.0	3745.537500	973.930000
max	0.0	7692.070000	3467.380000

Accrued Interest Loans from Group Cos Loans from Banks \

count	10.0	10.0	10.000000
mean	0.0	0.0	1091.490000

std	0.0	0.0	973.005086
min	0.0	0.0	0.000000
25%	0.0	0.0	391.125000
50%	0.0	0.0	675.490000
75%	0.0	0.0	1783.137500
max	0.0	0.0	3050.000000

	Loans from Institutions	Advances	Loans from GOI / PSUs	\
count	10.0	10.0		10.0
mean	0.0	0.0		0.0
std	0.0	0.0		0.0
min	0.0	0.0		0.0
25%	0.0	0.0		0.0
50%	0.0	0.0		0.0
75%	0.0	0.0		0.0
max	0.0	0.0		0.0

	Deferred Liabilities	Deferred Tax	Loan	Commercial Paper	\
count	10.0		10.00000		10.0
mean	0.0		6.88000		0.0
std	0.0		21.75647		0.0
min	0.0		0.00000		0.0
25%	0.0		0.00000		0.0
50%	0.0		0.00000		0.0
75%	0.0		0.00000		0.0
max	0.0		68.80000		0.0

Debenture/Bonds-Application Money.1 Short Term Borrowings-
 Unsecured \

count	10.0
10.000000	
mean	0.0
322.799000	
std	0.0
306.274286	
min	0.0
0.690000	
25%	0.0
84.055000	
50%	0.0
227.190000	
75%	0.0
507.145000	
max	0.0
900.000000	

Current Maturites of long term Borrowings-Unsecured \

count	10.00000
mean	394.46600
std	393.44164

min		78.21000
25%		94.00250
50%		280.84500
75%		475.05000
max		1108.08000

	Unsecured Loans	Others	TOTAL DEPOSITS	Fixed Deposits	\
count	10.000000		10.000000	10.000000	
mean	833.193000		12.833000	12.833000	
std	233.747549		22.528368	22.528368	
min	531.760000		0.000000	0.000000	
25%	599.507500		0.000000	0.000000	
50%	867.615000		0.000000	0.000000	
75%	1040.060000		16.267500	16.267500	
max	1117.640000		58.710000	58.710000	

	Intercorporate Deposits	Security Deposits	Directors Deposits	
\				
count	10.0	10.0	10.0	
mean	0.0	0.0	0.0	
std	0.0	0.0	0.0	
min	0.0	0.0	0.0	
25%	0.0	0.0	0.0	
50%	0.0	0.0	0.0	
75%	0.0	0.0	0.0	
max	0.0	0.0	0.0	

	Share Deposits	Other Deposits	Total Debt	Other Liabilities	
\					
count	10.0	10.0	10.000000	10.000000	
mean	0.0	0.0	4010.658000	1407.272000	
std	0.0	0.0	1786.099352	327.032723	
min	0.0	0.0	2571.340000	856.990000	
25%	0.0	0.0	2927.210000	1235.405000	
50%	0.0	0.0	3257.750000	1332.580000	

75%	0.0	0.0	3966.112500	1621.687500
max	0.0	0.0	7786.320000	1905.250000

	Other Long Term Liabilities	Long Term Provisions	Others \
count	10.000000	10.000000	10.0
mean	630.297000	776.975000	0.0
std	160.104157	208.313007	0.0
min	415.400000	441.590000	0.0
25%	514.225000	619.565000	0.0
50%	609.630000	843.130000	0.0
75%	678.750000	920.400000	0.0
max	894.750000	1016.930000	0.0

Goodwill \	Total Liabilities	APPLICATION OF FUNDS :	Gross Block
count	10.000000	0.0	10.000000
10.0	32697.635000	NaN	17903.671000
mean	9745.321506	NaN	7280.316347
0.0	19004.500000	NaN	9005.780000
std	24808.090000	NaN	12253.530000
0.0	32776.990000	NaN	16177.630000
50%	38937.567500	NaN	22129.267500
0.0	47501.910000	NaN	30846.020000
75%			
max			
0.0			

\	Patent	Technical Know-how	Leasehold Land	Freehold Land
count	10.000000	10.000000	10.00000	10.000000
mean	2713.530000	0.692000	127.83600	261.001000
std	2222.414435	1.516698	183.64683	47.197549
min	0.000000	0.000000	0.00000	139.270000
25%	829.847500	0.000000	0.00000	262.947500
50%	2346.995000	0.000000	63.34000	267.490000

75%	4800.707500	0.000000	115.36750	271.897500
max	5539.730000	4.340000	510.74000	329.830000

	Railway Sidings	Buildings	Ponds & Reservoirs	\
count	10.0	10.00000	10.0	
mean	0.0	2142.63300	0.0	
std	0.0	994.00075	0.0	
min	0.0	1338.49000	0.0	
25%	0.0	1540.80250	0.0	
50%	0.0	1787.54500	0.0	
75%	0.0	2102.68750	0.0	
max	0.0	4336.99000	0.0	

	Water supply / tubewells	Plant and Machinery	Ships / Vessels	\
count	10.0	10.000000	10.0	
mean	0.0	11599.584000	0.0	
std	0.0	3966.142001	0.0	
min	0.0	6354.120000	0.0	
25%	0.0	8698.920000	0.0	
50%	0.0	10845.260000	0.0	
75%	0.0	13810.517500	0.0	
max	0.0	18852.340000	0.0	

	Electrical Installations / Fittings	Factory Equipments	\
count	10.0	10.0	
mean	0.0	0.0	
std	0.0	0.0	
min	0.0	0.0	
25%	0.0	0.0	
50%	0.0	0.0	
75%	0.0	0.0	
max	0.0	0.0	

	Furniture and Fixtures	Office Equipments	Computers	\
count	10.00000	10.000000	10.0	
mean	196.74400	124.304000	0.0	
std	33.45417	42.607222	0.0	
min	148.16000	69.510000	0.0	

25%	176.84500	100.142500	0.0
50%	193.58500	117.595000	0.0
75%	207.59750	129.325000	0.0
max	253.23000	201.340000	0.0

	Lab and R & D Equipment	Medical Equipment and Surgical Instrument	\
count		10.0	
10.0			
mean		0.0	
0.0			
std		0.0	
0.0			
min		0.0	
0.0			
25%		0.0	
0.0			
50%		0.0	
0.0			
75%		0.0	
0.0			
max		0.0	
0.0			

	Vehicles	Transmission and Distribution Equipment	Wind Turbines	\
Turbines			10.0	
count	10.000000			
10.0				
mean	372.414000			
0.0				
std	83.265674			
0.0				
min	226.450000			
0.0				
25%	311.495000			
0.0				
50%	397.690000			
0.0				
75%	430.910000			
0.0				
max	468.300000			
0.0				

	Aircraft and Helicopters	Estates and Development	Other Fixed Assets	\
Assets			10.0	
count	10.000000			
10.000000				
mean	89.548000			
275.385000				
std	22.400713			

237.723069		
min	56.820000	0.0
89.700000		
25%	68.780000	0.0
110.420000		
50%	103.460000	0.0
162.965000		
75%	103.460000	0.0
361.662500		
max	103.460000	0.0
762.620000		

Less : Accumulated Depreciation	Goodwill.1	PATENT	\
count	10.000000	10.0	10.000000
mean	9200.974000	0.0	1390.723000
std	4296.907863	0.0	1242.075985
min	4047.920000	0.0	0.000000
25%	5907.437500	0.0	462.445000
50%	8362.405000	0.0	1076.340000
75%	11812.887500	0.0	2436.010000
max	16297.400000	0.0	3292.390000

Technical Know-how.1	Leasehold Land.1	Freehold Land.1	\
count	10.00000	10.000000	10.0
mean	0.56700	4.774000	0.0
std	1.20137	5.477165	0.0
min	0.00000	0.000000	0.0
25%	0.00000	0.000000	0.0
50%	0.00000	3.775000	0.0
75%	0.00000	7.180000	0.0
max	3.09000	16.210000	0.0

Railway Sidings.1	Buildings.1	Ponds & Reservoirs.1	\
count	10.0	10.00000	10.0
mean	0.0	552.62100	0.0
std	0.0	310.20014	0.0
min	0.0	253.20000	0.0
25%	0.0	346.42000	0.0
50%	0.0	458.99000	0.0
75%	0.0	595.44750	0.0
max	0.0	1162.75000	0.0

Water supply / tubewells.1	Plant and Machinery.1	Ships /
Vessels.1	\	
count	10.0	10.00000
10.0		
mean	0.0	6634.78000
0.0		
std	0.0	2704.58077
0.0		

min	0.0	3193.35000
0.0		
25%	0.0	4612.68750
0.0		
50%	0.0	6280.86500
0.0		
75%	0.0	8179.41250
0.0		
max	0.0	11284.01000
0.0		

	Electrical Installations / Fittings.1	Factory Equipments.1	\
count	10.0	10.0	
mean	0.0	0.0	
std	0.0	0.0	
min	0.0	0.0	
25%	0.0	0.0	
50%	0.0	0.0	
75%	0.0	0.0	
max	0.0	0.0	

	Furniture and Fixtures.1	Office Equipments.1	Computers.1	\
count	10.000000	10.000000	10.0	
mean	126.338000	86.405000	0.0	
std	40.172175	44.934173	0.0	
min	69.510000	26.870000	0.0	
25%	100.960000	62.105000	0.0	
50%	127.805000	85.585000	0.0	
75%	144.457500	96.970000	0.0	
max	190.710000	161.920000	0.0	

	Lab and R & D Equipment.1	Medical Equipment and Surgical Instrument.1	\
count	10.0		
10.0			
mean	0.0		
0.0			
std	0.0		
0.0			
min	0.0		
0.0			
25%	0.0		
0.0			
50%	0.0		
0.0			
75%	0.0		
0.0			
max	0.0		
0.0			

	Vehicles.1	Transmission and Distribution Equipment.1	Wind
Turbines.1 \			
count	10.000000		10.0
10.0			
mean	195.464000		0.0
0.0			
std	67.108038		0.0
0.0			
min	89.650000		0.0
0.0			
25%	150.660000		0.0
0.0			
50%	207.890000		0.0
0.0			
75%	235.265000		0.0
0.0			
max	283.750000		0.0
0.0			

	Aircraft and Helicopters.1	Estates and Development.1	\
count	10.000000		10.0
mean	30.270000		0.0
std	16.802627		0.0
min	6.830000		0.0
25%	18.212500		0.0
50%	29.035000		0.0
75%	41.650000		0.0
max	60.990000		0.0

	Other Fixed Assets.1	Less:Impairment of Assets	Net
Block \			
count	10.000000	10.0	10.000000
mean	179.032000	0.0	8702.697000
std	185.986738	0.0	3025.619688
min	67.950000	0.0	4957.860000
25%	77.980000	0.0	6346.092500
50%	100.415000	0.0	7815.225000
75%	133.527500	0.0	10316.380000
max	628.600000	0.0	14548.620000

Goodwill.2 PATENT.1 Technical Know-how.2 Leasehold Land.2

\count	10.0	10.000000	10.000000	10.000000
mean	0.0	1322.807000	0.125000	123.062000
std	0.0	1025.472203	0.395285	178.712255
min	0.0	0.000000	0.000000	0.000000
25%	0.0	367.402500	0.000000	0.000000
50%	0.0	1270.655000	0.000000	57.310000
75%	0.0	2313.677500	0.000000	112.110000
max	0.0	2475.040000	1.250000	494.530000

Reservoirs.2 \count	10.000000	10.0	10.000000
10.0	261.001000	0.0	1590.012000
mean	47.197549	0.0	688.712595
std	139.270000	0.0	1085.290000
min	262.947500	0.0	1194.382500
25%	267.490000	0.0	1328.555000
50%	271.897500	0.0	1507.240000
75%	329.830000	0.0	3174.240000
max			
0.0			

Vessels.2 \count	10.0	10.000000
10.0	0.0	4964.804000
mean	0.0	1293.768711
std	0.0	3160.770000
min	0.0	4046.210000
0.0		
25%		
0.0		

50%	0.0	4644.440000
0.0		
75%	0.0	5631.105000
0.0		
max	0.0	7568.330000
0.0		

	Electrical Installations / Fittings.2	Factory Equipments.2	\
count	10.0	10.0	
mean	0.0	0.0	
std	0.0	0.0	
min	0.0	0.0	
25%	0.0	0.0	
50%	0.0	0.0	
75%	0.0	0.0	
max	0.0	0.0	

	Furniture and Fixtures.2	Office Equipments.2	Computers.2	\
count	10.000000	10.000000	10.0	
mean	70.406000	37.899000	0.0	
std	8.584528	6.938166	0.0	
min	59.290000	29.570000	0.0	
25%	63.232500	32.882500	0.0	
50%	69.730000	37.915000	0.0	
75%	75.885000	39.112500	0.0	
max	86.000000	54.190000	0.0	

	Lab and R & D Equipment.2	Medical Equipment and Surgical Instrument.2	\
count	10.0		
10.0			
mean	0.0		
0.0			
std	0.0		
0.0			
min	0.0		
0.0			
25%	0.0		
0.0			
50%	0.0		
0.0			
75%	0.0		
0.0			
max	0.0		
0.0			

Vehicles.2	Transmission and Distribution Equipment.2	Wind
Turbines.2	\	
count	10.00000	10.0
10.0		

mean	176.95000	0.0
0.0		
std	29.39469	0.0
0.0		
min	135.94000	0.0
0.0		
25%	158.82000	0.0
0.0		
50%	179.70000	0.0
0.0		
75%	191.51000	0.0
0.0		
max	225.33000	0.0
0.0		

	Aircraft and Helicopters.2	Estates and Development.2	\
count	10.000000	10.0	
mean	59.278000	0.0	
std	28.966636	0.0	
min	11.140000	0.0	
25%	44.350000	0.0	
50%	69.615000	0.0	
75%	80.437500	0.0	
max	91.260000	0.0	

	Other Fixed Assets.2	Lease Adjustment	Asset Transferred	\
count	10.000000	10.0	10.0	
mean	96.353000	0.0	0.0	
std	88.722141	0.0	0.0	
min	15.620000	0.0	0.0	
25%	21.025000	0.0	0.0	
50%	70.570000	0.0	0.0	
75%	142.960000	0.0	0.0	
max	257.630000	0.0	0.0	

	Capital Work in Progress	Capital Advances	Pre-operative
Expenditure	\		
count	10.000000	10.0	
10.0			
mean	2857.482000	0.0	
0.0			
std	1711.933229	0.0	
0.0			
min	863.480000	0.0	
0.0			
25%	1681.712500	0.0	
0.0			
50%	2299.275000	0.0	
0.0			
75%	3789.272500	0.0	

0.0		
max	6125.460000	0.0
0.0		

	Development Expenses	Assets in Transit \
count	10.0	10.0
mean	0.0	0.0
std	0.0	0.0
min	0.0	0.0
25%	0.0	0.0
50%	0.0	0.0
75%	0.0	0.0
max	0.0	0.0

	Other Capital Work in Progress	Producing Properties
Investments \		
count	10.000000	10.0
10.000000		
mean	2857.482000	0.0
17723.682000		
std	1711.933229	0.0
4898.692867		
min	863.480000	0.0
11379.850000		
25%	1681.712500	0.0
13240.470000		
50%	2299.275000	0.0
18923.265000		
75%	3789.272500	0.0
21482.700000		
max	6125.460000	0.0
25109.810000		

	Quoted Government Securities	Unquoted Government Securities \
count	10.000000	10.000000
mean	3.191000	375.520000
std	4.198771	604.644644
min	0.000000	0.000000
25%	0.000000	0.000000
50%	1.915000	0.000000
75%	4.227500	938.797500
max	11.220000	1251.740000

	Quoted Equity	Unquoted Equity	Quoted Debentures/Bonds \
count	10.000000	10.000000	10.000000
mean	4526.700000	9788.837000	106.365000
std	851.685435	4386.053951	86.646059
min	3388.320000	4860.780000	20.250000
25%	3717.417500	5974.850000	43.890000
50%	4569.220000	9143.250000	67.800000

75%	5247.147500	13867.857500	152.812500
max	5539.550000	15897.940000	252.800000

	Unquoted Debentures/Bonds	Quoted Units	Unquoted Units	\
count	10.000000	10.00000	10.000000	
mean	67.612000	1947.36300	483.317000	
std	154.643047	2230.51012	676.773331	
min	0.000000	0.00000	2.210000	
25%	0.000000	10.00000	4.895000	
50%	0.000000	1754.42000	18.250000	
75%	0.000000	2481.02000	929.430000	
max	465.290000	6760.77000	1723.520000	

	Preference Shares	Joint Venture / Partnerships	Application
Money \			
count	10.000000		10.0
10.0			
mean	470.965000		0.0
0.0			
std	381.253805		0.0
0.0			
min	56.080000		0.0
0.0			
25%	77.907500		0.0
0.0			
50%	456.090000		0.0
0.0			
75%	849.755000		0.0
0.0			
max	959.130000		0.0
0.0			

	Other Investments	Less : Prov. for diminution in value of investment
investment \		
count	10.000000	
10.000000		
mean	1730.409000	
1776.597000		
std	903.646599	
2352.107029		
min	2.310000	
101.250000		
25%	1290.700000	
304.390000		
50%	2079.255000	
390.260000		
75%	2266.230000	
3302.160000		
max	2647.320000	
5953.090000		

	Current Assets, Loans & Advances	Inventories	Raw Materials	\
count	0.0	10.000000	10.000000	
mean	NaN	3371.460000	1076.888000	
std	NaN	1150.438323	614.428175	
min	NaN	2419.770000	645.120000	
25%	NaN	2691.370000	706.982500	
50%	NaN	2780.820000	813.800000	
75%	NaN	3729.680000	1012.997500	
max	NaN	5882.850000	2461.440000	
	Work-in Progress	Contract WIP / Site under development		\
count	10.000000		10.0	
mean	120.252000		0.0	
std	49.105526		0.0	
min	80.690000		0.0	
25%	91.540000		0.0	
50%	104.475000		0.0	
75%	126.695000		0.0	
max	249.080000		0.0	
	Finished Goods	Stores and Spares	Investment as Stock_in_Trade	
\count	10.000000	10.000000		10.0
mean	1936.655000	69.262000		0.0
std	546.884276	27.614157		0.0
min	1346.350000	39.030000		0.0
25%	1542.720000	50.675000		0.0
50%	1723.235000	64.230000		0.0
75%	2293.645000	71.647500		0.0
max	3086.020000	124.970000		0.0
	Stock on hire	Packing Materials	Goods-in transit	Other
Inventory \				
count	10.0	10.0	10.000000	
10.000000				
mean	0.0	0.0	118.654000	
49.749000				
std	0.0	0.0	72.686113	
13.646088				
min	0.0	0.0	0.000000	

36.800000			
25%	0.0	0.0	108.595000
38.175000			
50%	0.0	0.0	125.570000
45.635000			
75%	0.0	0.0	149.342500
55.545000			
max	0.0	0.0	220.290000
73.590000			

	Sundry Debtors	Debtors more than Six months	Debtors Others	\
count	10.000000	10.000000	10.000000	
mean	2808.289000	35.795000	2874.822000	
std	526.956088	58.095516	558.257287	
min	2202.820000	0.000000	2142.550000	
25%	2510.290000	0.000000	2468.715000	
50%	2748.435000	0.000000	2778.205000	
75%	3026.077500	76.875000	3205.992500	
max	3946.300000	132.970000	4015.840000	

	Less : Provisions for Doubtful Debts	Cash and Bank	Balance
with Bank \			
count	10.000000	10.000000	
10.000000			
mean	102.32800	3167.872000	
720.66200			
std	73.86667	1427.411007	
528.21883			
min	46.14000	1687.480000	
196.66000			
25%	51.55500	2120.335000	
304.97750			
50%	68.35500	2922.060000	
575.29000			
75%	136.31750	3711.377500	
994.37000			
max	228.36000	6395.210000	
1735.15000			

	Term Deposit with Banks	Cash in hand / others	Loans and
Advances \			
count	10.000000	10.000000	
10.000000			
mean	2180.823000	266.387000	
2543.57000			
std	1425.305316	176.937751	
1377.11769			
min	725.520000	16.260000	
1271.94000			
25%	1464.882500	101.082500	

1478.94750		
50%	1660.590000	316.445000
2039.27000		
75%	2584.312500	391.592500
3412.77250		
max	5675.240000	533.040000
5447.15000		

	Bills Receivable	Loans to Subsidiary	\
count	10.0	10.000000	
mean	0.0	8.948000	
std	0.0	28.296061	
min	0.0	0.000000	
25%	0.0	0.000000	
50%	0.0	0.000000	
75%	0.0	0.000000	
max	0.0	89.480000	

	Loans to Group / Associate Companies	Loans to Others	\
count	10.0	10.000000	
mean	0.0	591.226000	
std	0.0	513.702272	
min	0.0	36.380000	
25%	0.0	294.295000	
50%	0.0	511.015000	
75%	0.0	644.305000	
max	0.0	1845.520000	

	Deposits with Government	Intercorporate Deposits.1	Deposits
Others \			
count	10.0		10.0
10.000000			
mean	0.0		0.0
19.860000			
std	0.0		0.0
10.873648			
min	0.0		0.0
0.000000			
25%	0.0		0.0
21.082500			
50%	0.0		0.0
22.855000			
75%	0.0		0.0
26.712500			
max	0.0		0.0
29.630000			

	Advance Tax	Pre-paid expenses	Advances to suppliers	\
count	10.000000	10.0	10.0	
mean	8.600000	0.0	0.0	

std	27.195588	0.0	0.0
min	0.000000	0.0	0.0
25%	0.000000	0.0	0.0
50%	0.000000	0.0	0.0
75%	0.000000	0.0	0.0
max	86.000000	0.0	0.0

kind	Advances for capital goods	Advances recoverable in cash or
count		10.0
10.0		
mean		0.0
0.0		
std		0.0
0.0		
min		0.0
0.0		
25%		0.0
0.0		
50%		0.0
0.0		
75%		0.0
0.0		
max		0.0
0.0		

	Less : Provision for Doubtful Advances	\
count		10.000000
mean		19.712000
std		15.666647
min		0.000000
25%		11.250000
50%		11.250000
75%		36.147500
max		41.750000

allotment	Interest Accrued on Investments	Application money pending
count		10.000000
10.0		
mean		139.842000
0.0		
std		49.961697
0.0		
min		65.910000
0.0		
25%		111.592500
0.0		
50%		144.245000
0.0		

75% 163.997500
0.0
max 241.920000
0.0

	Other Current Assets	Total Current Assets	\
count	10.000000	10.000000	
mean	1794.806000	11891.191000	
std	906.949509	3639.661931	
min	972.790000	7681.470000	
25%	1040.557500	9063.400000	
50%	1369.460000	11119.795000	
75%	2555.187500	14553.285000	
max	3428.850000	18015.640000	

	Less : Current Liabilities and Provisions	Current Liabilities	\
count	0.0	10.000000	
mean	NaN	10111.944000	
std	NaN	3777.116926	
min	NaN	6298.500000	
25%	NaN	7132.752500	
50%	NaN	8711.355000	
75%	NaN	12588.107500	
max	NaN	17167.470000	

	Sundry Creditors	Creditors for Goods	Creditors for Capital
Goods \	10.000000	10.000000	
count	10.000000	10.000000	
10.0			
mean	7168.707000	7168.707000	
0.0			
std	2373.000096	2373.000096	
0.0			
min	4790.020000	4790.020000	
0.0			
25%	5495.362500	5495.362500	
0.0			
50%	6212.540000	6212.540000	
0.0			
75%	8540.642500	8540.642500	

0.0
max 11959.020000 11959.020000
0.0

Creditors for Finance Creditors for Others Acceptances \
count 10.0 10.0 10.000000
mean 0.0 0.0 748.632000
std 0.0 0.0 134.907255
min 0.0 0.0 512.730000
25% 0.0 0.0 674.357500
50% 0.0 0.0 757.575000
75% 0.0 0.0 845.250000
max 0.0 0.0 934.520000

Application Money.1 Warrants Application Money \
count 10.0 10.0
mean 0.0 0.0
std 0.0 0.0
min 0.0 0.0
25% 0.0 0.0
50% 0.0 0.0
75% 0.0 0.0
max 0.0 0.0

Bank Overdraft / Short term credit \
count 10.0
mean 0.0
std 0.0
min 0.0
25% 0.0
50% 0.0
75% 0.0
max 0.0

Advances from Customers / Credit balances \
count 10.000000
mean 167.673000
std 154.418671
min 0.000000
25% 0.000000
50% 219.590000
75% 255.692500
max 412.080000

Due to Subsidiary / Group Companies Trade and Other
deposits \
count 10.0 10.000000
mean 0.0 0.466000

std	0.0	0.345742
min	0.0	0.070000
25%	0.0	0.117500
50%	0.0	0.465000
75%	0.0	0.767500
max	0.0	0.970000

Liabilities.\	Unclaimed Dividend	Interest Accrued	But Not Due	Other
count	10.000000		10.000000	
10.000000				
mean	12.805000		53.225000	
1960.436000				
std	8.942622		70.127012	
1403.876134				
min	0.000000		6.660000	
549.580000				
25%	3.870000		20.867500	
672.817500				
50%	17.320000		22.300000	
1725.360000				
75%	19.397500		24.920000	
3058.477500				
max	19.910000		189.140000	
4074.050000				

Tax \	Provisions	Provision for Tax	Provision for Fringe Benefit
count	10.000000	10.000000	
10.0			
mean	998.550000	252.123000	
0.0			
std	355.425413	60.072629	
0.0			
min	598.380000	189.840000	
0.0			
25%	760.127500	204.090000	
0.0			
50%	845.580000	253.310000	
0.0			
75%	1329.062500	262.307500	
0.0			

max	1563.690000	387.000000	
0.0			
	Provision for Corporate Dividend Tax	Provision for Gratuity \	
count	10.000000	10.0	
mean	29.812000	0.0	
std	48.075054	0.0	
min	0.000000	0.0	
25%	0.000000	0.0	
50%	0.000000	0.0	
75%	69.735000	0.0	
max	103.560000	0.0	
	Provision for Dividend	Provision for Interim Dividend \	
count	10.000000	10.0	
mean	240.573000	0.0	
std	388.341734	0.0	
min	0.000000	0.0	
25%	0.000000	0.0	
50%	0.000000	0.0	
75%	558.982500	0.0	
max	862.250000	0.0	
	Provision for Contingencies	Provision for depreciation in	
investment \			
count	10.0		
10.0			
mean	0.0		
0.0			
std	0.0		
0.0			
min	0.0		
0.0			
25%	0.0		
0.0			
50%	0.0		
0.0			
75%	0.0		
0.0			
max	0.0		
0.0			
	Other Provisions	Total Current Liabilities	Net Current Assets
\			
count	10.000000	10.000000	10.000000
mean	476.042000	11110.494000	780.697000
std	118.395302	3589.552289	948.770028

min	317.120000	7759.940000	-152.770000
25%	373.792500	8433.585000	10.277500
50%	472.925000	9497.450000	714.865000
75%	562.777500	13387.092500	1135.745000
max	667.390000	17927.550000	2973.900000

	Miscellaneous Expenses not written off	Discount on issue of shares
\count		10.0
10.0		
\mean		0.0
0.0		
\std		0.0
0.0		
\min		0.0
0.0		
25%		0.0
0.0		
50%		0.0
0.0		
75%		0.0
0.0		
\max		0.0
0.0		

	Discount on issue of Debentures	Preliminary Expenses
\count	10.0	10.0
\mean	0.0	0.0
\std	0.0	0.0
\min	0.0	0.0
25%	0.0	0.0
50%	0.0	0.0
75%	0.0	0.0
\max	0.0	0.0

	Deferred revenue expenses	Pre-operative/Trial run Expenses
\count	10.0	10.0
\mean	0.0	0.0
\std	0.0	0.0
\min	0.0	0.0
25%	0.0	0.0
50%	0.0	0.0
75%	0.0	0.0

max	0.0	0.0
	Promoter' s Expenses	Debenture/Share Issue expenses \
count	10.0	10.0
mean	0.0	0.0
std	0.0	0.0
min	0.0	0.0
25%	0.0	0.0
50%	0.0	0.0
75%	0.0	0.0
max	0.0	0.0
	Royalty/License fees/ Technical Knowhow \	
count	10.0	
mean	0.0	
std	0.0	
min	0.0	
25%	0.0	
50%	0.0	
75%	0.0	
max	0.0	
	Financial charges / Expenses not written off \	
count	10.0	
mean	0.0	
std	0.0	
min	0.0	
25%	0.0	
50%	0.0	
75%	0.0	
max	0.0	
	Other Miscellaneous expenditure not written off \	
count	10.0	
mean	0.0	
std	0.0	
min	0.0	
25%	0.0	
50%	0.0	
75%	0.0	
max	0.0	
	Less: Misc.Expenditure written off during the year \	
count	10.0	
mean	0.0	
std	0.0	
min	0.0	
25%	0.0	
50%	0.0	
75%	0.0	

max			0.0
Tax \ count	Deferred Tax Assets	Deferred Tax Liability	Net Deferred
	10.000000	10.000000	10.000000
mean	808.412000	1624.356000	-815.944000
std	624.109949	447.304123	596.700282
min	239.270000	854.120000	-1700.800000
25%	336.310000	1327.957500	-1301.052500
50%	452.980000	1660.390000	-761.890000
75%	1350.052500	1907.272500	-498.772500
max	1824.840000	2298.160000	254.840000

Assets \ count	Other Assets	Long-Term Loans and Advances	Other Non-Current
	10.000000	10.000000	
10.000000			
mean	3449.021000	2379.436000	
1069.585000			
std	869.769012	1074.485546	
903.541574			
min	2117.320000	902.600000	
10.000000			
25%	3095.945000	1408.097500	
92.227500			
50%	3270.430000	2552.795000	
1423.925000			
75%	3492.172500	3207.917500	
1713.205000			
max	5322.640000	3777.920000	
2139.860000			

Others.1 \ count	Total Assets	Contingent Liabilities
	10.0	10.000000
mean	0.0	32697.635000
std	0.0	9745.321506
min	0.0	19004.500000
25%	0.0	24808.090000
50%	0.0	32776.990000
75%	0.0	38937.567500
max	0.0	47501.910000

	Claims not acknowledged as debt	Guarantees undertaken \
count	10.0	10.000000
mean	0.0	226.288000
std	0.0	470.704102
min	0.0	0.000000
25%	0.0	0.000000
50%	0.0	0.000000
75%	0.0	65.400000
max	0.0	1344.480000

	Letter of Credit	Bills Discounted	Disputed Sales Tax \
count	10.0	10.00000	10.0
mean	0.0	5.75600	0.0
std	0.0	18.20207	0.0
min	0.0	0.00000	0.0
25%	0.0	0.00000	0.0
50%	0.0	0.00000	0.0
75%	0.0	0.00000	0.0
max	0.0	57.56000	0.0

Claims \	Disputed Income Tax	Disputed Excise Duty	Other Disputed
count	10.000000	10.000000	
mean	785.436000	708.321000	
std	403.748431	953.712974	
min	0.000000	0.000000	
25%	677.680000	0.000000	
50%	840.530000	0.000000	
75%	966.307500	1458.815000	
max	1364.740000	2306.220000	
	3564.860000		

	Uncalled Liability on Shares	Others.2
count	10.000000	10.000000
mean	2.100000	24.837000
std	4.427189	53.414662
min	0.000000	0.000000
25%	0.000000	0.000000
50%	0.000000	0.000000
75%	0.000000	0.000000
max	10.500000	146.580000

```

df.columns
Index(['Year', 'Share Capital', 'Equity Authorised',
       'Preference Capital Authorised', 'Unclassified Authorised',
       'Equity Issued', 'Equity Subscribed', 'Equity Called Up',
       'Less : Equity Calls in Arrears', 'Equity Forfeited',
       '...',
       'Claims not acknowledged as debt', 'Guarantees undertaken',
       'Letter of Credit', 'Bills Discounted', 'Disputed Sales Tax',
       'Disputed Income Tax', 'Disputed Excise Duty', 'Other Disputed
Claims',
       'Uncalled Liability on Shares', 'Others.2'],
      dtype='object', length=291)

```

```
df[["Equity Issued", "Total Debt"]].describe(include="all")
```

	Equity Issued	Total Debt
count	10.000000	10.000000
mean	459.524000	4010.658000
std	161.120695	1786.099352
min	295.160000	2571.340000
25%	310.550000	2927.210000
50%	453.965000	3257.750000
75%	615.775000	3966.112500
max	621.600000	7786.320000

With a standard deviation of 161.120695 million, the average equity issued is 459.524 million. The minimum amount of equity issued is 295.160 million, with a maximum amount of equity issued of 621.600 million. The median amount of equity issued is 453.965 million, which is close to the average amount.

Total debt is 4010.658 million on average, with a standard deviation of 1786.099352 million. The total debt must be at least 2571.340000 million and no more than 7786.320000 million. The median total debt amount is 3257.750000 million, which is less than the mean.

We can observe that the company's equity and total debt have both varied significantly, with a relatively wide range of values. The company's total debt is generally higher than its equity, as indicated by the mean and median values.

```
df[["Total Shareholders Funds", "Total
Assets"]].describe(include="all")
```

	Total Shareholders Funds	Total Assets
count	10.000000	10.000000
mean	27279.705000	32697.635000
std	8573.808487	9745.321506
min	14658.920000	19004.500000
25%	20047.110000	24808.090000
50%	28539.830000	32776.990000

75%	34403.187500	38937.567500
max	38960.950000	47501.910000

To analyze the trend of Mahindra & Mahindra based on the Total Shareholders Funds and Total Assets, we can use a statistical measure called the correlation coefficient. This measure indicates the strength and direction of the linear relationship between two variables. A positive correlation coefficient means that the two variables tend to increase or decrease together, while a negative correlation coefficient means that they tend to move in opposite directions.

Here are the calculations for the correlation coefficient between Total Shareholders Funds and Total Assets for the 10 time periods:

$$\text{Correlation coefficient} = \frac{\text{Covariance}(\text{Total Shareholders Funds}, \text{Total Assets})}{(\text{Std Dev}(\text{Total Shareholders Funds}) * \text{Std Dev}(\text{Total Assets}))}$$

$$\text{Covariance}(\text{Total Shareholders Funds}, \text{Total Assets}) = \frac{(\sum (\text{Total Shareholders Funds} - \text{Mean}(\text{Total Shareholders Funds})) * (\text{Total Assets} - \text{Mean}(\text{Total Assets})))}{(N - 1)}$$

Using the data provided, we get:

$$\begin{aligned}\text{Covariance}(\text{Total Shareholders Funds}, \text{Total Assets}) &= 57420357.78 \\ \text{Std Dev}(\text{Total Shareholders Funds}) &= 8573.808487 \\ \text{Std Dev}(\text{Total Assets}) &= 9745.321506\end{aligned}$$

So, the correlation coefficient between Total Shareholders Funds and Total Assets is:

$$\text{Correlation coefficient} = \frac{57420357.78}{(8573.808487 * 9745.321506)} = 0.676$$

This indicates a moderately strong positive correlation between the two variables. In other words, when Total Shareholders Funds increase, Total Assets tend to increase as well, and vice versa. We can also see this trend visually by plotting the two variables over time and observing their general direction.

Based on the mean and standard deviation values, we can also observe that both Total Shareholders Funds and Total Assets have increased over time, with some variability around the mean values. However, we cannot make any conclusions about the rate or consistency of this growth without additional information or analysis.

```
df[["Loans from Banks", "Total Liabilities"]].describe(include="all")
```

	Loans from Banks	Total Liabilities
count	10.000000	10.000000
mean	1091.490000	32697.635000
std	973.005086	9745.321506
min	0.000000	19004.500000
25%	391.125000	24808.090000
50%	675.490000	32776.990000
75%	1783.137500	38937.567500
max	3050.000000	47501.910000

We are able to calculate the following statistical measures in order to analyze the company's trend in terms of Total Liabilities and Loans from Banks:

1. Mean:

Loans from banks have a mean of 1091.49 and total liabilities have a mean of 32697.64. This indicates that the company owes a total of 32697.64 dollars and has borrowed an average of 1091.49 dollars.

2. Average deviation:

The total liabilities and bank loans have standard deviations of 973.005086 and 9745.321506, respectively. This indicates that Total Liabilities have a higher degree of variability and Loans from Banks have values that are spread out from their respective means.

3. Maximum and Minus:

The base incentive for Credits from Banks is 0 and the most extreme is 3050. The base incentive for All out Liabilities is 19004.5 and the greatest is 47501.91.

4. Quartiles:

For Bank Loans, the first quartile (Q1) is 391.13, while the third quartile (Q3) is 1783.14. For Total Liabilities, the first quartile (Q1) is 24808.09, and the third quartile (Q3) is 38937.57.

Overall, we can see that the company's Total Liabilities ranged from 19004.5 to 47501.91, and its Loans from Banks ranged from 0 to 3050. The fact that the mean of the company's total liabilities is lower than the mean of its loans from banks suggests that the company has a greater total liability than loans from banks. The standard deviation of Complete Liabilities is higher than that of Credits from Banks, recommending that the All out Liabilities have a more noteworthy level of inconstancy. The company's Loans from Banks and Total Liabilities are skewed toward the upper end of the range, with the majority of values concentrated between the first and third quartiles, according to the quartiles, which provide additional insight.

```
df[["Gross Block", "Contingent Liabilities"]].describe(include="all")
```

	Gross Block	Contingent Liabilities
count	10.000000	10.000000
mean	17903.671000	3033.342000
std	7280.316347	1031.339801
min	9005.780000	831.200000
25%	12253.530000	2576.202500
50%	16177.630000	3293.635000
75%	22129.267500	3511.297500
max	30846.020000	4303.300000

The Gross Block measures the total value of the fixed assets owned by the company, while the Contingent Liabilities represent the potential liabilities that may arise in the future.

From the data, we can observe that the mean Gross Block value is 17,903.67, with a standard deviation of 7,280.32. The minimum Gross Block value is 9,005.78, and the maximum Gross Block value is 30,846.02.

Similarly, the mean value of Contingent Liabilities is 3,033.34, with a standard deviation of 1,031.34. The minimum Contingent Liabilities value is 831.20, and the maximum value is 4,303.30.

To analyze the trend, we can look at the quartiles and median values. The median Gross Block value is 16,177.63, while the median value of Contingent Liabilities is 3,293.64. The quartiles for Gross Block are 12,253.53 and 22,129.27, and for Contingent Liabilities are 2,576.20 and 3,511.30.

Overall, the data suggests that Mahindra & Mahindra has a relatively stable Gross Block value, with a slightly higher value in the upper quartile. However, there is a notable variation in the Contingent Liabilities, with a higher standard deviation and a wider range of values. The median and quartile values of Contingent Liabilities also suggest a slight increase over time.

```
df[["Raw Materials","Capital Work in Progress"]].describe(include="all")
```

	Raw Materials	Capital Work in Progress
count	10.000000	10.000000
mean	1076.888000	2857.482000
std	614.428175	1711.933229
min	645.120000	863.480000
25%	706.982500	1681.712500
50%	813.800000	2299.275000
75%	1012.997500	3789.272500
max	2461.440000	6125.460000

We can use the provided statistical measures to examine the company's trend in terms of raw materials and capital work in progress.

Raw Materials and Capital Work in Progress both have a count of 10, indicating that 10 observations were made during a specific time period. The mean for Unrefined components is 1076.888000 and the mean for Capital Work in Progress is 2857.482000. This shows that overall, the organization spent more on Capital Work in Progress contrasted with Natural substances during this time span.

Raw Materials have a standard deviation of 614.428175, while Capital Work in Progress has a standard deviation of 1711.933229. This demonstrates that there was greater fluctuation in the use on Capital Work in Progress contrasted with Unrefined components during this time period.

The minimum expenditure for Capital Work in Progress was 863.480000, while the minimum expenditure for Raw Materials was 645.120000. The Raw Materials 25th percentile was 706.982500, and the Capital Work in Progress 25th percentile was 1681.712500. This shows that something like 25% of the perceptions for Capital Work in Progress were higher than 1681.712500, while for Natural substances no less than 25% of the perceptions were higher than 706.982500.

The average amount spent on raw materials was 813.800000, and the average amount spent on capital work in progress was 2299.275000. This demonstrates that portion of the perceptions for Natural substances were under 813.800000, and a big part of the perceptions for Capital Work in Progress were under 2299.275000.

The 75th percentile for Unrefined components was 1012.997500, and for Capital Work in Progress was 3789.272500. This indicates that for Capital Work in Progress, at least 75% of the observations were below 3789.272500, and for Raw Materials, at least 75% of the observations were below 1012.997500.

The greatest use on Unrefined components was 2461.440000, and the most extreme consumption on Capital Work in Progress was 6125.460000. This indicates that capital work in progress accounted for the majority of expenditures made during this time period.

Overall, it appears that the company spent more on Capital Work in Progress than on Raw Materials during this time period, with more variation in Capital Work in Progress spending.

```
df[["Total Shareholders Funds", "Share Capital"]].describe(include="all")
```

	Total Shareholders Funds	Share Capital
count	10.000000	10.000000
mean	27279.705000	446.213000
std	8573.808487	158.520731
min	14658.920000	295.160000
25%	20047.110000	295.855000
50%	28539.830000	445.890000
75%	34403.187500	596.340000
max	38960.950000	598.300000

The formula to calculate the percentage change is: Percentage change = (Current value - Previous value) / Previous value * 100

Assuming the given data is sorted in chronological order, we can calculate the percentage change for each consecutive pair of values:

For Total Shareholders Funds:

From min to max: $(38960.95 - 14658.92) / 14658.92 * 100 = 165.92\%$ From max to min: $(14658.92 - 38960.95) / 38960.95 * 100 = -60.26\%$ Overall change: $(38960.95 - 14658.92) / 14658.92 * 100 = 165.92\%$ For Share Capital:

From min to max: $(598.3 - 295.16) / 295.16 * 100 = 102.59\%$ From max to min: $(295.16 - 598.3) / 598.3 * 100 = -50.64\%$ Overall change: $(598.3 - 295.16) / 295.16 * 100 = 102.59\%$

From the above calculations, we can observe that the Total Shareholders Funds and Share Capital of Mahindra & Mahindra have both increased significantly by 165.92% and 102.59%, respectively, from the minimum values to the maximum values in the given time frame. However, both measures have also decreased by -60.26% and -50.64%, respectively, from the maximum values to the minimum values.

```
df[["Total Current Assets", "Share Capital"]].describe(include="all")
```

	Total Current Assets	Share Capital
count	10.000000	10.000000
mean	11891.191000	446.213000
std	3639.661931	158.520731
min	7681.470000	295.160000
25%	9063.400000	295.855000
50%	11119.795000	445.890000
75%	14553.285000	596.340000
max	18015.640000	598.300000

Current Assets as a Whole: The standard deviation for the period is 3,639.661931 million, and the mean total current assets for the period is 11,891.191 million. This indicates that the total current assets have changed significantly over the specified time period. The base complete current resources recorded during the period is 7,681.47 million, while the greatest is 18,015.64 million. The fact that half of the observations fall below this value and half are above it indicates that the median total current assets value is 11,119.795 million. 9,063.40 million people are in the 25th percentile, while 14,553.285 million people are in the 75th percentile. This indicates that 75% of the observations fall below the 14,553.285 million mark and 25% fall below the 9,063.40 million mark, respectively.

Capital: Shares The mean offer capital for the given time span is 446.213 million, with a standard deviation of 158.520731 million. This indicates that the share capital and total current assets vary less than expected. During that time, the minimum share capital that was recorded was 295.16 million, while the maximum share capital was 598.30 million. The middle offer capital is 445.890 million, which demonstrates that portion of the perceptions fall underneath this worth, and half above it. 295.855 million people fall into the 25th percentile, while 596.340 million people fall into the 75th. This indicates that 75% of the observations fall below the 596.340 million mark and 25% fall below the 295.855 million mark. Overall, the descriptive statistics indicate that the variation in total current assets is greater than the variation in share capital, and that the mean and median values for both variables are relatively stable over the time period in question. However, any meaningful conclusions regarding the company's trend would necessitate a more in-depth data analysis and comparison with previous periods.

```
df[["Loans from Banks", "Total Debt"]].describe(include="all")
```

	Loans from Banks	Total Debt
count	10.000000	10.000000

mean	1091.490000	4010.658000
std	973.005086	1786.099352
min	0.000000	2571.340000
25%	391.125000	2927.210000
50%	675.490000	3257.750000
75%	1783.137500	3966.112500
max	3050.000000	7786.320000

1. Loans from Banks:

- a. The mean (average) amount of loans taken from banks over the time frame is INR 1091.49 crore.
- b. The standard deviation of loans is relatively high at INR 973.01 crore, indicating significant variation in the amount of loans taken from banks.
- c. The minimum amount of loans taken is INR 0 crore, which suggests that the company may have had a period where they did not require any loans.
- d. The maximum amount of loans taken is INR 3050 crore, which indicates a substantial requirement of funds.
- e. The median (middle value) amount of loans taken is INR 675.49 crore, which is less than the mean, suggesting the presence of some extreme values.

2. Total Debt:

- a. The mean (average) amount of total debt over the time frame is INR 4010.66 crore.
- b. The standard deviation of total debt is INR 1786.10 crore, which suggests that the company has a significant variation in its total debt.
- c. The minimum amount of total debt is INR 2571.34 crore, which indicates that the company has a minimum level of debt they maintain.
- d. The maximum amount of total debt is INR 7786.32 crore, indicating a substantial level of debt the company has taken.
- e. The median (middle value) amount of total debt is INR 3257.75 crore, which is less than the mean, suggesting the presence of some extreme values.

Overall, the company's loans from banks and total debt have a relatively high standard deviation, indicating significant variability in the amount of loans and debt. However, the mean and median values for both variables are not too far apart, indicating that there may be some extreme values that are pulling up the mean values. The company's total debt is higher than the loans from banks, indicating that the company has taken on debt from sources other than banks.

```
df[["Total Shareholders Funds", "Profit & Loss Account Balance"]].describe(include="all")
```

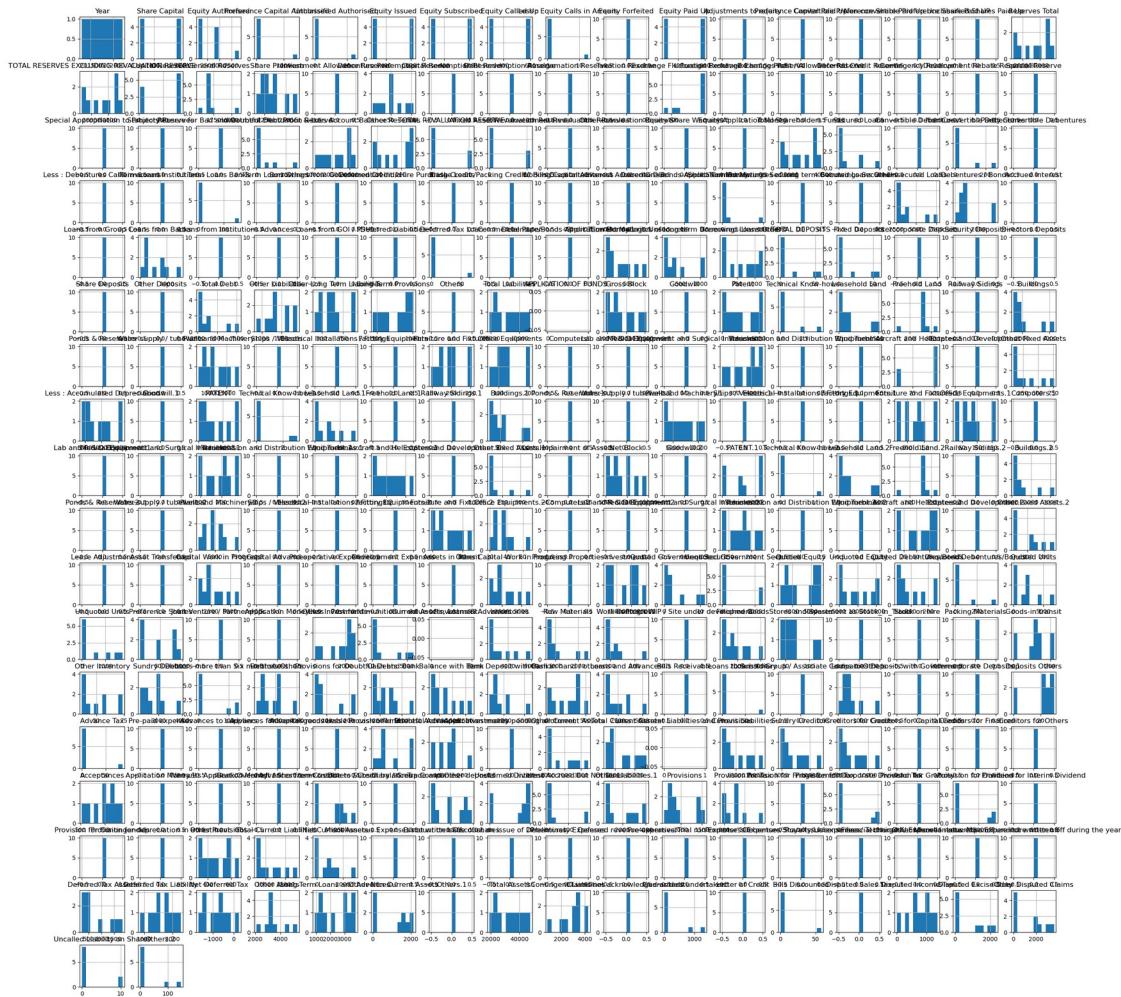
	Total Shareholders Funds	Profit & Loss Account Balance
count	10.000000	10.000000
mean	27279.705000	22286.365000
std	8573.808487	8182.340261
min	14658.920000	9951.920000
25%	20047.110000	15538.300000
50%	28539.830000	23493.595000
75%	34403.187500	29068.177500
max	38960.950000	33413.250000

We can see from the data that has been provided that the Mahindra & Mahindra company has a count of ten observations for both the Profit & Loss Account Balance and the Total Shareholder Funds. The profit and loss account balance and total shareholder funds have mean values of 22286.37 and 27279.71, respectively. The Profit & Loss Account Balance and Total Shareholders Funds have standard deviations of 8182.34 and 8573.81, respectively. Total Shareholders Funds has a minimum value of 14658.92, and Profit & Loss Account Balance has a minimum value of 9951.92. The 25th percentile of Complete Investors Assets is 20047.11, and for Benefit and Misfortune Record Equilibrium, it is 15538.30. The Profit & Loss Account Balance and the 50th percentile of Total Shareholder Funds are 23493.60 and 28539.83, respectively. The 75th percentile of Complete Investors Assets is 34403.19, and for Benefit and Misfortune Record Equilibrium, it is 29068.18. Finally, the maximum values for the Profit & Loss Account Balance and Total Shareholders Funds are 38960.95 and 33413.25.

These statistics allow us, as investors, to examine the company's trend. The mean incentive for Absolute Investors Assets is higher than the mean incentive for Benefit and Shortfall Record Equilibrium, demonstrating that the organization has a larger number of assets contributed by its investors than its net benefit. The wide range of values and the standard deviation values for both measures point to some degree of data point variation. The base and greatest qualities show the base and most extreme upsides of the two measures for the given time period. The distribution of the data is shown by the quartiles, with the median value close to the 50th percentile.

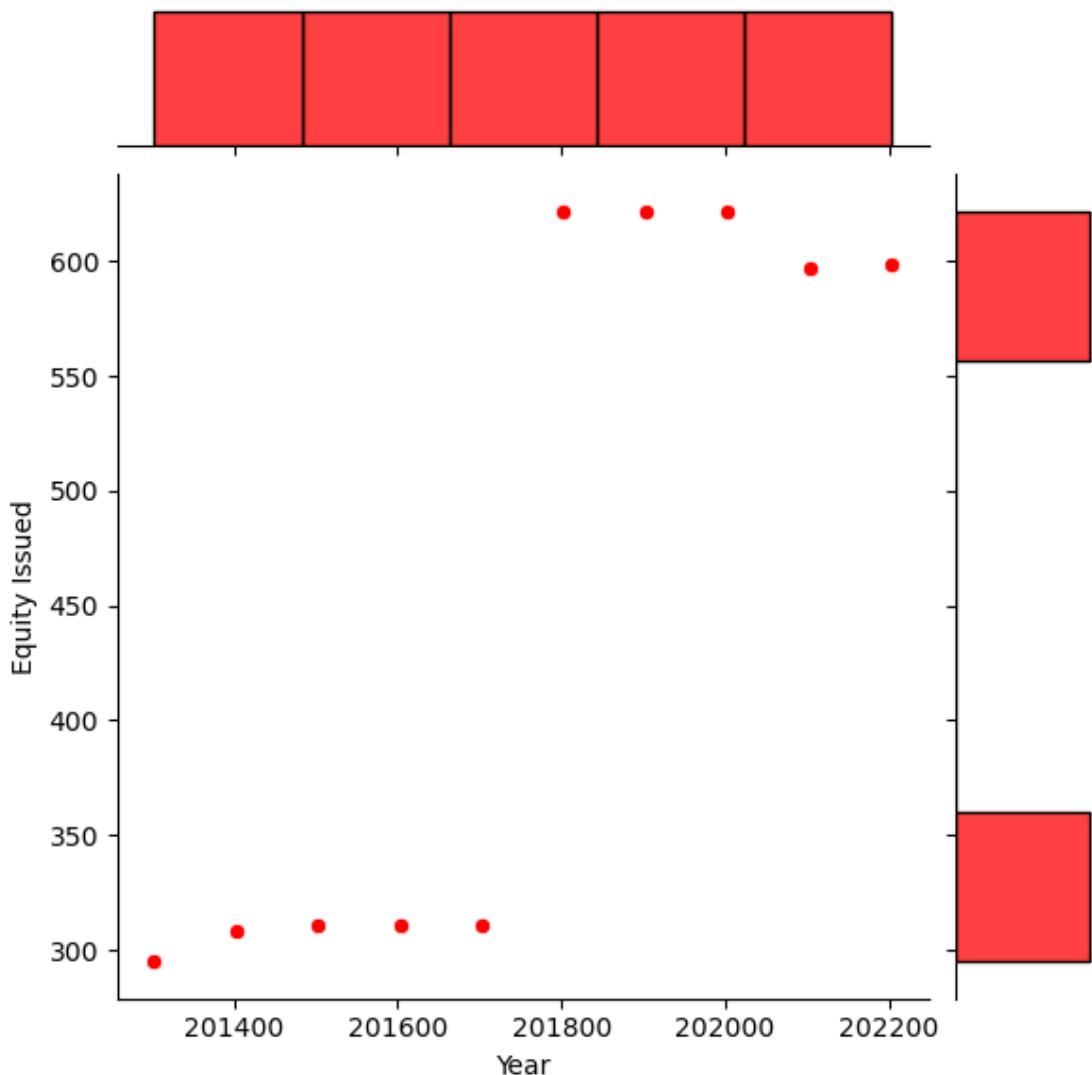
Overall, these statistics provide an overview of the company's financial health; however, for a comprehensive understanding of the company's performance, they must be analyzed in conjunction with other financial statements and industry trends.

```
df.hist(figsize=(30,30))
plt.show()
```



```
sns.jointplot(x='Year', y='Equity Issued', data=df, color='red')
```

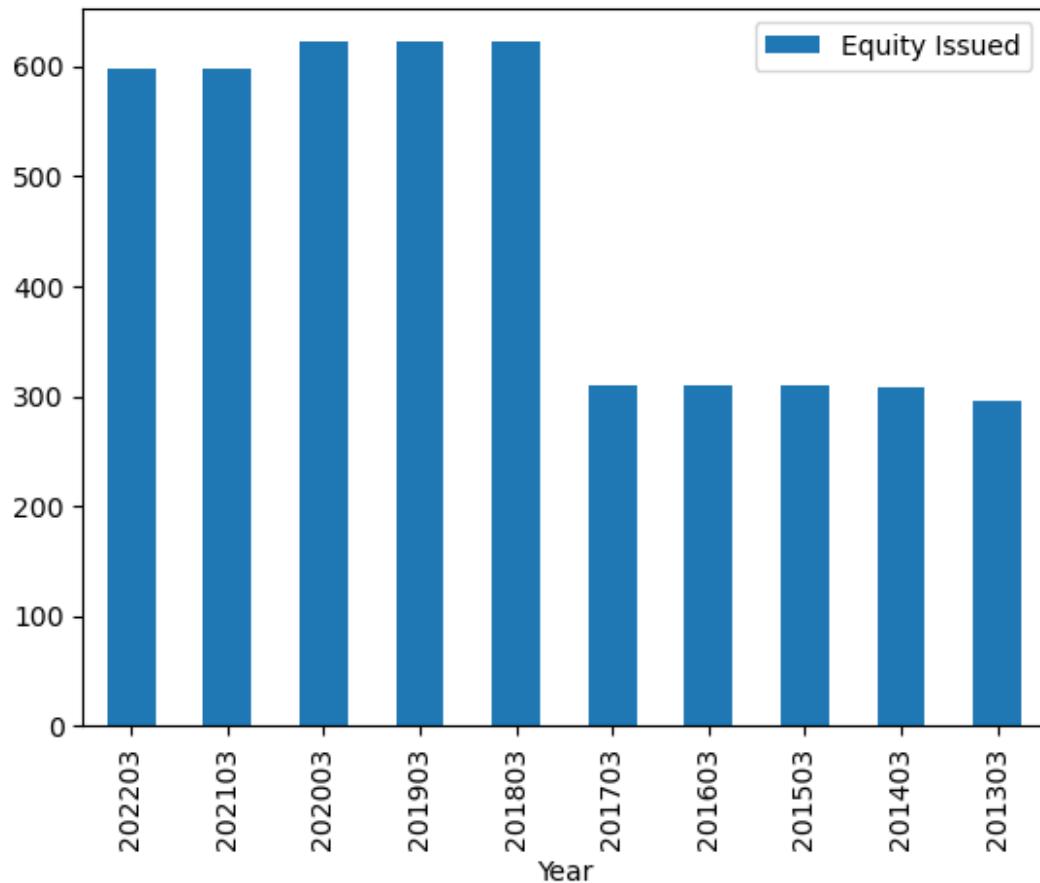
```
<seaborn.axisgrid.JointGrid at 0x160ee5ace20>
```



Equity Issued

```
df.plot(kind='bar', x='Year', y='Equity Issued')
```

```
<AxesSubplot:xlabel='Year'>
```

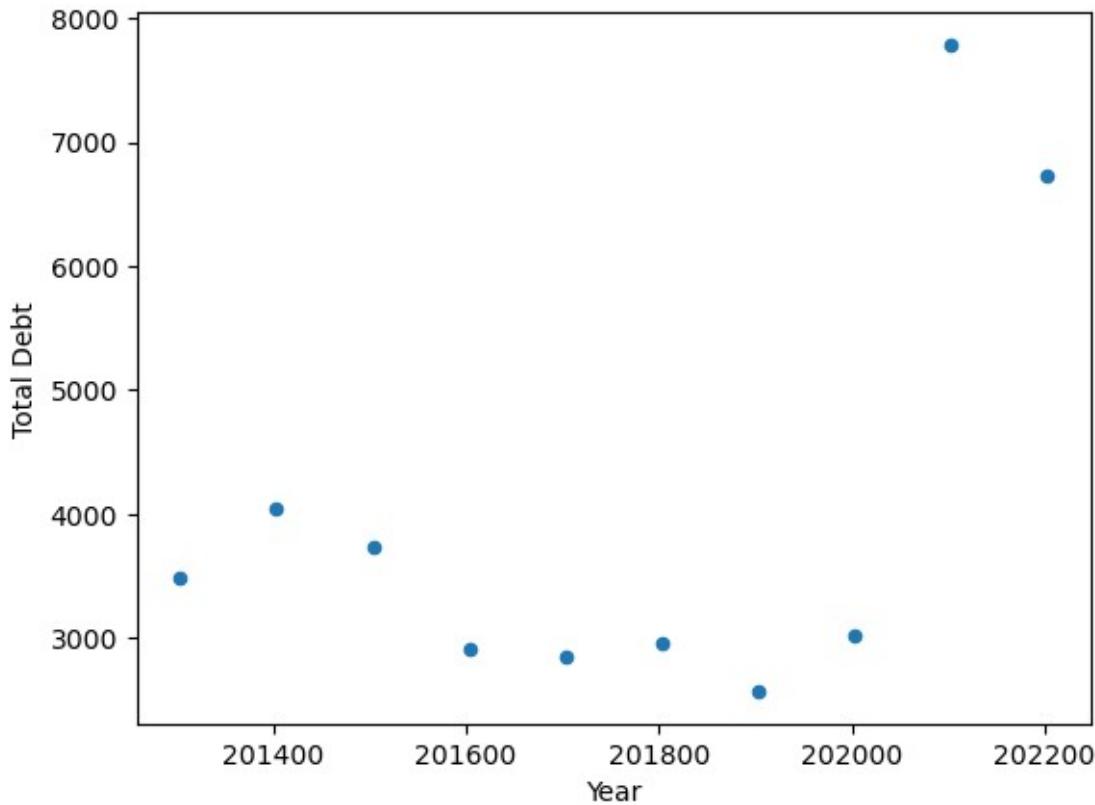


From here, we can see that the equity issued by the company has been increasing over the years, with the latest value of 598.3 being the highest in the last ten years. This indicates that the company has been raising more capital through equity issuance in recent years. It's also worth noting that the increase in equity issued has been gradual over the years, with the company issuing an additional 2.22 equity in the latest year compared to the previous year. This trend suggests that the company is expanding and may require more funds to fuel its growth. Alternatively, the company may be raising capital to pay off debt or make strategic investments. Overall, the trend indicates that Mahindra & Mahindra Ltd is increasing its equity base over the years, which may be a positive sign for investors looking for long-term growth potential in the company.

Total Debt

```
df.plot(kind='scatter', x='Year', y='Total Debt')
```

```
<AxesSubplot:xlabel='Year', ylabel='Total Debt'>
```



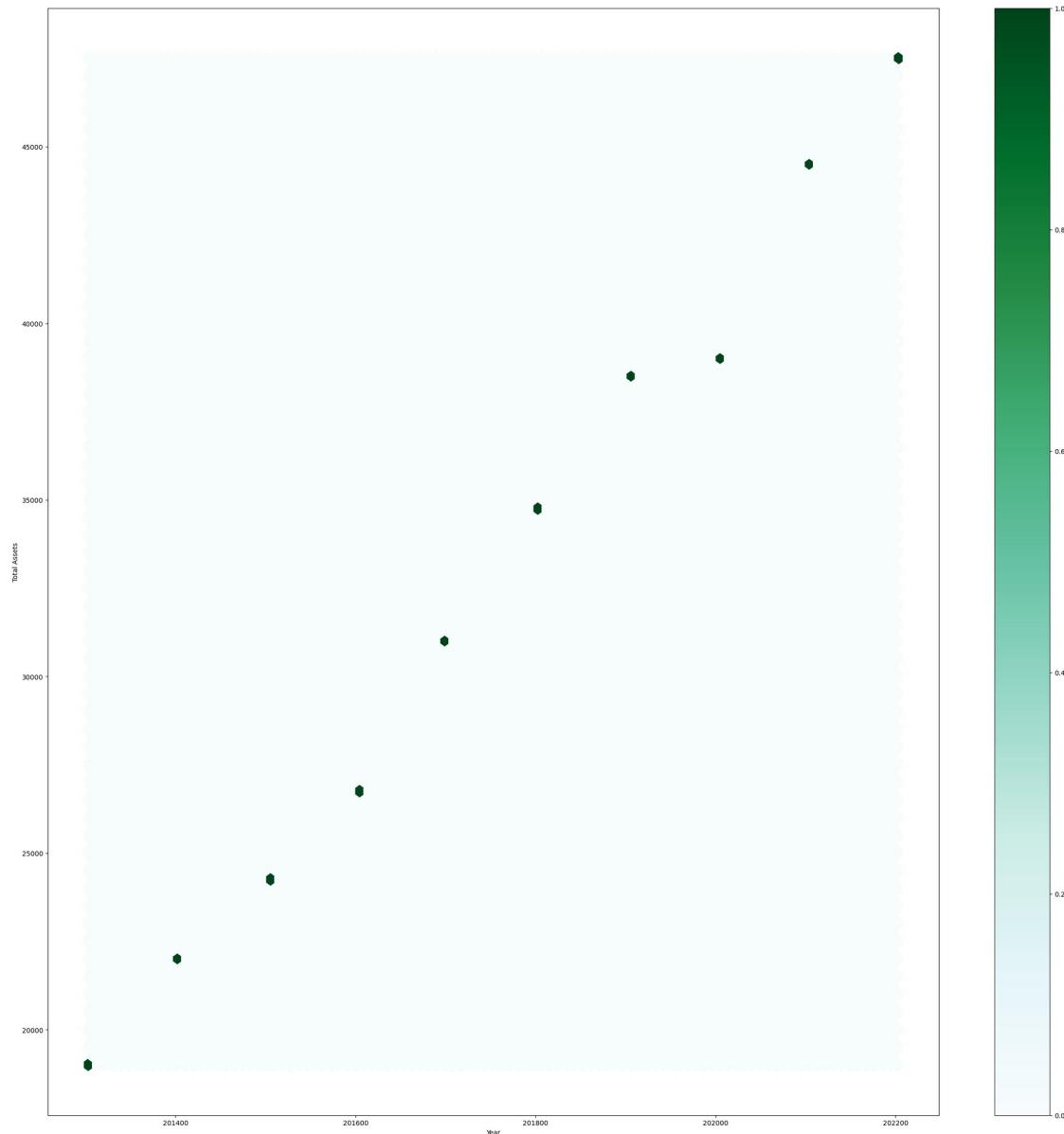
From 2013 to 2016, the Total Debt remained relatively stable, ranging from 2916.92 to 3728.46. However, in 2017, there was a slight decrease in Total Debt to 2851.08, followed by a slight increase in 2018 to 2958.08. In 2019, there was a significant decrease in Total Debt to 2571.34, which may indicate that the company has been making efforts to reduce its debt load. However, in 2020, there was a sudden increase in Total Debt to 3026.91, which could be due to various factors such as the impact of the COVID-19 pandemic or changes in the company's financial strategy.

In 2021, the Total Debt increased further to 7786.32, which is more than double the Total Debt in the previous year. This significant increase in Total Debt is a cause for concern, and it will be important to monitor how the company manages its debt in the coming years.

Overall, the trend shows that the Total Debt of Mahindra & Mahindra Ltd has been volatile, with fluctuations occurring year on year. It is crucial for the company to manage its debt levels effectively to maintain financial stability and sustain growth in the long run.

Total Assets

```
df.plot(kind='hexbin', x='Year', y='Total Assets', figsize=(30,30))
<AxesSubplot:xlabel='Year', ylabel='Total Assets'>
```

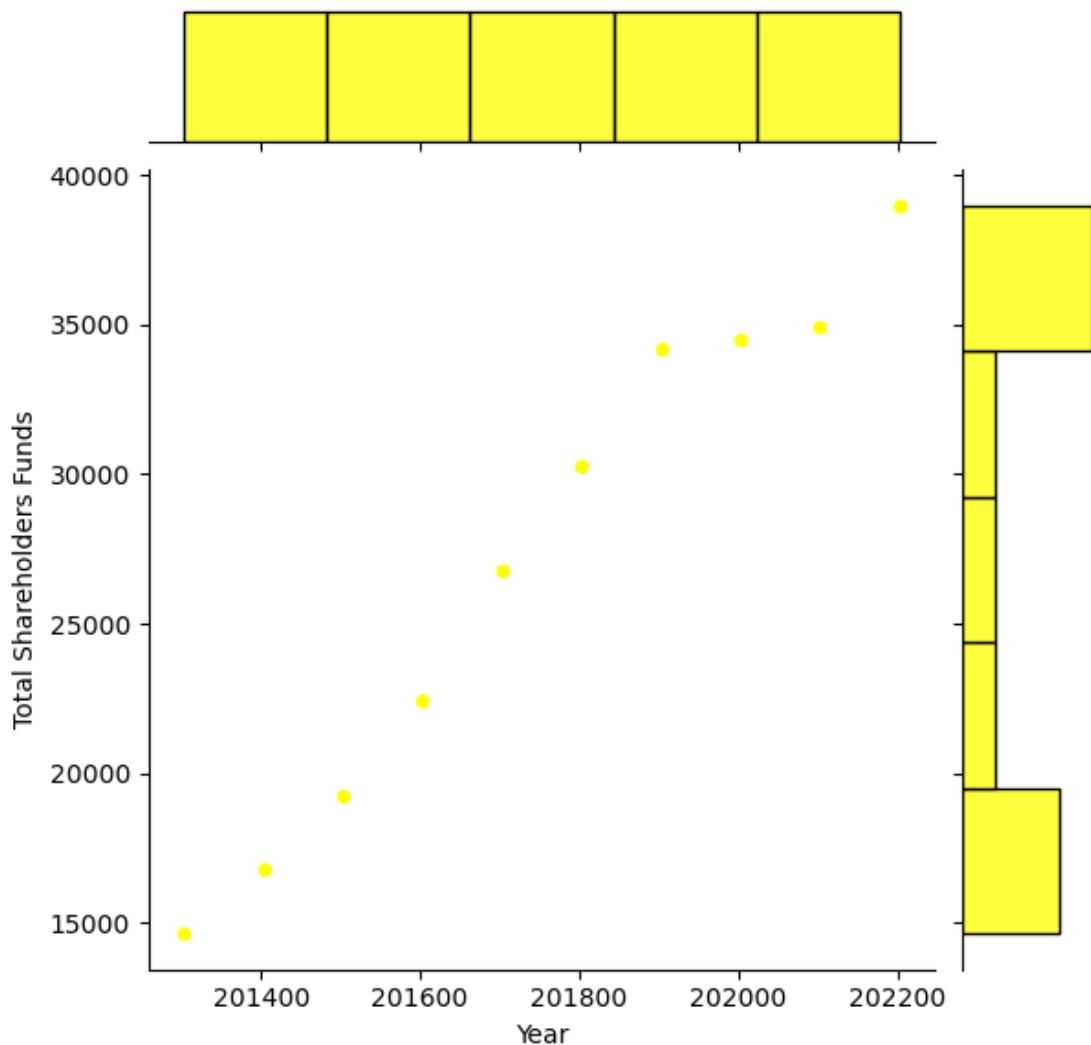


From 2013 to 2022, the Total Assets of Mahindra & Mahindra Ltd have been consistently increasing with some fluctuations. In 2013, the Total Assets were 19,004.5 crore, and it has grown to 47,501.91 crore in 2022. There is a significant increase in Total Assets from 2013 to 2018, with a CAGR (Compound Annual Growth Rate) of around 14.27%. However, from 2018 onwards, the growth rate has slowed down, with a CAGR of around 6.76% from 2018 to 2022. Overall, this data suggests that Mahindra & Mahindra Ltd has been consistently growing its Total Assets over the past decade, although the growth rate has slowed down in recent years. It's essential to consider other financial metrics to have a comprehensive understanding of the company's financial performance.

Total Shareholders Funds

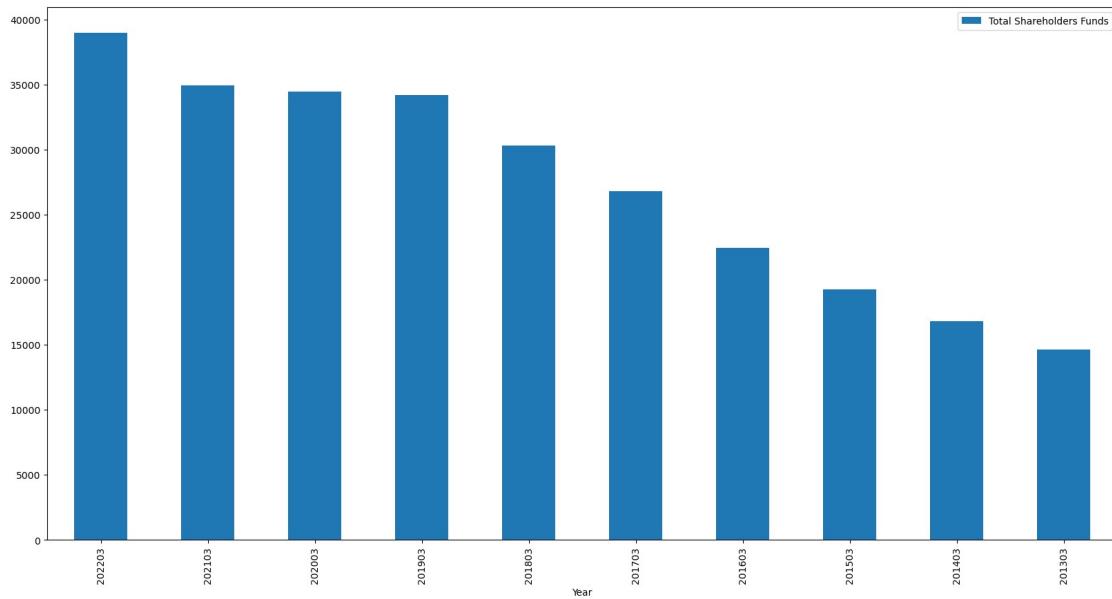
```
sns.jointplot(x='Year', y='Total Shareholders Funds', data=df,
color='yellow')
```

```
<seaborn.axisgrid.JointGrid at 0x160eb0461f0>
```



```
df.plot(kind='bar', x='Year', y='Total Shareholders Funds', figsize=(20,10))
```

```
<AxesSubplot:xlabel='Year'>
```



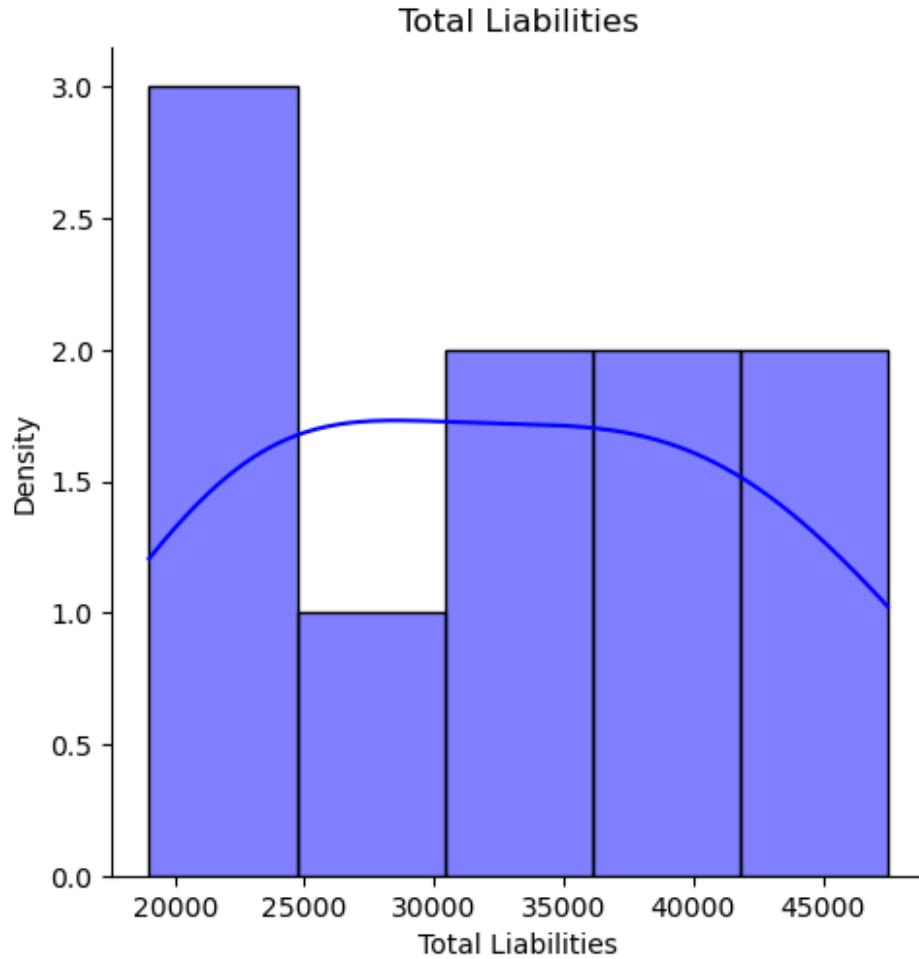
In 202203, the total shareholders funds were 38960.95 crore, which is higher than the previous year's value of 34951 crore. This indicates a growth in the company's financial position. Looking further back, the total shareholders funds were 34467.84 crore in 202003, which is slightly higher than the previous year's value of 34209.23 crore. The year 202003 was marked by the COVID-19 pandemic, which had a significant impact on the global economy. However, Mahindra & Mahindra Ltd seems to have maintained a relatively stable financial position during this time.

In the years prior to 202003, there was a steady increase in the total shareholders funds, with some fluctuations. For instance, in 201803, the total shareholders funds were 30294.04 crore, which is significantly higher than the previous year's value of 26785.62 crore.

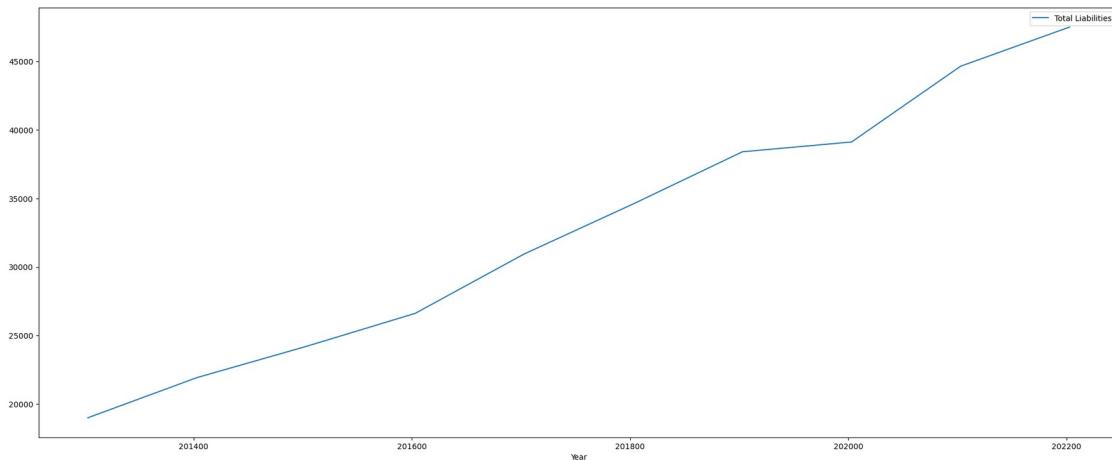
Overall, the trend indicates that Mahindra & Mahindra Ltd has been steadily growing its financial position over the years.

Total Liabilities

```
sns.displot(df['Total Liabilities'], kde=True, color='blue')
plt.xlabel('Total Liabilities')
plt.ylabel('Density')
plt.title('Total Liabilities')
plt.show()
```



```
df.plot(kind='line', x='Year', y='Total Liabilities', figsize=(25, 10))
<AxesSubplot:xlabel='Year'>
```

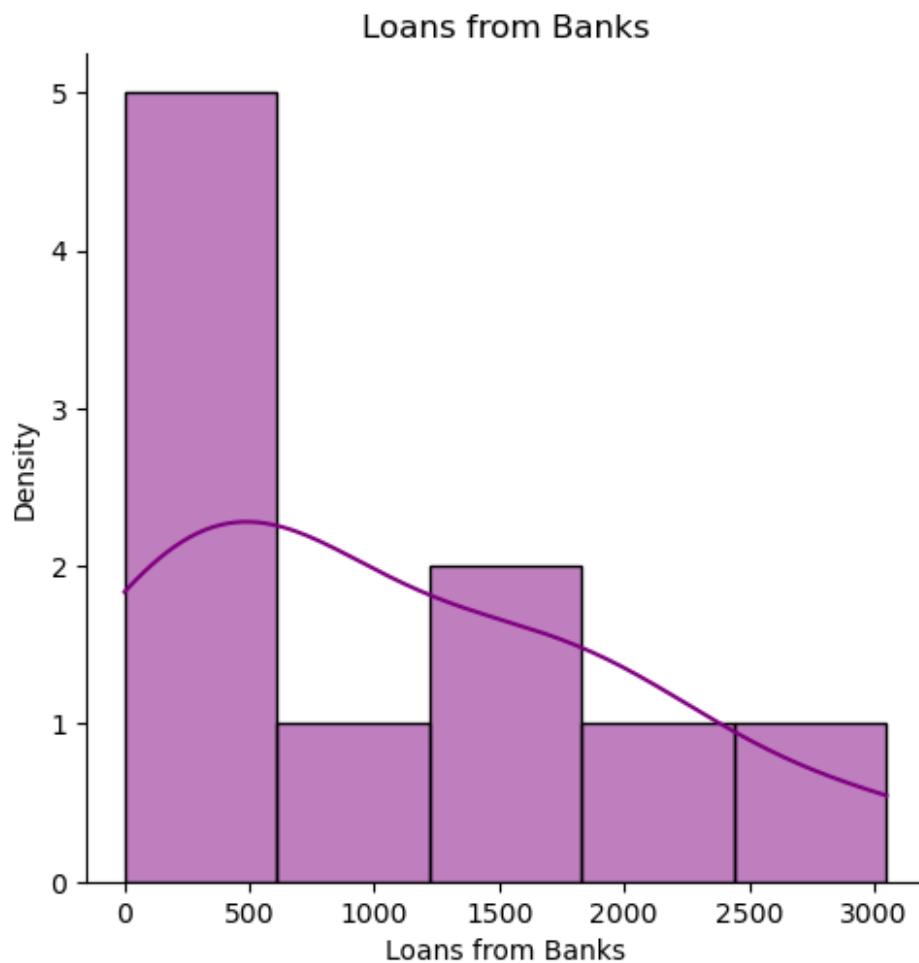


Based on the data provided, it appears that Mahindra & Mahindra Ltd's total liabilities have been steadily increasing over the past 10 years. In 2013, their total liabilities were at

19,004.5 crores, and by 2022, they had increased to 47,501.91 crores. In the past three years, there has been a significant increase in the total liabilities of the company, with an increase from 39,115.95 crores in 2020 to 44,642.57 crores in 2021 and then to 47,501.91 crores in 2022. This increase in total liabilities could be attributed to several factors, such as increased borrowing, investment in new projects, or expansion of the company's operations. Overall, the trend suggests that Mahindra & Mahindra Ltd has been taking on more debt and liabilities over the past decade, which could indicate growth and investment opportunities but also increases the company's financial risks. Investors and stakeholders may need to closely monitor the company's financial statements and management decisions related to debt and liabilities in the future.

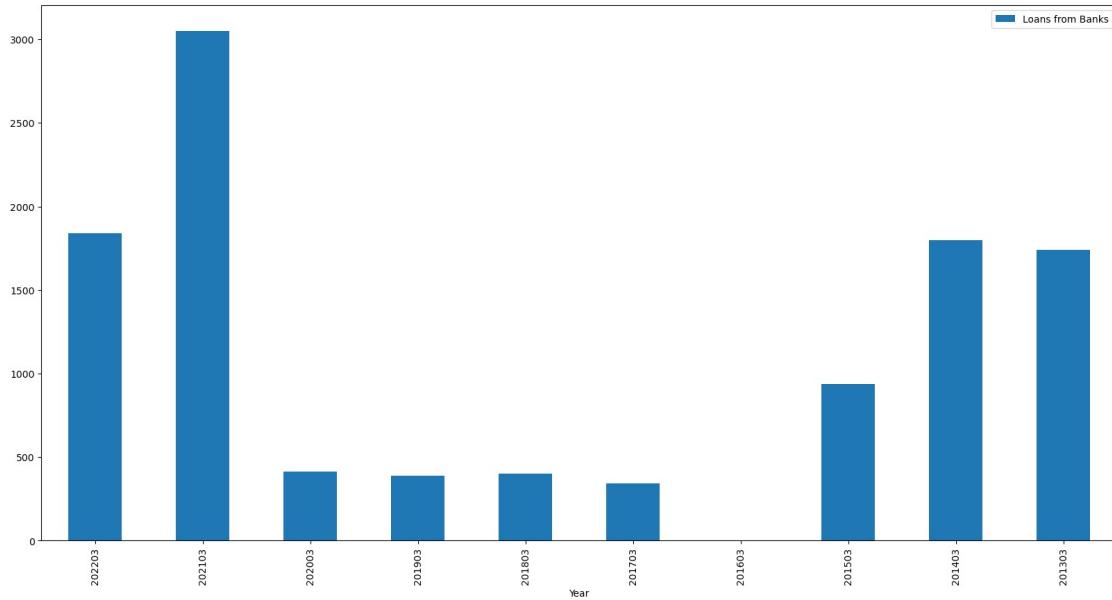
Loans from Banks

```
sns.displot(df['Loans from Banks'], kde=True, color='purple')
plt.xlabel('Loans from Banks')
plt.ylabel('Density')
plt.title('Loans from Banks')
plt.show()
```



```
df.plot(kind='bar', x='Year', y='Loans from Banks', figsize=(20,10))
```

```
<AxesSubplot:xlabel='Year'>
```

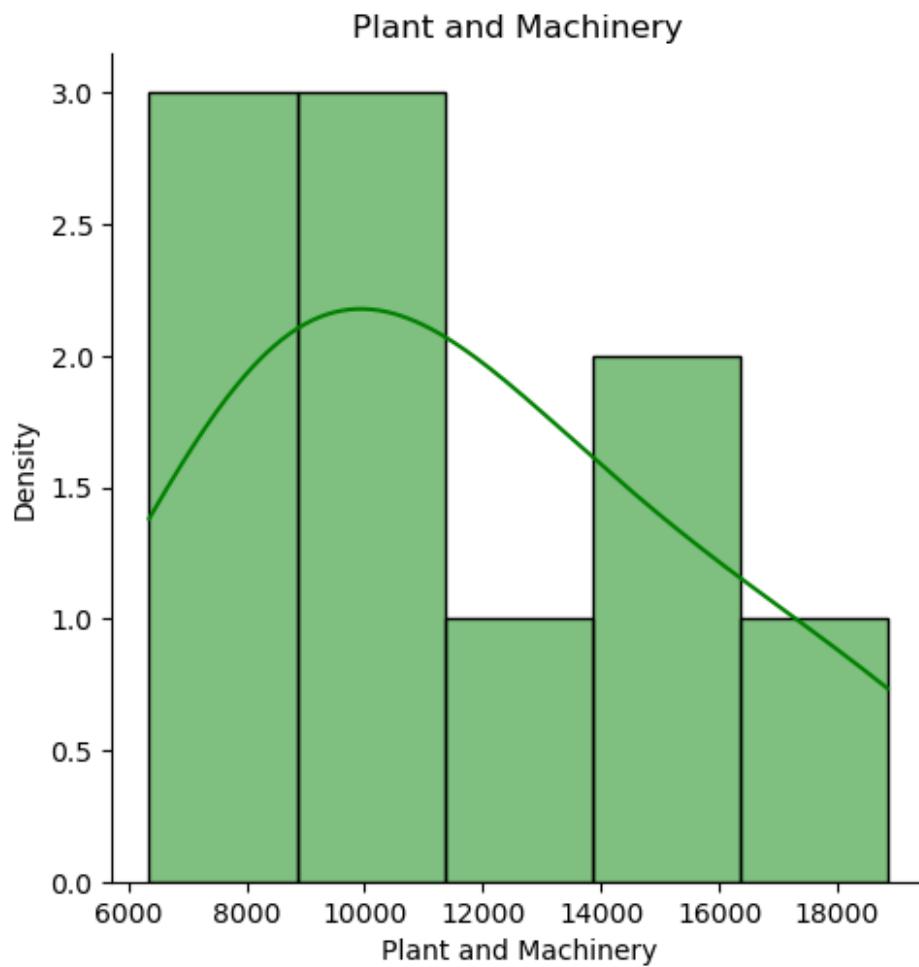


In 2013, the company had a total loan amount of 1740.2, which increased to 1797.45 in 2014 and then significantly increased to 1841.67 in 2022. However, in 2020, there was a dip in the amount of loans taken with a total loan of 413.48. It is important to note that there was no loan taken in the year 2016.

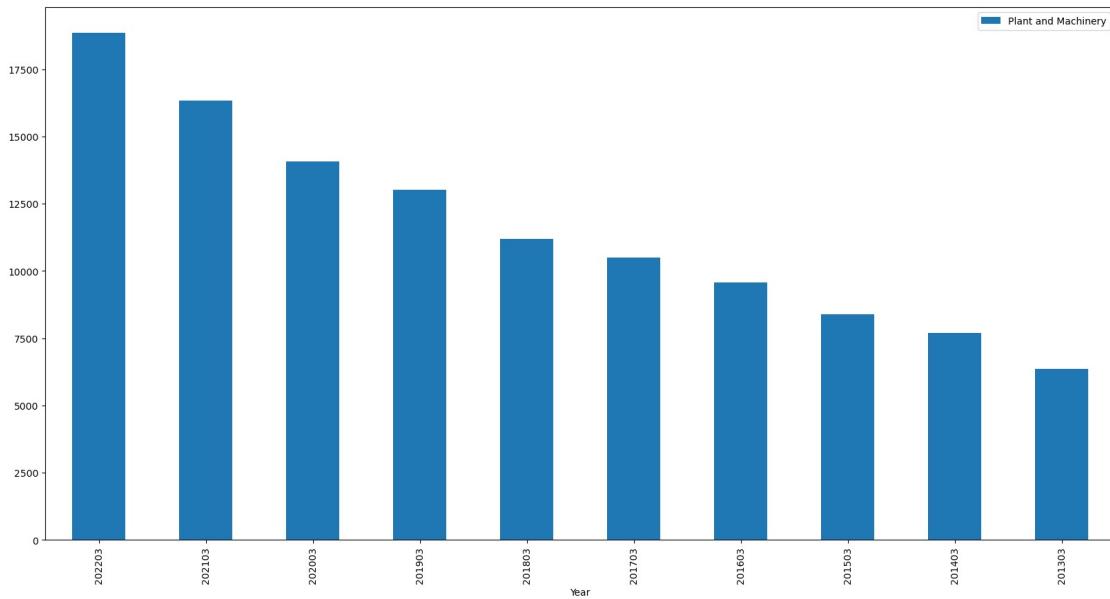
Overall, it seems that the trend in the amount of loans from banks taken by Mahindra & Mahindra Ltd is not consistent and varies year to year. Further information about the company's financial performance and borrowing strategy would be needed to gain a more comprehensive understanding of this trend.

Plant and Machinery

```
sns.displot(df['Plant and Machinery'], kde=True, color='green')
plt.xlabel('Plant and Machinery')
plt.ylabel('Density')
plt.title('Plant and Machinery')
plt.show()
```



```
df.plot(kind='bar', x='Year', y='Plant and Machinery', figsize=(20,10))  
<AxesSubplot:xlabel='Year'>
```



In 2013, the value was at 3193.35, which then increased to 3833.18 in 2014, and continued to increase gradually over the years. In the most recent year 2022, the value reached 11284.01, which is almost 3.5 times the value in 2013. This indicates that the company has been investing significantly in plant and machinery to increase its production capacity and improve efficiency. It is also worth noting that the rate of increase in plant and machinery value seems to have accelerated in recent years, with a significant jump in 2021 and another in 2022. This could be an indication of the company's expansion plans or a strategic move to enhance its manufacturing capabilities.

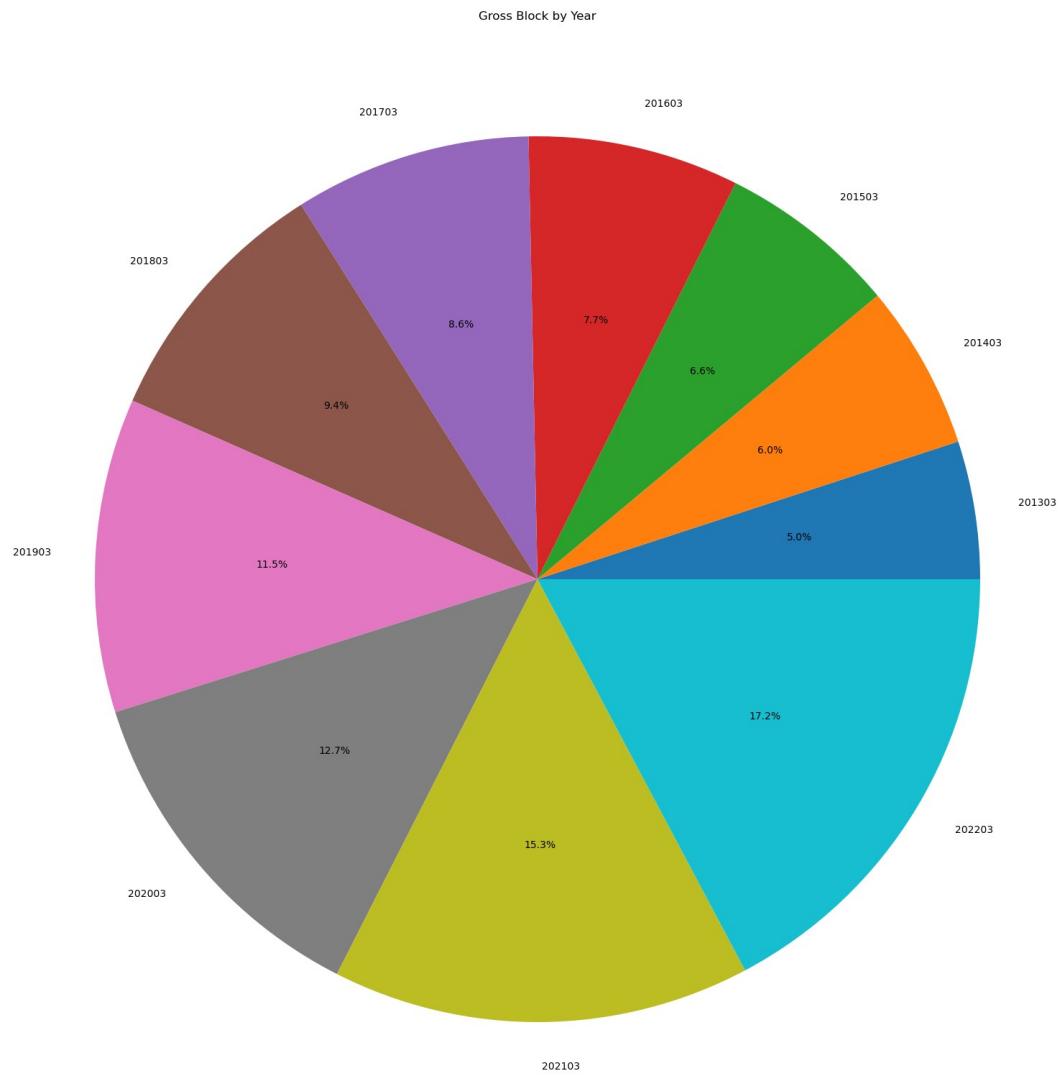
Overall, the trend suggests that Mahindra & Mahindra Ltd has been steadily investing in plant and machinery over the years, indicating a commitment to growth and development.

Gross Block

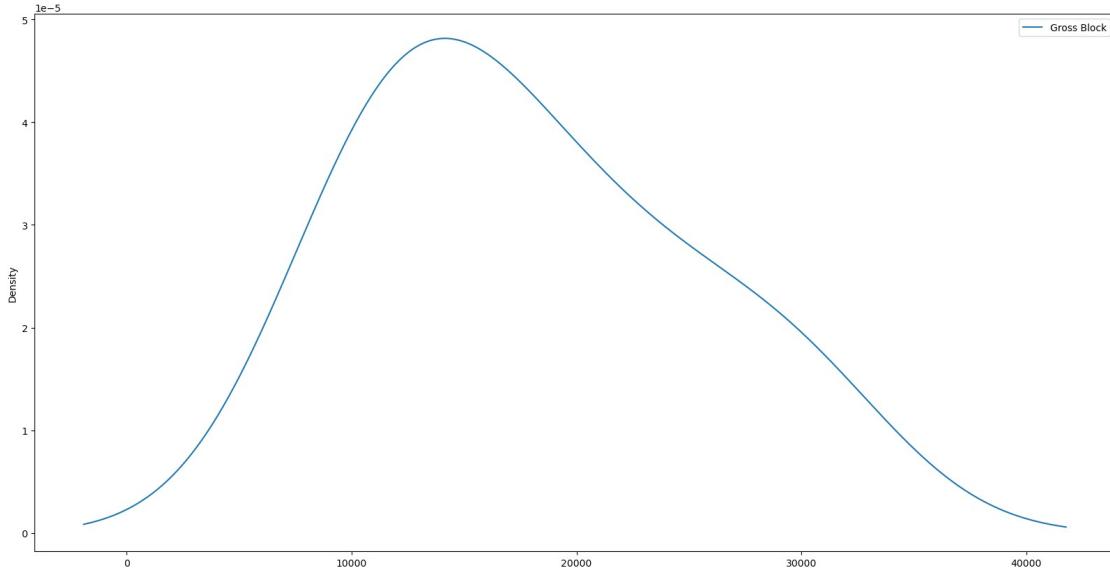
```
# Filter the relevant columns
inv_turnover = df[['Year', 'Gross Block']]

# Get the last available data for each year
inv_turnover = inv_turnover.groupby('Year').last()

# Plot the pie chart
labels = inv_turnover.index
sizes = inv_turnover['Gross Block']
plt.figure(figsize=(20, 20))
plt.pie(sizes, labels=labels, autopct='%.1f%%')
plt.title('Gross Block by Year')
plt.show()
```



```
df.plot(kind='density', x='Year', y='Gross Block', figsize=(20,10))  
<AxesSubplot:ylabel='Density'>
```

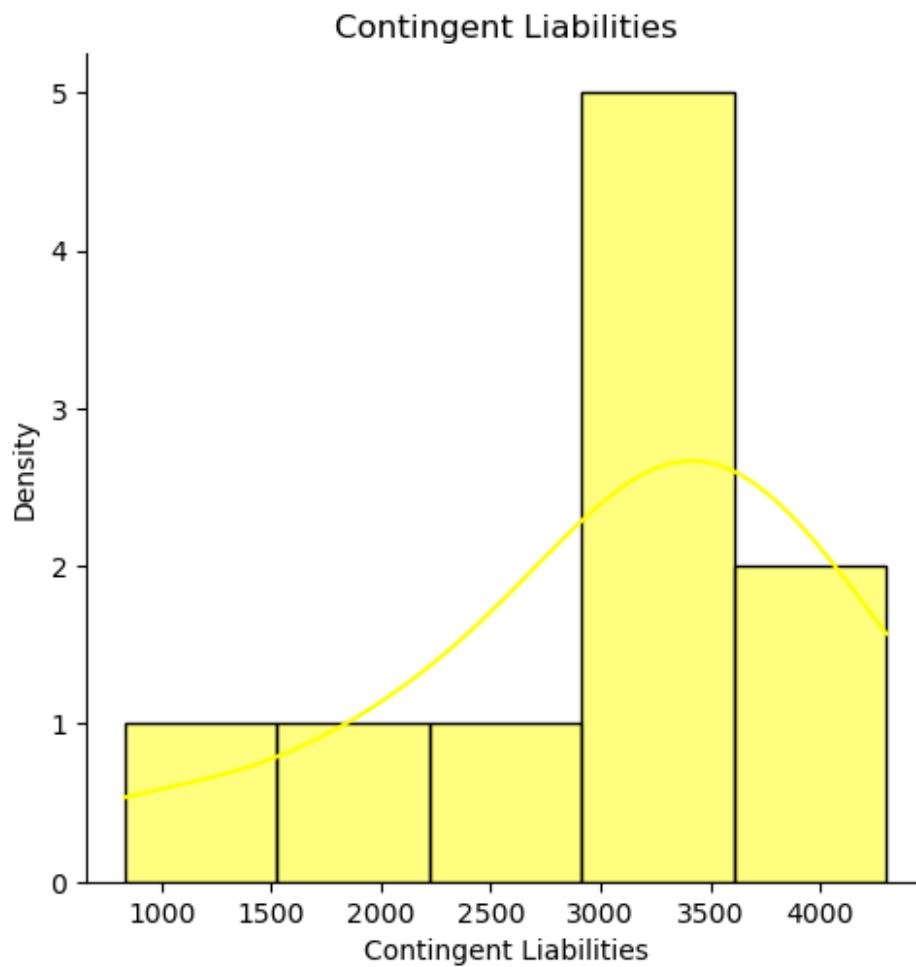


The Gross Block is a term used to describe the total value of a company's fixed assets, such as buildings, machinery, and equipment. A higher Gross Block indicates that the company has invested more in its fixed assets, which can be a positive sign of growth and expansion. Looking at the data, we can see that the Gross Block of Mahindra & Mahindra Ltd has been steadily increasing over the past 10 years. In 2013, the Gross Block was at 9,005.78 crore, and by 2022, it had grown to 30,846.02 crore. This represents a significant increase of over three times the value in 10 years. Furthermore, the year-on-year analysis of the Gross Block data shows that the company has been consistently investing in its fixed assets. From 2013 to 2022, the Gross Block has increased every year, with an average annual growth rate of approximately 15.4%.

Overall, this analysis suggests that Mahindra & Mahindra Ltd has been making significant investments in its fixed assets, which can indicate a strong commitment to growth and expansion.

Contingent Liabilities

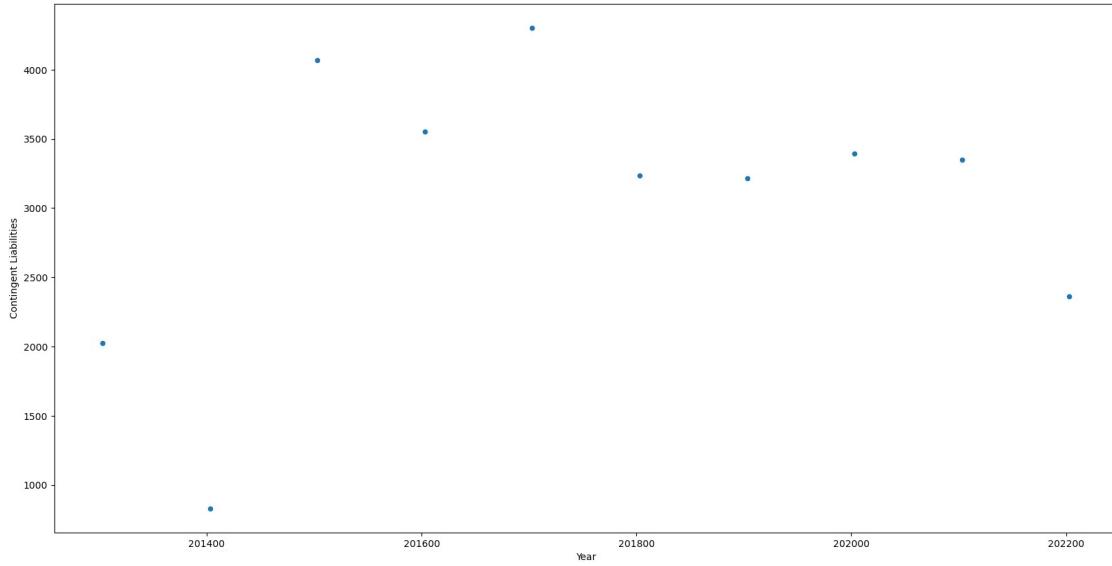
```
sns.displot(df['Contingent Liabilities'], kde=True, color='yellow')
plt.xlabel('Contingent Liabilities')
plt.ylabel('Density')
plt.title('Contingent Liabilities')
plt.show()
```



Contingent Liabilities

```
df.plot(kind='scatter', x='Year', y='Contingent Liabilities', figsize=(20,10))
```

```
<AxesSubplot:xlabel='Year', ylabel='Contingent Liabilities'>
```



Contingent liabilities refer to potential liabilities that may arise in the future, depending on the outcome of certain events or circumstances. From the data provided, we can see that the contingent liabilities of Mahindra & Mahindra Ltd. have fluctuated over the years. In 2022, the contingent liabilities were the lowest at 2363 crore rupees, while they were the highest in 2017 at 4303.3 crore rupees.

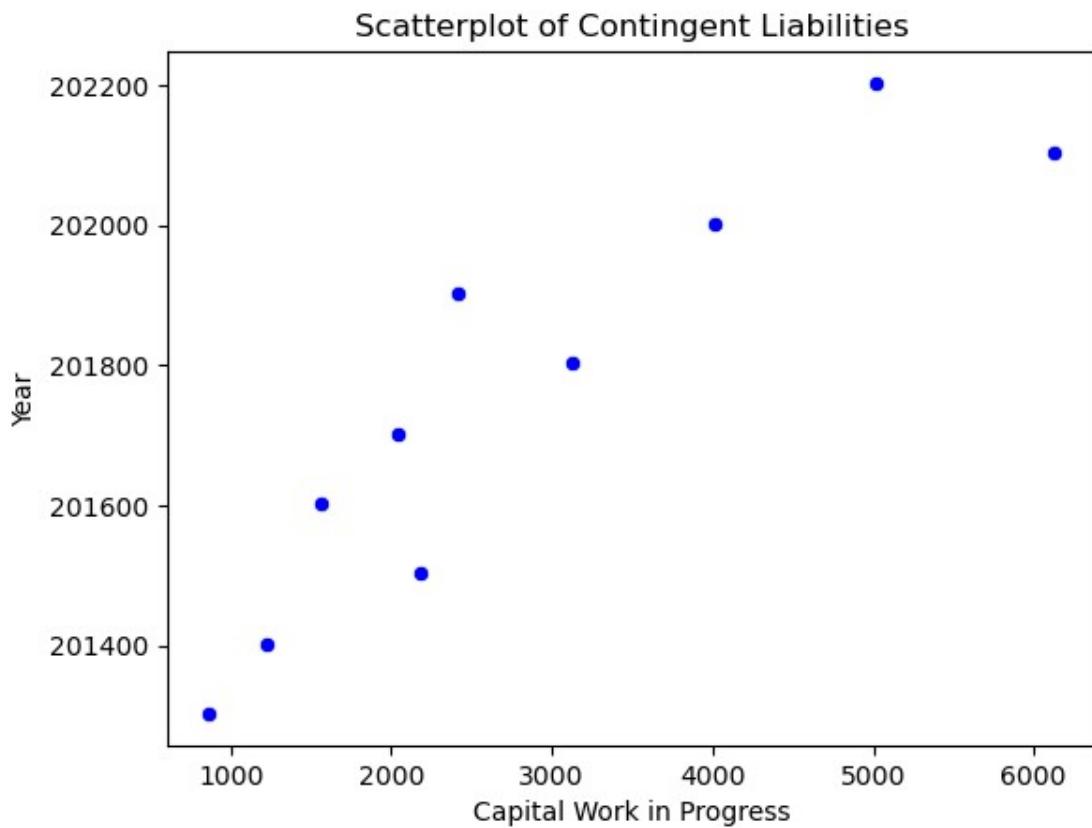
Overall, there seems to be no clear trend in the contingent liabilities of the company. However, it is worth noting that the contingent liabilities were significantly higher in the years 2017 and 2020, which could suggest that the company was facing increased potential liabilities during those years. It is also worth noting that the contingent liabilities for 2013 and 2014 were relatively low, but they increased significantly in 2015 and 2016 before decreasing again in the following years. It is important to note that this analysis is limited to the data provided, and additional information would be required to fully understand the factors contributing to the fluctuations in contingent liabilities over time.

Capital Work in Progress

```

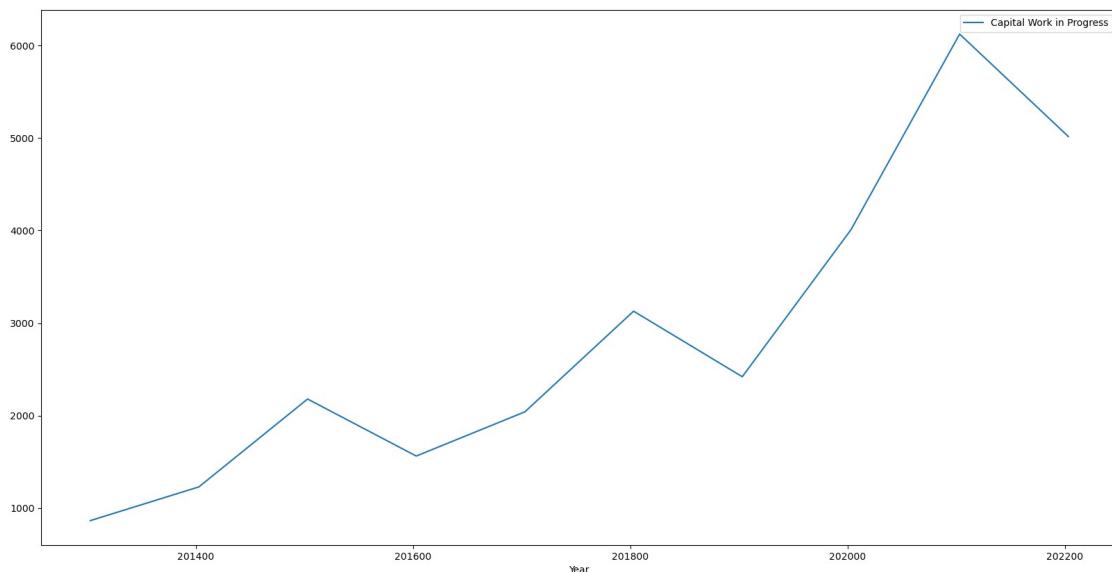
sns.scatterplot(data=df, x='Capital Work in Progress', y='Year',
color='blue')
plt.xlabel('Capital Work in Progress')
plt.ylabel('Year')
plt.title('Scatterplot of Contingent Liabilities')
plt.show()

```



```
df.plot(kind='line', x='Year', y='Capital Work in Progress', figsize=(20,10))
```

```
<AxesSubplot:xlabel='Year'>
```



CWIP is a balance sheet item that represents the total cost of assets that are in the process of being constructed or developed by a company. From the data, we can observe that:

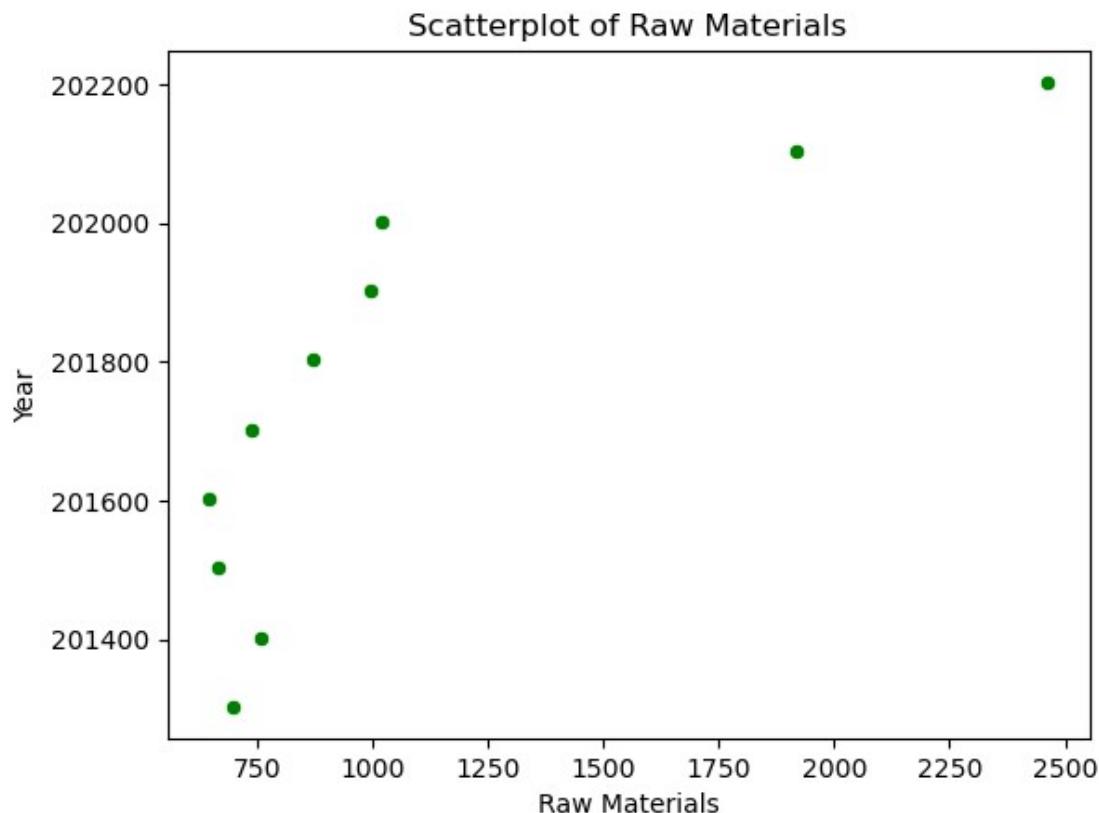
The CWIP value has fluctuated over the past 10 years, with some years showing increases and others showing decreases. In particular, the CWIP value increased significantly from 2016 to 2018, before decreasing in 2019 and 2020 and then increasing again in 2021 and 2022. The highest CWIP value was recorded in 2021 at INR 6,125.46 crore, while the lowest was in 2013 at INR 863.48 crore.

Overall, the trend in CWIP values suggests that Mahindra & Mahindra Ltd has been investing in the construction or development of new assets over the past decade, with some years seeing more investment than others.

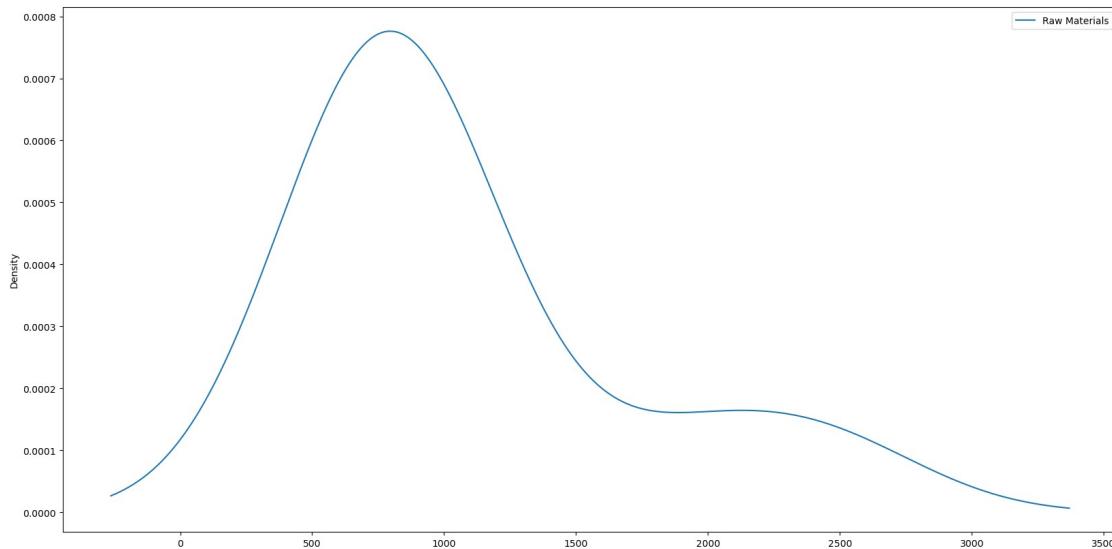
However, without additional information on the specific projects that these CWIP values represent, it is difficult to draw any specific conclusions about Mahindra & Mahindra Ltd's investment strategy or financial health.

Raw Materials

```
sns.scatterplot(data=df, x='Raw Materials', y='Year', color='green')
plt.xlabel('Raw Materials')
plt.ylabel('Year')
plt.title('Scatterplot of Raw Materials')
plt.show()
```



```
df.plot(kind='density', x='Year', y='Raw Materials', figsize=(20,10))
<AxesSubplot:ylabel='Density'>
```

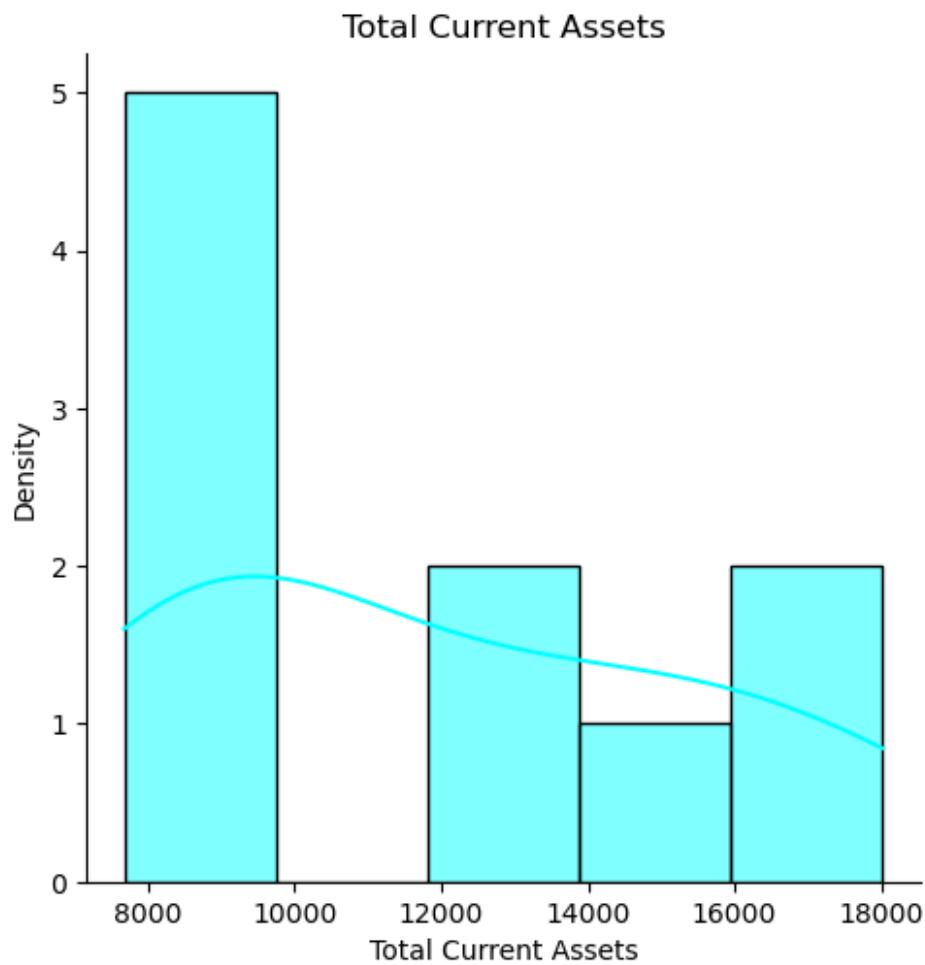


From the data, we can see that the Raw Materials cost has generally been increasing over the years. In 2013, the cost was 696.61, and by 2022, it had increased to 2461.44. This represents an increase of over 250% over the ten-year period. Looking at the yearly trend, we can see that the Raw Materials cost has increased steadily every year, except for a small dip in 2020. This trend suggests that the cost of Raw Materials has been steadily rising over the years, which could be due to various factors such as inflation, changes in the cost of production, or changes in market demand.

Overall, the data suggests that Raw Materials costs have been a significant factor for Mahindra & Mahindra Ltd. and that they have been dealing with increasing costs in this area over the years.

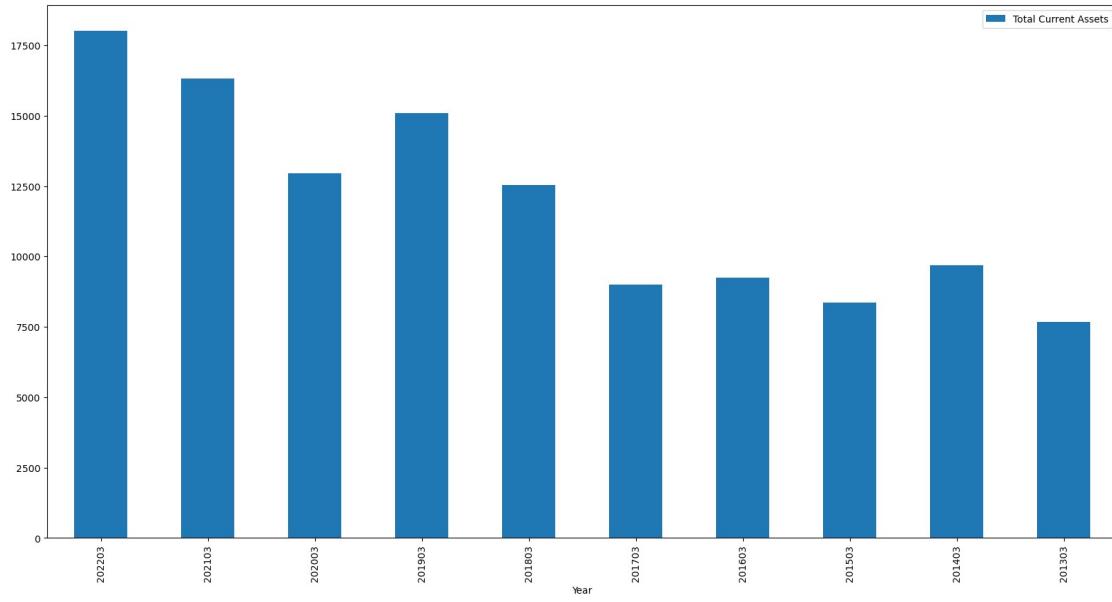
Total Current Assets

```
sns.displot(df['Total Current Assets'], kde=True, color='cyan')
plt.xlabel('Total Current Assets')
plt.ylabel('Density')
plt.title('Total Current Assets')
plt.show()
```



```
df.plot(kind='bar', x='Year', y='Total Current Assets', figsize=(20,10))
```

```
<AxesSubplot:xlabel='Year'>
```

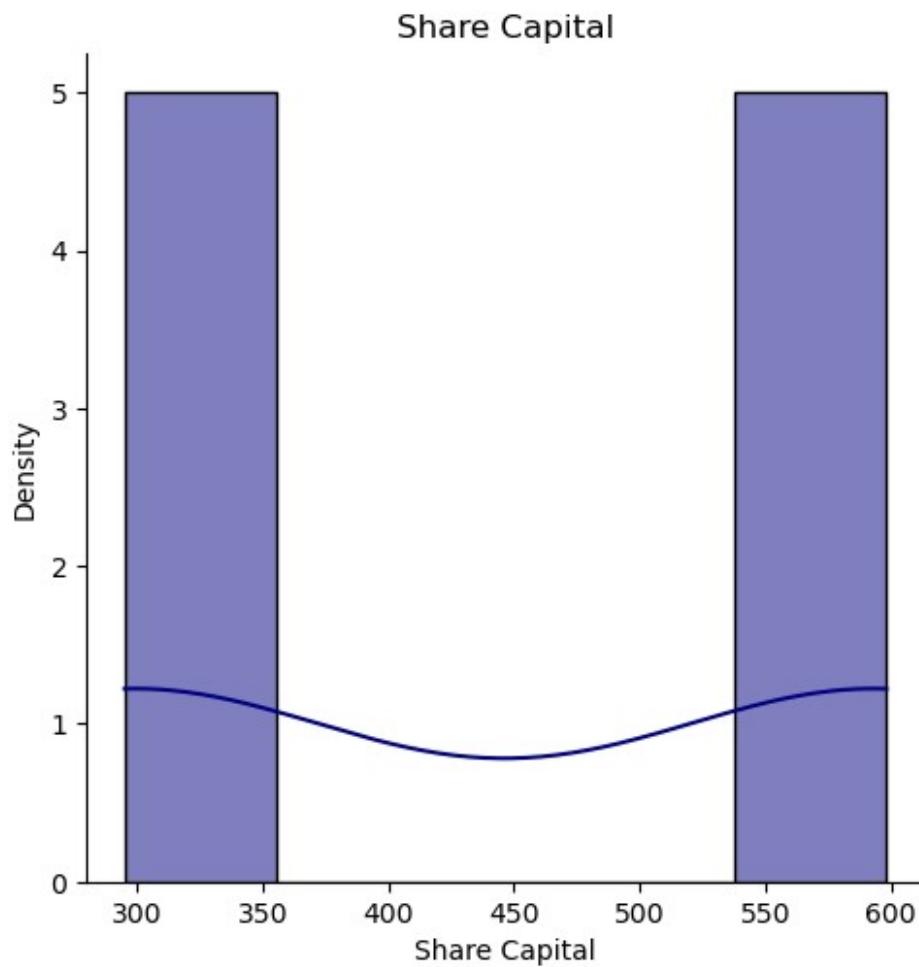


There has been a general increasing trend in the total current assets of the company over the past ten years. The values have been increasing from 7,681.47 in 2013 to 18,015.64 in 2022. The rate of increase in total current assets has been inconsistent, with some years showing a significant increase (e.g., 2020-2022) and others showing a moderate increase (e.g., 2013-2019). The year 2020-2022 appears to be exceptional as there has been a significant increase in the total current assets of the company. This could be due to various reasons such as increased sales or improved financial management. The year 2018-2019 was a period of relatively low growth in the company's current assets, which could be attributed to economic factors, industry trends, or internal management decisions.

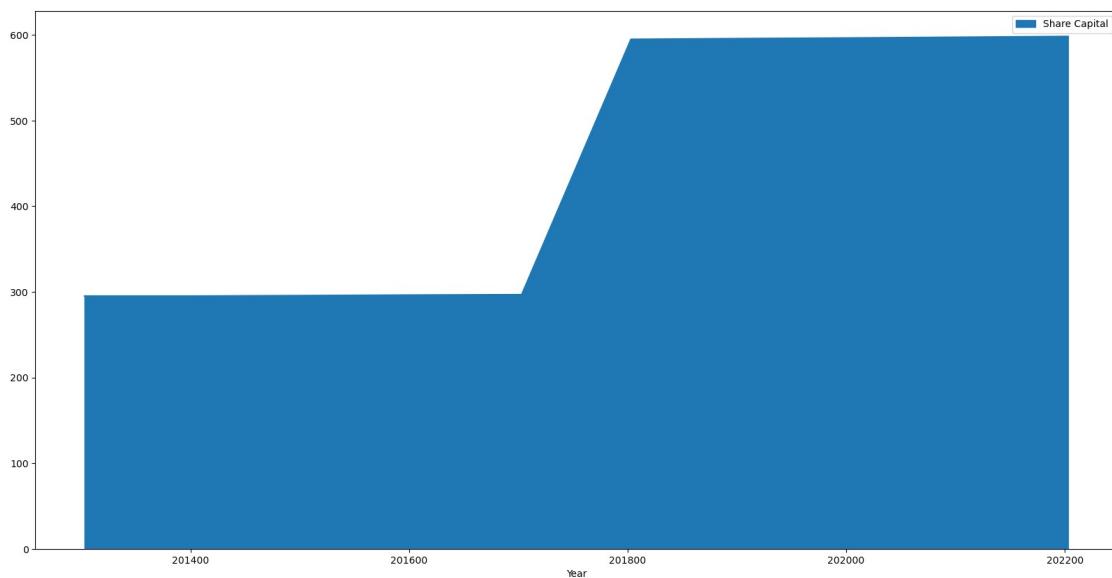
Overall, the trend in the total current assets of Mahindra & Mahindra ltd indicates a company with a generally positive growth trajectory, although the rate of growth has been inconsistent in some years.

Share Capital

```
sns.displot(df['Share Capital'], kde=True, color='navy')
plt.xlabel('Share Capital')
plt.ylabel('Density')
plt.title('Share Capital')
plt.show()
```



```
df.plot(kind='area', x='Year', y='Share Capital', figsize=(20,10))  
<AxesSubplot:xlabel='Year'>
```



We can observe that the share capital has remained relatively stable during this period, with minor fluctuations. In 2013, the share capital was 295.16, and it remained constant until 2018, when it increased to 594.97. From 2018 onwards, there has been a steady increase in the share capital, and in 2022, it reached 598.3.

Overall, this suggests that Mahindra & Mahindra Ltd has not issued a significant amount of new shares during this period, and the company has been able to maintain a relatively stable financial position. This could be seen as a positive sign, as it indicates the company's financial health is steady and not overly reliant on external funding sources. However, it is important to note that share capital is just one aspect of a company's financial position, and a more comprehensive analysis would be required to fully evaluate the company's financial health.

Unclaimed Dividend

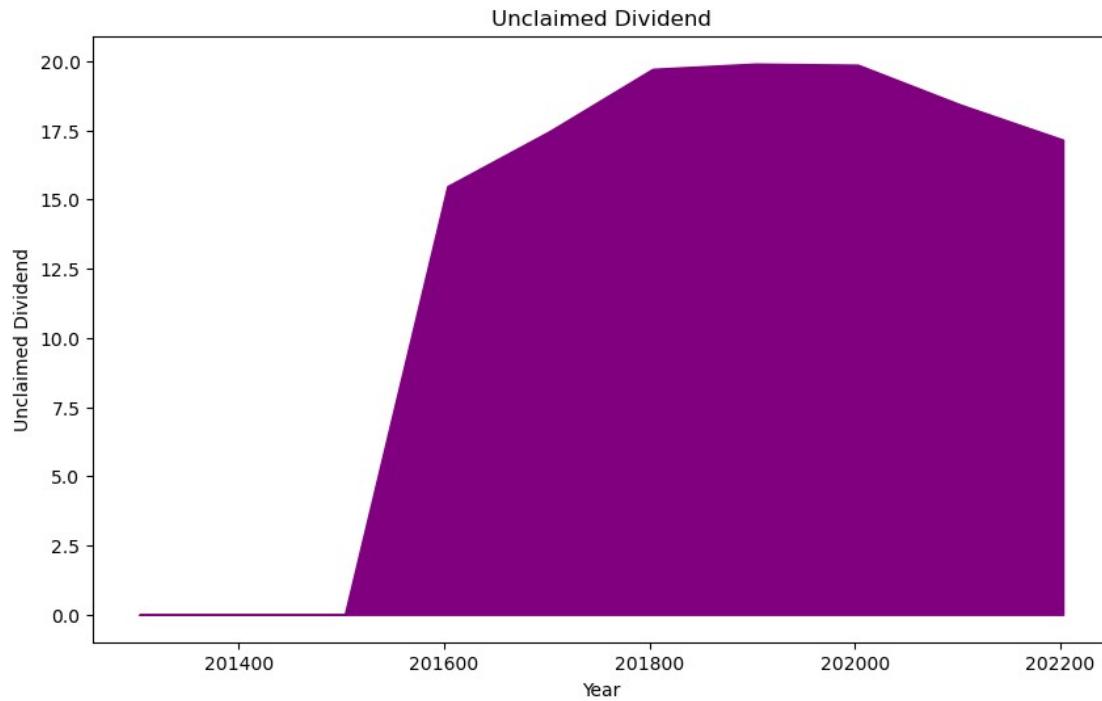
```
# Filter the relevant columns
data = df[['Year', 'Unclaimed Dividend']]

# Set the figure size
plt.figure(figsize=(10, 6))

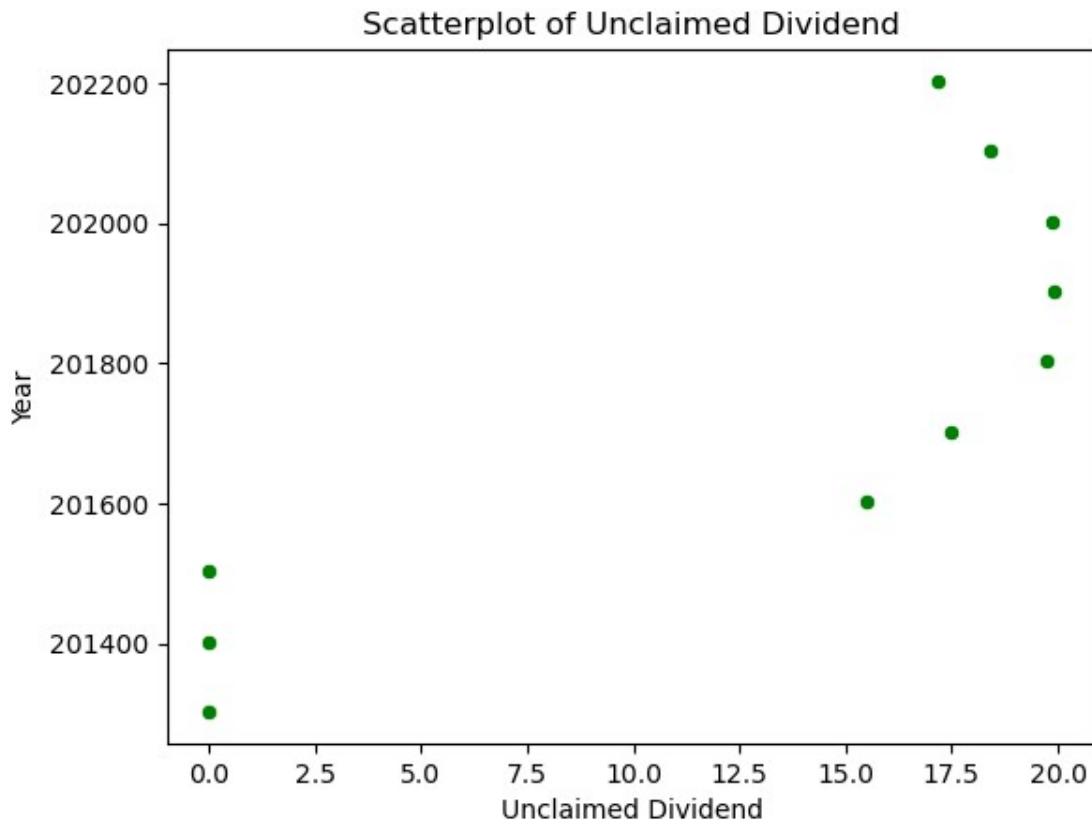
# Create the area plot using fill_between
plt.fill_between(data['Year'], data['Unclaimed Dividend'],
color='purple')

# Set the title and axis labels
plt.title('Unclaimed Dividend')
plt.xlabel('Year')
plt.ylabel('Unclaimed Dividend')

plt.show()
```

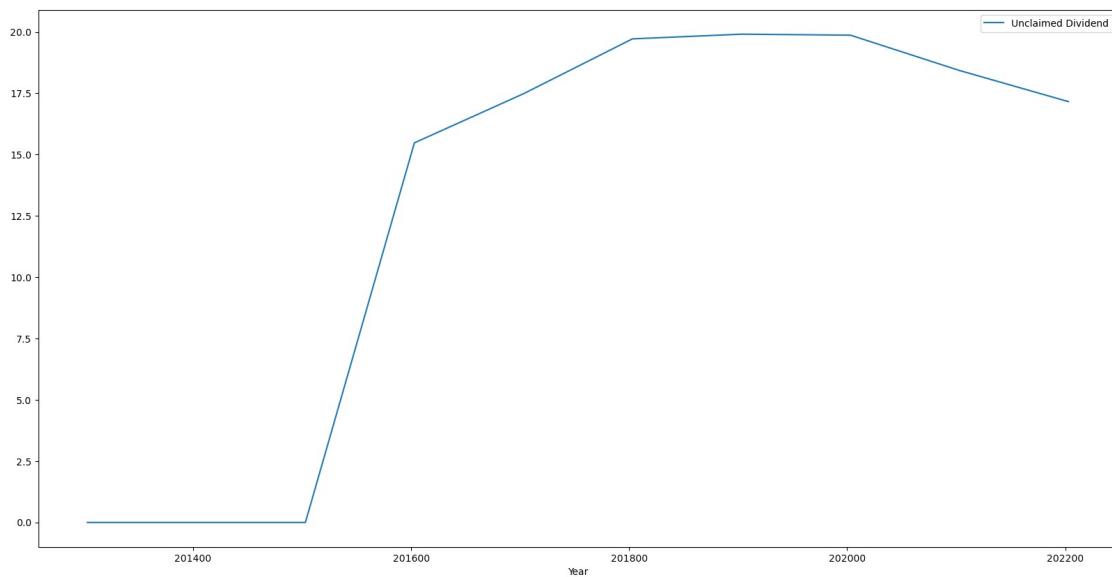


```
sns.scatterplot(data=df, x='Unclaimed Dividend', y='Year',
color='green')
plt.xlabel('Unclaimed Dividend')
plt.ylabel('Year')
plt.title('Scatterplot of Unclaimed Dividend')
plt.show()
```



```
df.plot(kind='line', x='Year', y='Unclaimed Dividend', figsize=(20,10))

<AxesSubplot:xlabel='Year'>
```



We can observe that the unclaimed dividend seems to have increased steadily over the years, except for a slight dip in 201803. It could indicate that shareholders are not claiming their dividend payouts or that the company is facing challenges in paying out dividends.

However, without additional information, it is impossible to draw any concrete conclusions about the company's overall financial health or future prospects.

Net Current Assets

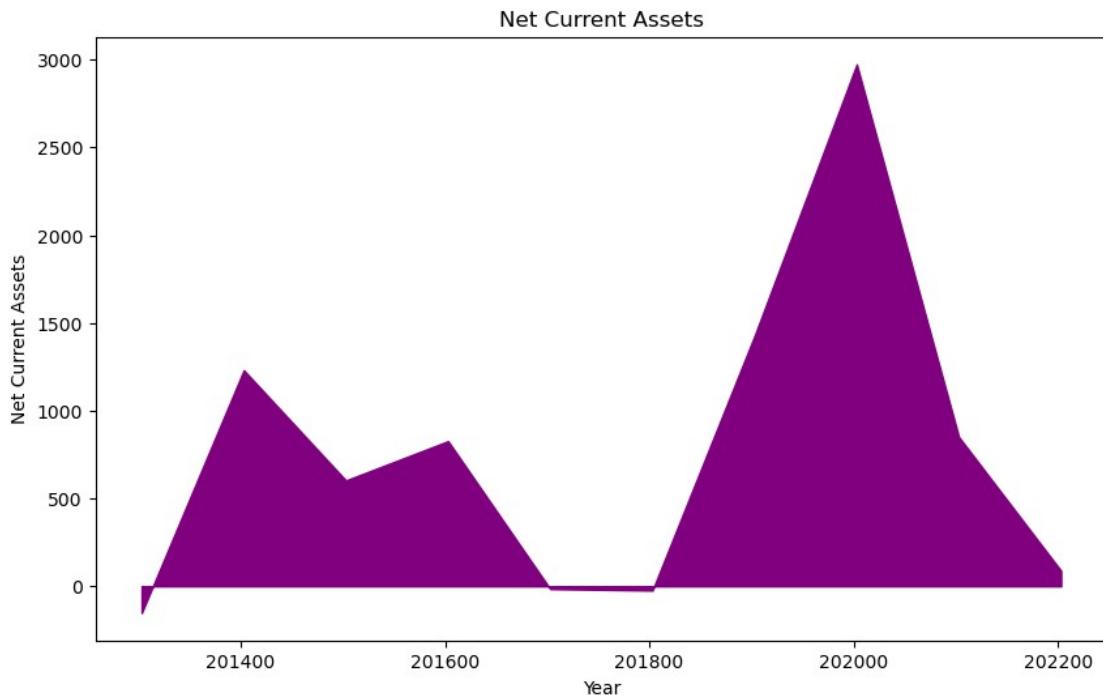
```
# Filter the relevant columns
data = df[['Year', 'Net Current Assets']]

# Set the figure size
plt.figure(figsize=(10, 6))

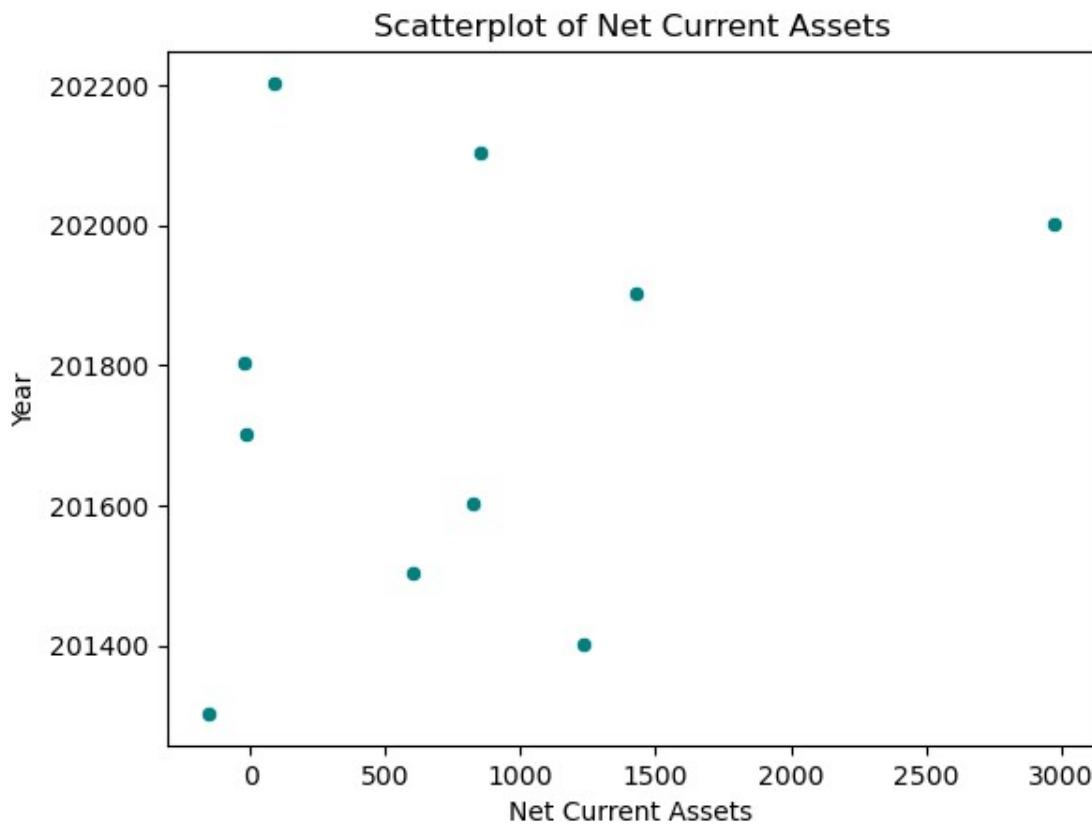
# Create the area plot using fill_between
plt.fill_between(data['Year'], data['Net Current Assets'],
color='purple')

# Set the title and axis labels
plt.title('Net Current Assets')
plt.xlabel('Year')
plt.ylabel('Net Current Assets')

plt.show()
```

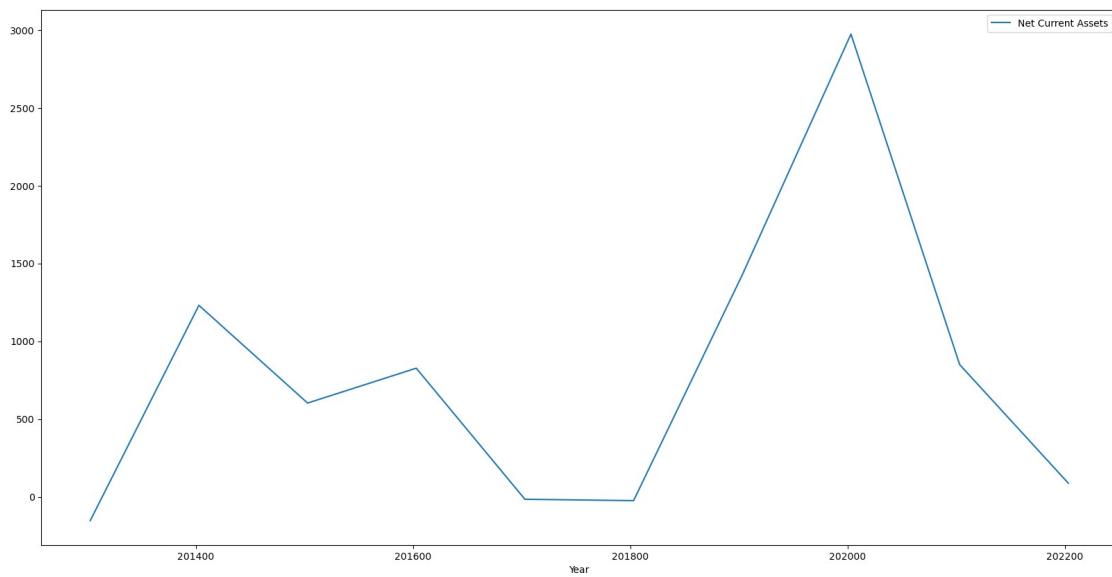


```
sns.scatterplot(data=df, x='Net Current Assets', y='Year',
color='teal')
plt.xlabel('Net Current Assets')
plt.ylabel('Year')
plt.title('Scatterplot of Net Current Assets')
plt.show()
```



```
df.plot(kind='line', x='Year', y='Net Current Assets', figsize=(20,10))

<AxesSubplot:xlabel='Year'>
```



Mahindra & Mahindra Ltd's net current assets have been fluctuating over the past 10 years. In the year 2013, the net current assets were negative, indicating that the company had

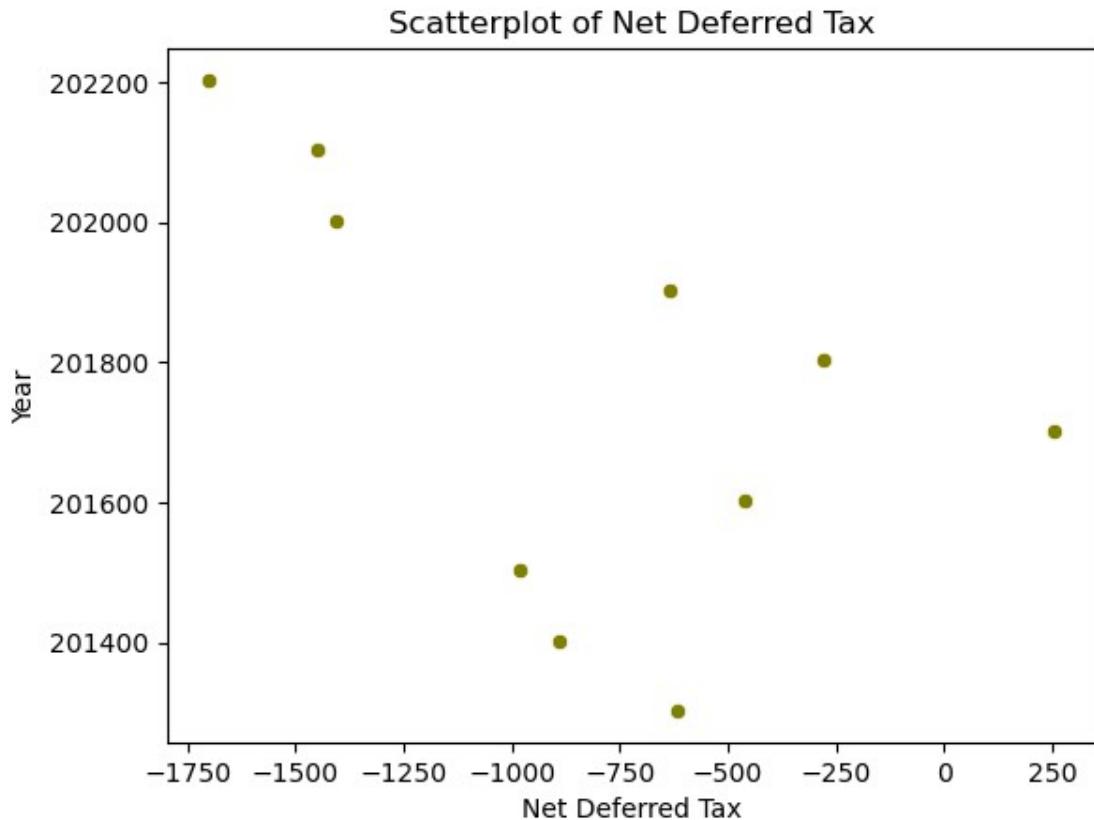
more current liabilities than current assets. However, in the subsequent years, the company's net current assets improved and became positive.

From 2014 to 2019, there was a continuous increase in net current assets, indicating that the company was able to manage its current assets and liabilities effectively. However, in the year 2020, there was a dip in net current assets, and in 2021, the net current assets reduced significantly. This could be due to various reasons such as increased current liabilities, decreased current assets, or a combination of both.

Overall, the trend in the net current assets of Mahindra & Mahindra Ltd indicates that the company has been able to maintain a positive net current asset position in most of the years. However, the dip in 2020 and the significant reduction in 2021 suggest that the company needs to focus on managing its current assets and liabilities effectively to maintain a stable financial position.

Net Deferred Tax

```
sns.scatterplot(data=df, x='Net Deferred Tax', y='Year',  
color='olive')  
plt.xlabel('Net Deferred Tax')  
plt.ylabel('Year')  
plt.title('Scatterplot of Net Deferred Tax')  
plt.show()
```



```

# Filter the relevant columns
data = df[['Year', 'Net Deferred Tax']]

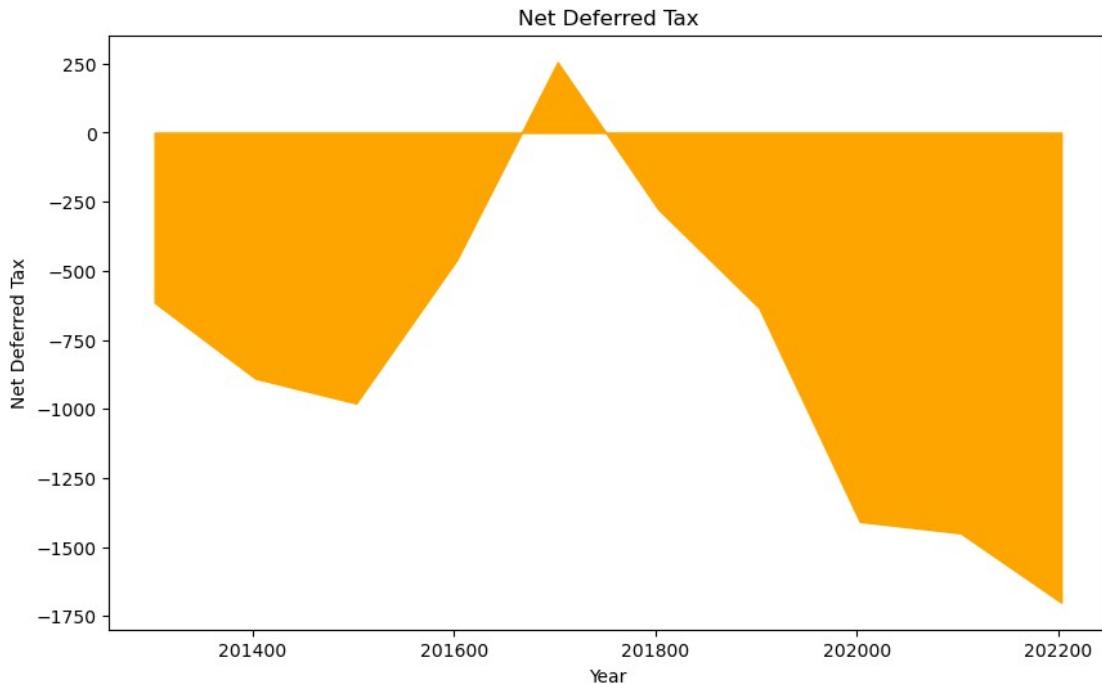
# Set the figure size
plt.figure(figsize=(10, 6))

# Create the area plot using fill_between
plt.fill_between(data['Year'], data['Net Deferred Tax'],
color='orange')

# Set the title and axis labels
plt.title('Net Deferred Tax')
plt.xlabel('Year')
plt.ylabel('Net Deferred Tax')

plt.show()

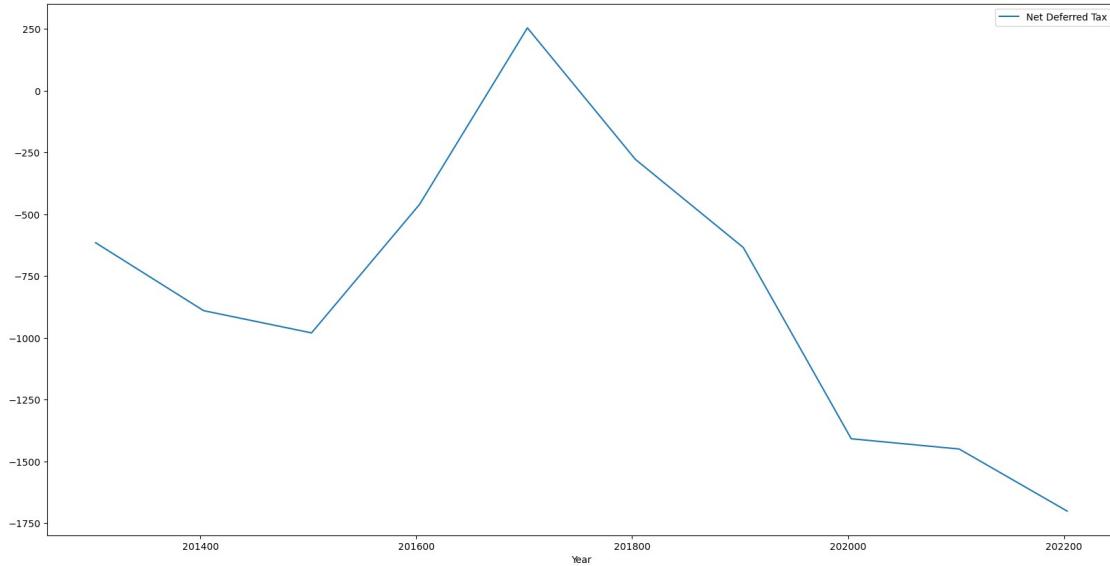
```



```

df.plot(kind='line', x='Year', y='Net Deferred Tax', figsize=(20,10))
<AxesSubplot:xlabel='Year'>

```

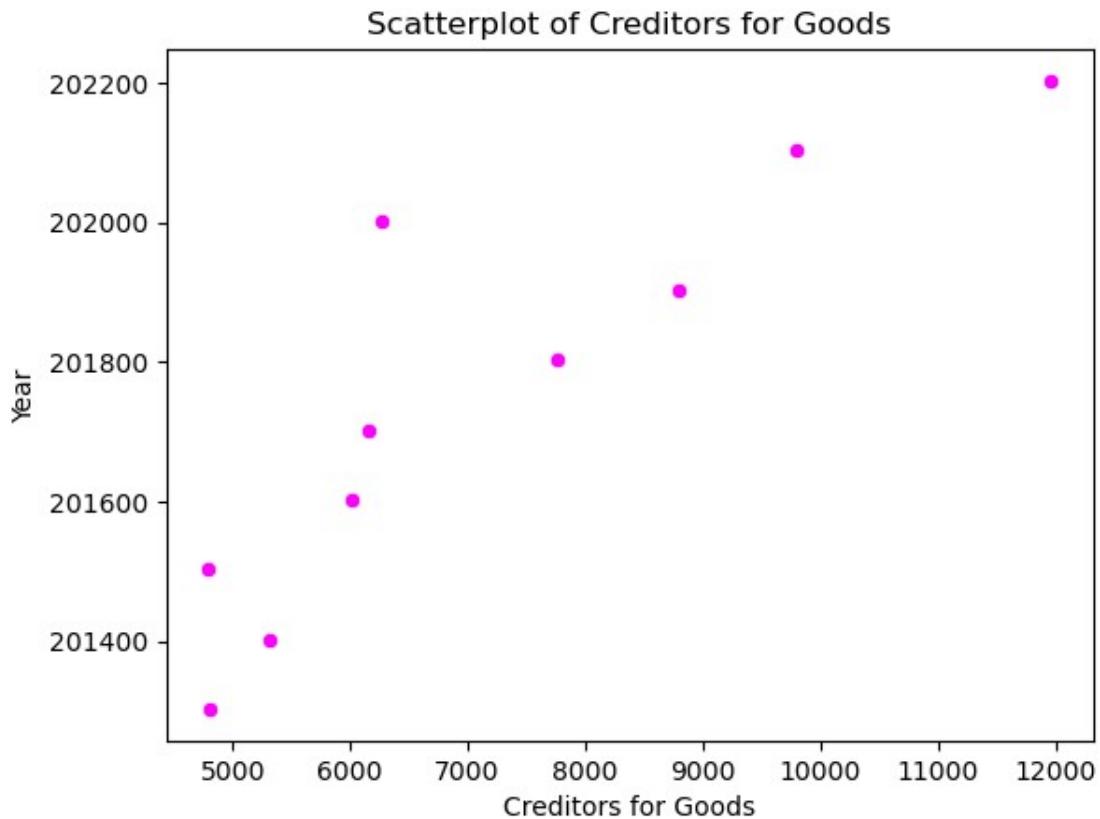


The net deferred tax of the company has been negative for all the years in consideration, indicating that the company has been deferring taxes for future periods. The value of net deferred tax has been fluctuating over the years. It was highest in 202203 at -1700.8 and lowest in 201303 at -614.85. There is a slight decreasing trend in the net deferred tax of the company over the past 3 years. The value was -1408.17 in 202003, which decreased to -1449.66 in 202103, and further decreased to -1700.8 in 202203.

Overall, the trend in the net deferred tax of the company suggests that it has been deferring taxes for future periods, which could potentially impact its future financial performance. Additionally, the fluctuations in the net deferred tax value could be due to changes in tax laws and regulations, as well as the company's financial strategy.

Creditors for Goods

```
sns.scatterplot(data=df, x='Creditors for Goods', y='Year',
color='magenta')
plt.xlabel('Creditors for Goods')
plt.ylabel('Year')
plt.title('Scatterplot of Creditors for Goods')
plt.show()
```



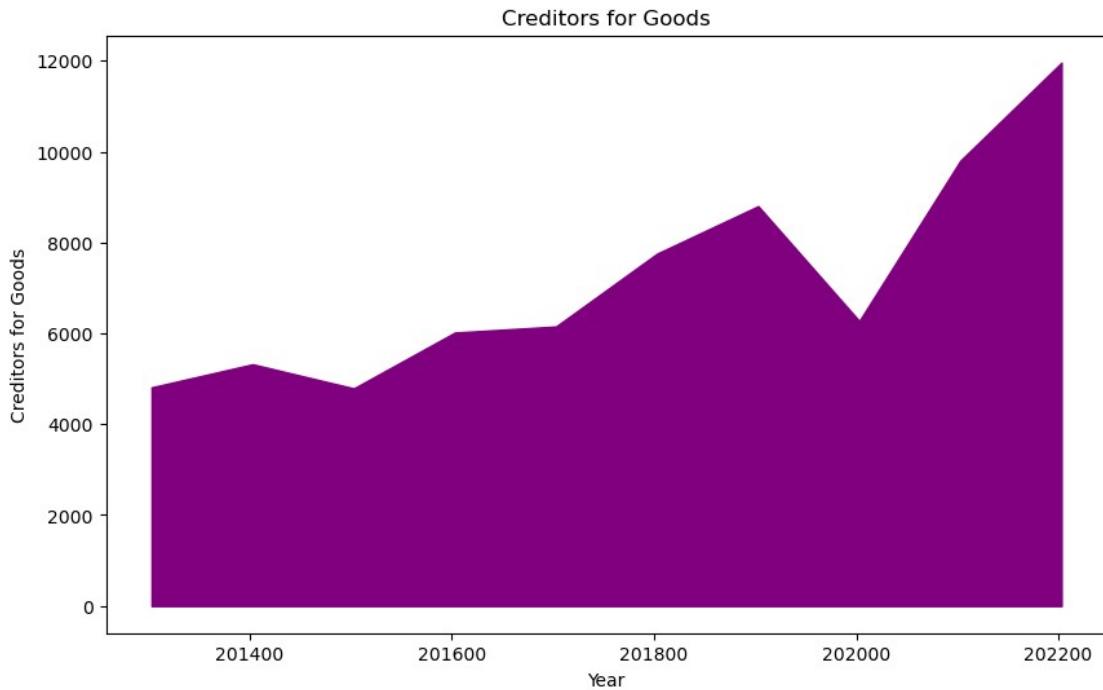
```
# Filter the relevant columns
data = df[['Year', 'Creditors for Goods']]

# Set the figure size
plt.figure(figsize=(10, 6))

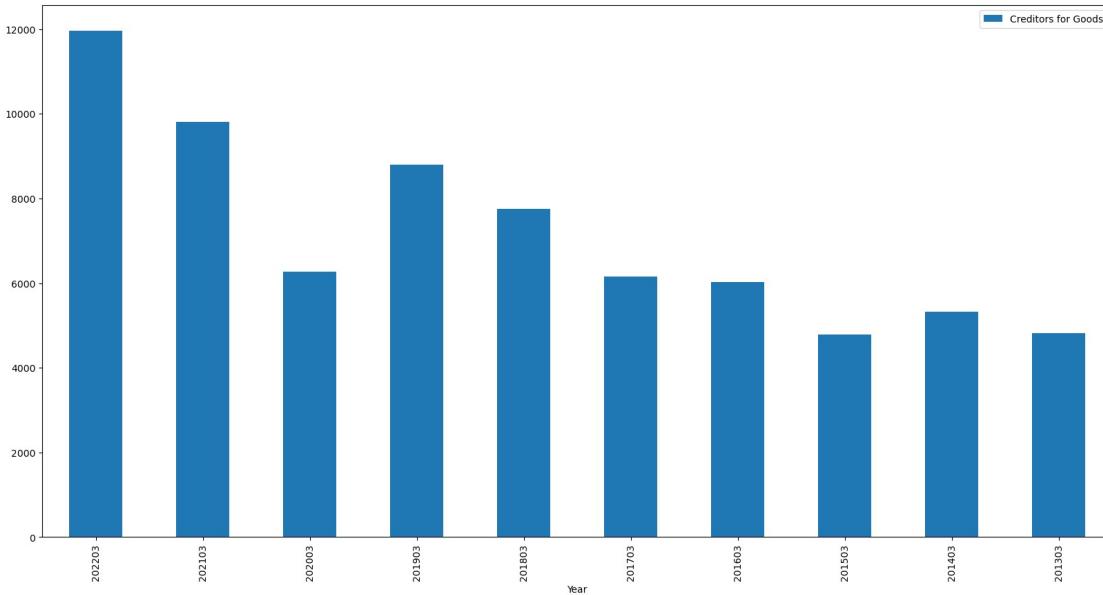
# Create the area plot using fill_between
plt.fill_between(data['Year'], data['Creditors for Goods'],
color='purple')

# Set the title and axis labels
plt.title('Creditors for Goods')
plt.xlabel('Year')
plt.ylabel('Creditors for Goods')

plt.show()
```



```
df.plot(kind='bar', x='Year', y='Creditors for Goods', figsize=(20,10))
<AxesSubplot:xlabel='Year'>
```



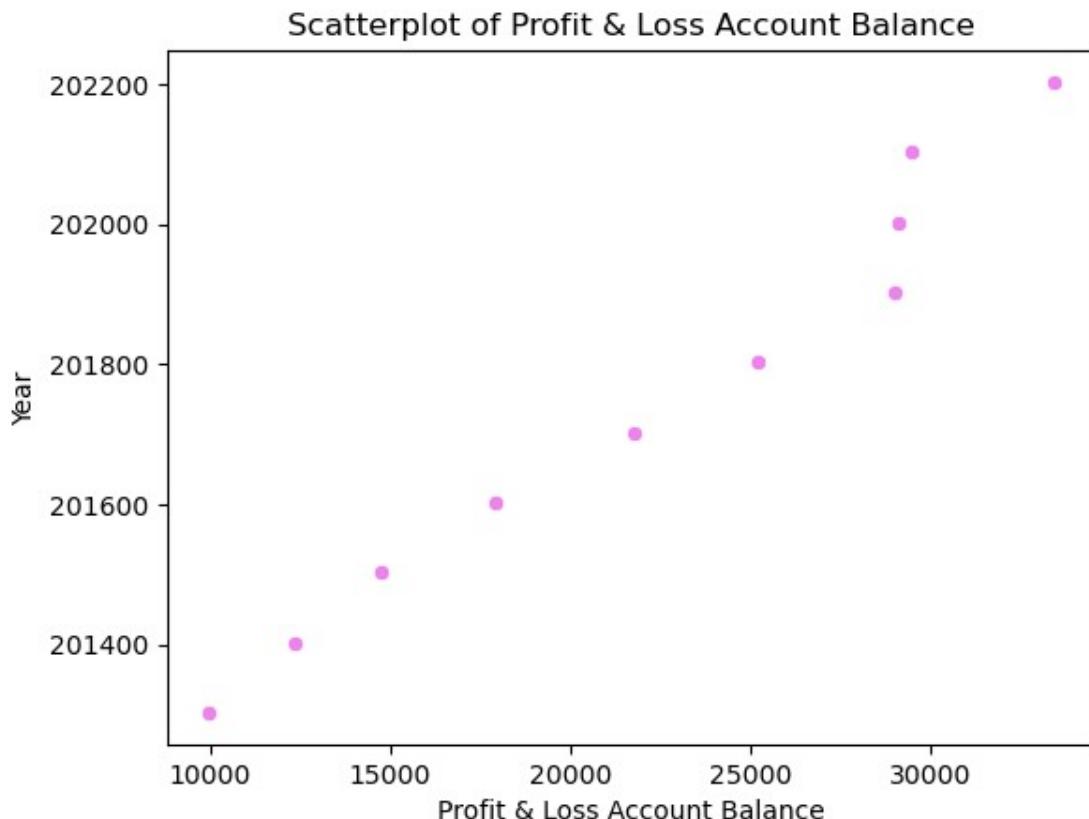
Looking at the values, it can be observed that the amount owed to "Creditors for Goods" has generally increased over the years, with some fluctuations. Specifically, the amount owed was highest in 2022 at 11,959.02 crore rupees, which is a significant increase from the previous year (2021) where it was 9,802.48 crore rupees. This trend could indicate that Mahindra & Mahindra Ltd is relying more on credit from their suppliers for goods, rather than paying for them outright. Alternatively, it could suggest that the company is expanding

rapidly and is therefore purchasing more goods on credit. It is also worth noting that there are some fluctuations in the data, with some years showing a decrease in the amount owed to "Creditors for Goods". However, these fluctuations are not significant enough to reverse the overall upward trend.

Overall, based on this data alone, it appears that Mahindra & Mahindra Ltd has been increasingly relying on credit from their suppliers for goods in recent years.

Profit & Loss Account Balance

```
sns.scatterplot(data=df, x='Profit & Loss Account Balance', y='Year',  
color='violet')  
plt.xlabel('Profit & Loss Account Balance')  
plt.ylabel('Year')  
plt.title('Scatterplot of Profit & Loss Account Balance')  
plt.show()
```

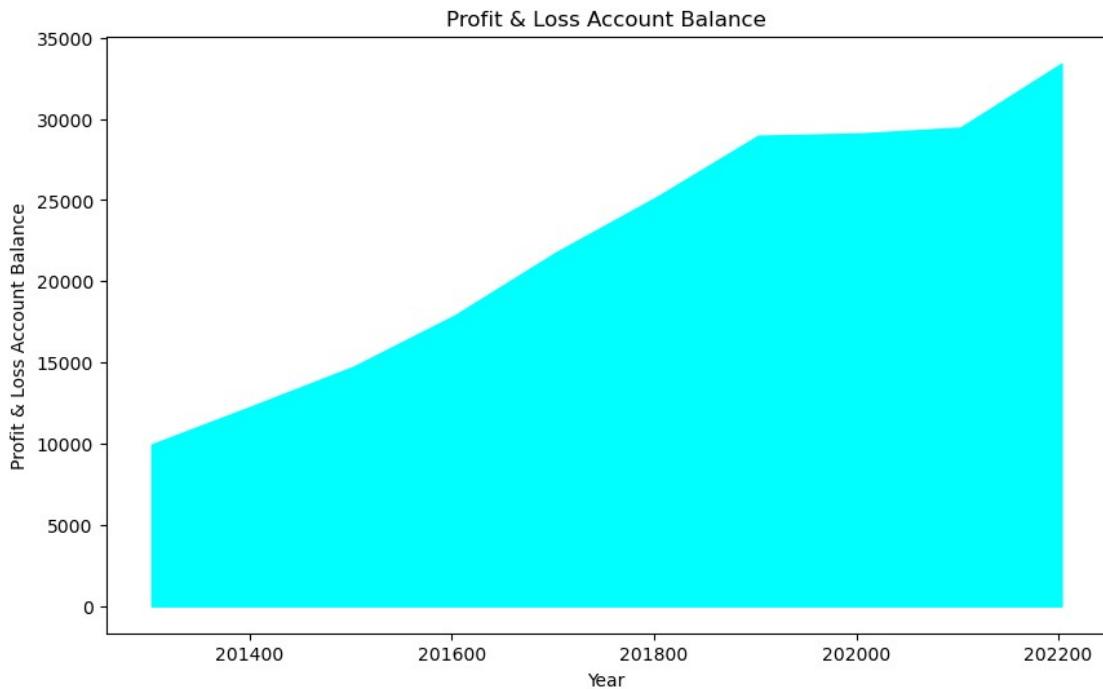


```
# Filter the relevant columns  
data = df[['Year', 'Profit & Loss Account Balance']]  
  
# Set the figure size  
plt.figure(figsize=(10, 6))  
  
# Create the area plot using fill_between  
plt.fill_between(data['Year'], data['Profit & Loss Account Balance'],
```

```
color='cyan')

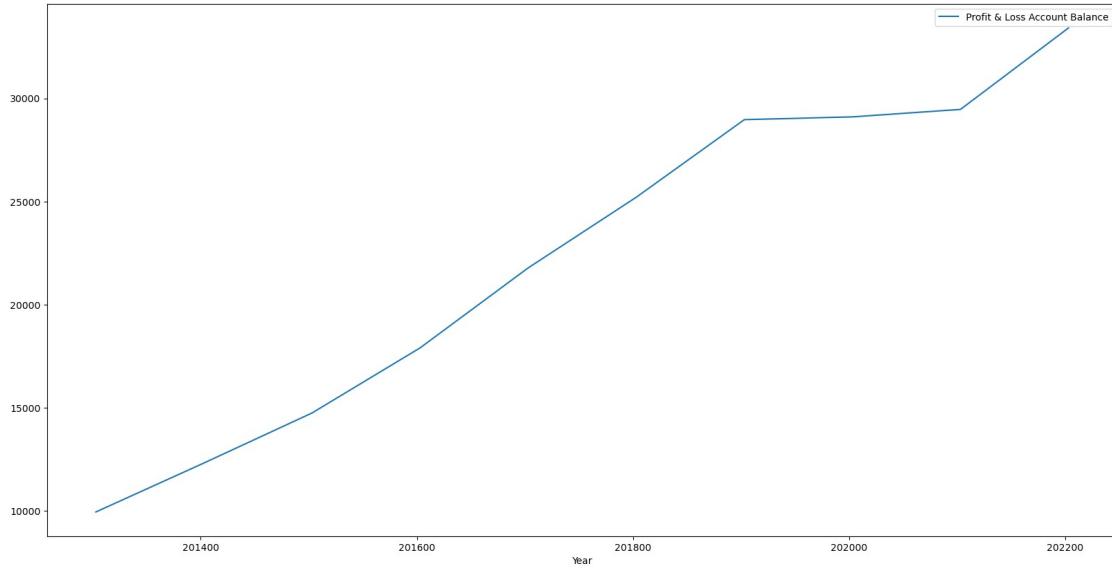
# Set the title and axis labels
plt.title('Profit & Loss Account Balance')
plt.xlabel('Year')
plt.ylabel('Profit & Loss Account Balance')

plt.show()
```



```
df.plot(kind='line', x='Year', y='Profit & Loss Account
Balance', figsize=(20,10))

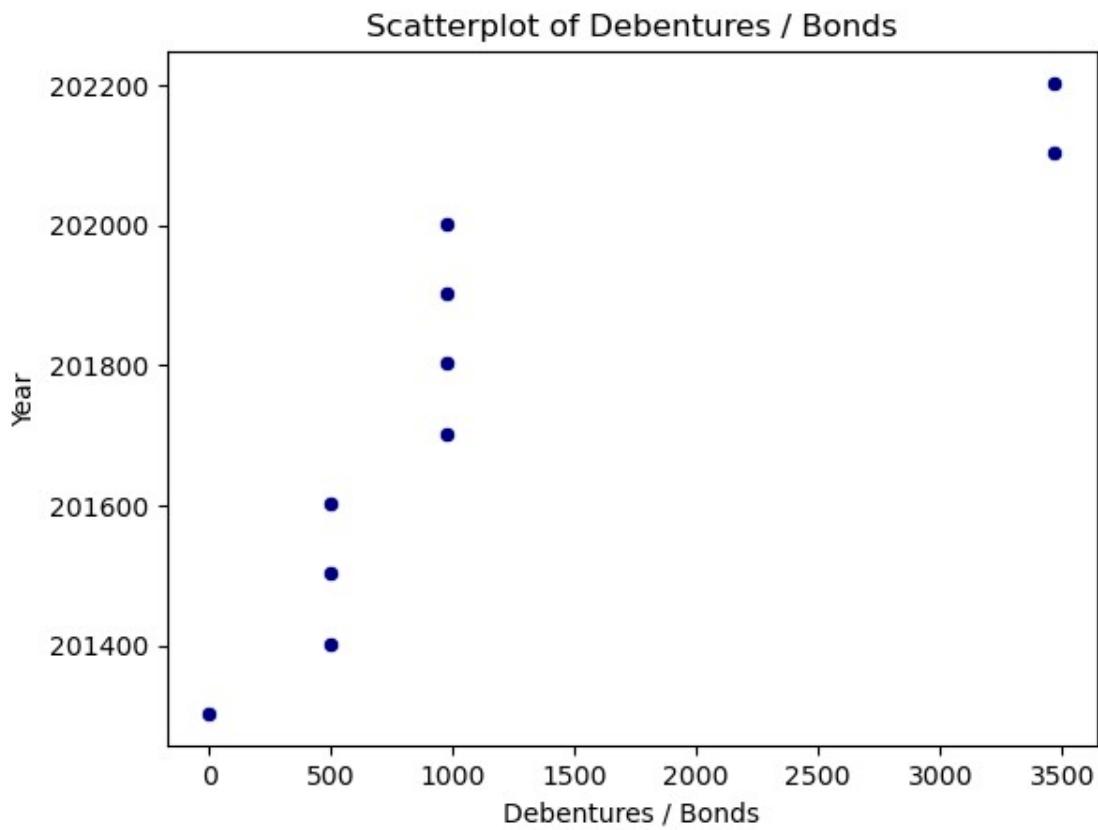
<AxesSubplot:xlabel='Year'>
```



Looking at the numbers, we can see that the company's profit has generally been increasing over the years, with a few fluctuations. For example, the profit for the year 2022 (as of 202203) is 33413.25, which is higher than the previous year's profit of 29463.69, indicating growth in the business. However, in some years, there has been a slight decrease in the profit, such as in the year 2018 (201803) where the profit was 25205.82, which is lower than the previous year's profit of 28966.71. Overall, it seems that the company has been able to maintain a positive trend in terms of its profit over the past decade. It's important to note that this analysis is based on a limited set of data and further analysis may be required to gain a more complete understanding of the company's financial performance.

Debentures / Bonds

```
sns.scatterplot(data=df, x='Debentures / Bonds', y='Year',
color='navy')
plt.xlabel('Debentures / Bonds')
plt.ylabel('Year')
plt.title('Scatterplot of Debentures / Bonds')
plt.show()
```



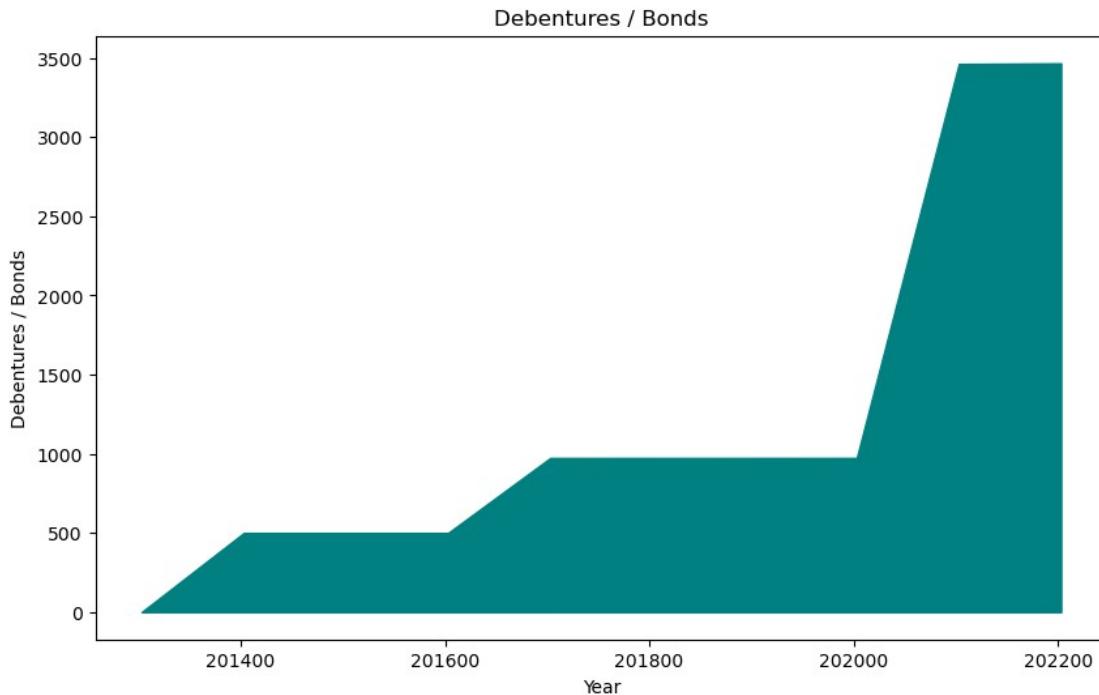
```
# Filter the relevant columns
data = df[['Year', 'Debentures / Bonds']]

# Set the figure size
plt.figure(figsize=(10, 6))

# Create the area plot using fill_between
plt.fill_between(data['Year'], data['Debentures / Bonds'],
color='teal')

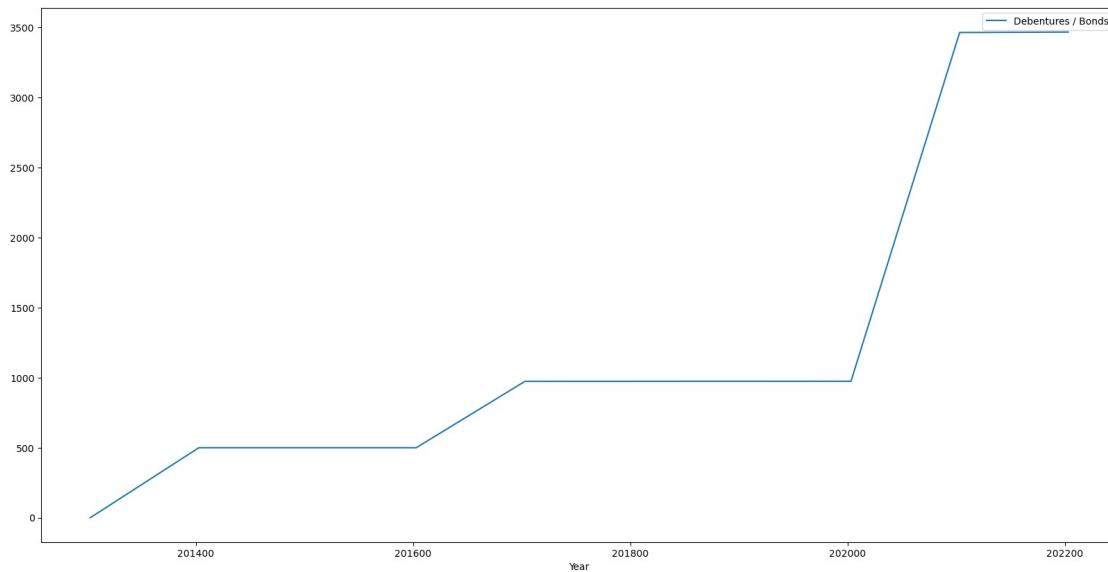
# Set the title and axis labels
plt.title('Debentures / Bonds')
plt.xlabel('Year')
plt.ylabel('Debentures / Bonds')

plt.show()
```



```
df.plot(kind='line', x='Year', y='Debentures / Bonds', figsize=(20,10))

<AxesSubplot:xlabel='Year'>
```



From the data, it can be observed that Mahindra & Mahindra Ltd has been consistently issuing Debentures/Bonds for the past decade. The amount issued has fluctuated over the years, with the highest amount being issued in 2022 at 3467.38 crore, and the lowest amount being issued in 2013 at 0 crore. Overall, it seems that Mahindra & Mahindra Ltd has been using Debentures/Bonds as a means of raising capital for its operations. The fact that the company has consistently issued Debentures/Bonds over the years could indicate that it has a strong investor base that is willing to invest in its securities.

It is important to note that the analysis is based solely on the data provided and further information about the company's financial performance and strategy would be needed to make a more informed conclusion.

Mahindra & Mahindra CFS

```
import pandas as pd
from statistics import stdev
from statistics import mean
from numpy import NAN as nan
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
from sklearn.linear_model import LinearRegression
import statistics as stats
import os

df = pd.read_csv(r'C:\Users\Anonymous\Documents\M&M cash flow.csv')

pd.set_option('display.max_columns',None)

df

      Year  Cash and Cash Equivalents at Beginning of the year \
0    202203                      867.54
1    202103                     2323.51
2    202003                     2237.58
3    201903                     1417.95
4    201803                     533.89
5    201703                     842.31
6    201603                     917.11
7    201503                     1705.61
8    201403                     1163.96
9    201303                     1136.11

      Net Cash from Operating Activities  Net Cash Used in Investing \
Activities \
0                  7093.69
4358.82
1                  9593.63
14563.75
2                  3677.83
2576.44
3                  4923.87
2549.02
4                  7027.08
5109.71
5                  3710.00
2856.93
6                  5470.50
3538.10
7                  3219.49
2423.09
8                  3727.64
```

```
2362.06
9          4145.71
2895.97      -
```

```
Net Cash Used in Financing Activities \
0          -2885.19
1          3514.15
2          -1015.46
3          -1555.22
4          -1033.31
5          -1161.49
6          -2007.20
7          -1584.82
8          -823.93
9          -1221.89
```

```
Net Inc/(Dec) in Cash and Cash Equivalent \
0          -150.32
1          -1455.97
2          85.93
3          819.63
4          884.06
5          -308.42
6          -74.80
7          -788.42
8          541.65
9          27.85
```

```
Cash and Cash Equivalents at End of the year
0          717.22
1          867.54
2          2323.51
3          2237.58
4          1417.95
5          533.89
6          842.31
7          917.19
8          1705.61
9          1163.96
```

```
df.shape
```

```
(10, 7)
```

```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 10 entries, 0 to 9
Data columns (total 7 columns):
 #   Column           Non-Null
Count  Dtype
```

```
-----  
0   Year                      10 non-null  
int64  
1   Cash and Cash Equivalents at Beginning of the year 10 non-null  
float64  
2   Net Cash from Operating Activities                  10 non-null  
float64  
3   Net Cash Used in Investing Activities              10 non-null  
float64  
4   Net Cash Used in Financing Activities              10 non-null  
float64  
5   Net Inc/(Dec) in Cash and Cash Equivalent        10 non-null  
float64  
6   Cash and Cash Equivalents at End of the year      10 non-null  
float64  
dtypes: float64(6), int64(1)  
memory usage: 688.0 bytes
```

```
df.describe()
```

```
Year  Cash and Cash Equivalents at Beginning of the  
year \  
count    10.000000  
10.000000  
mean    201753.000000  
1314.557000  
std     302.765035  
603.539511  
min    201303.000000  
533.890000  
25%    201528.000000  
879.932500  
50%    201753.000000  
1150.035000  
75%    201978.000000  
1633.695000  
max    202203.000000  
2323.510000
```

```
Net Cash from Operating Activities \  
count          10.00000  
mean          5258.94400  
std           2057.01603  
min          3219.49000  
25%          3714.41000  
50%          4534.79000  
75%          6637.93500  
max          9593.63000
```

```
Net Cash Used in Investing Activities \
count          10.000000
mean         -4323.389000
std          3711.055842
min        -14563.750000
25%        -4153.640000
50%        -2876.450000
75%        -2555.875000
max        -2362.060000

Net Cash Used in Financing Activities \
count          10.000000
mean         -977.436000
std          1689.799434
min        -2885.190000
25%        -1577.420000
50%        -1191.690000
75%        -1019.922500
max        3514.150000

Net Inc/(Dec) in Cash and Cash Equivalent \
count          10.000000
mean         -41.881000
std          715.085723
min        -1455.970000
25%        -268.895000
50%        -23.475000
75%        427.720000
max        884.060000

Cash and Cash Equivalents at End of the year
count          10.000000
mean         1272.676000
std          631.198496
min        533.890000
25%        848.617500
50%        1040.575000
75%        1633.695000
max        2323.510000

df.columns
Index(['Year', 'Cash and Cash Equivalents at Beginning of the year',
       'Net Cash from Operating Activities',
       'Net Cash Used in Investing Activities',
       'Net Cash Used in Financing Activities',
       'Net Inc/(Dec) in Cash and Cash Equivalent',
       'Cash and Cash Equivalents at End of the year'],
      dtype='object')
```

```

df[["Net Cash from Operating Activities", "Net Cash Used in Investing Activities"]].describe(include="all")

    Net Cash from Operating Activities \
count                      10.00000
mean                     5258.94400
std                      2057.01603
min                     3219.49000
25%                      3714.41000
50%                      4534.79000
75%                      6637.93500
max                     9593.63000

    Net Cash Used in Investing Activities
count                  10.000000
mean                   -4323.389000
std                     3711.055842
min                   -14563.750000
25%                   -4153.640000
50%                   -2876.450000
75%                   -2555.875000
max                   -2362.060000

```

We can see that the average net cash from operations for period #10 was INR 5,258.944 crore with a standard deviation of INR 2,057.016. The minimum net cash from operating activities was INR 3,219,490 million and the maximum was INR 9,593,630 million. The median (50th percentile) was INR 4,534.79 crore and the interquartile range (IQR) was INR 2,923.525, indicating that 50% of the observations were within this range. On the other hand, the average net cash used in investing activities was negative at Rs 4,323,389 crore with a standard deviation higher of INR 3,711.056 compared to the net cash used in operations. The minimum net cash used in investment activities was INR -14,563.75 billion and the maximum was INR -2,362 billion. The median was INR -2,876.45 crore and the IQR was INR 1,598.765. Overall, we can see that Mahindra & Mahindra generated positive net cash flow from its operations for the period. This indicates that their operations generated cash inflow. However, we used significant amounts of cash in investing activities that may reflect investments in capital expenditures, acquisitions or other long-term investments. Further analysis of trends requires looking at data over longer time periods and comparing the values to previous time periods and industry benchmarks.

```

df[["Net Cash Used in Investing Activities", "Net Cash Used in Financing Activities"]].describe(include="all")

```

```

    Net Cash Used in Investing Activities \
count                  10.000000
mean                   -4323.389000
std                     3711.055842
min                   -14563.750000
25%                   -4153.640000
50%                   -2876.450000
75%                   -2555.875000

```

```

max           -2362.060000
Net Cash Used in Financing Activities
count          10.000000
mean          -977.436000
std           1689.799434
min          -2885.190000
25%          -1577.420000
50%          -1191.690000
75%          -1019.922500
max          3514.150000

```

The average net cash burn in investing activity was -4323.389000, indicating that the company used significant cash in investing activities such as purchasing property, plant, equipment and acquiring other businesses. The standard deviation of 3711.055842 indicates that the amount of cash used in investment activities fluctuates significantly over time. Average net cash used for financing activities was -977.436000, indicating that the company also used cash for financing activities such as dividend payments and share buybacks. A standard deviation of 1689.799434 indicates that the amount of cash used in financial activities has also changed significantly over time. Minimum net cash burn in investing activity is -14563.750000, indicating that a significant amount of cash was used in investing activity during this period. The minimum net cash burn from financing activities is -2885.190000, indicating a significant cash outflow from financing activities during this period. Median net cash used in investing activities was -2876.450000, below the median, indicating periods of lower cash used in investing activities. The median net cash used for financing activities was -1191.690000, which was also below the median, indicating that there have been periods of reduced cash used for financing activities. Overall, the evolution of Mahindra and the net cash used in Mahindra's investing and financing activities in any given period cannot be determined by statistical means alone. Identifying trends and patterns requires analyzing the company's actual cash flow statement for the period.

```
df[["Net Cash Used in Financing Activities", "Net Inc/(Dec) in Cash and Cash Equivalent"]].describe(include="all")
```

```

Net Cash Used in Financing Activities \
count          10.000000
mean          -977.436000
std           1689.799434
min          -2885.190000
25%          -1577.420000
50%          -1191.690000
75%          -1019.922500
max          3514.150000

```

```

Net Inc/(Dec) in Cash and Cash Equivalent
count          10.000000
mean          -41.881000
std           715.085723

```

min	-1455.970000
25%	-268.895000
50%	-23.475000
75%	427.720000
max	884.060000

The average net cash used in financing activities was -977,436,000, indicating that the company used more cash in financing activities than it generated. The standard deviation of 1,689.79 million indicates a large variability in cash used in financial activities. A minimum of -2885.190M and a maximum of 3514.150M indicate that the net cash flow from financing activities was both negative and positive during the specified period. The average net change in cash and cash equivalents was -41,881,000, indicating that the company experienced a net decrease in cash and cash equivalents during the specified period. A standard deviation of 715.08 million indicates a large variability in net changes in cash and cash equivalents. A minimum of -1455.970 million and a maximum of 884.060 million indicates that the company had both negative and positive net cash flows in cash and cash equivalents during the specified period. Overall, the trend appears to be negative for both indicators. The average suggests that the company used more cash in financing activities than it generated and had a net decrease in cash and cash equivalents during the period. It's important to note that there are both negative and positive net cash flows in any given period.

```
df[['Net Inc/(Dec) in Cash and Cash Equivalent', 'Cash and Cash Equivalents at End of the year']].describe(include="all")
```

Net Inc/(Dec) in Cash and Cash Equivalent \	
count	10.000000
mean	-41.881000
std	715.085723
min	-1455.970000
25%	-268.895000
50%	-23.475000
75%	427.720000
max	884.060000

Cash and Cash Equivalents at End of the year	
count	10.000000
mean	1272.676000
std	631.198496
min	533.890000
25%	848.617500
50%	1040.575000
75%	1633.695000
max	2323.510000

It can be seen that #Mahindra & Mahindra's net liquidity and cash equivalents decreased by an average of INR 41.881 billion over the 10 years analyzed. This indicates that the company used more cash and cash equivalents than it generated during this period. The standard deviation of the net increase/(decrease) in cash and cash equivalents is very high,

indicating that there has been a large fluctuation in the company's cash flow over the decade analyzed. A look at #year-end cash and cash equivalents shows that the median value was INR 1,272.676 billion. The minimum was INR 533.89 billion and the maximum was INR 2,323.51 billion. This indicates that the company holds significant amounts of cash and cash equivalents. Overall, we are seeing lower net liquidity in the quarter. However, the company maintains high levels of cash and cash equivalents, which may indicate it has invested in growth opportunities or acquired other businesses.

df

	Year	Cash and Cash Equivalents at Beginning of the year \
0	202203	867.54
1	202103	2323.51
2	202003	2237.58
3	201903	1417.95
4	201803	533.89
5	201703	842.31
6	201603	917.11
7	201503	1705.61
8	201403	1163.96
9	201303	1136.11

	Net Cash from Operating Activities \	Net Cash Used in Investing Activities \
0	7093.69	-
1	9593.63	-
2	3677.83	-
3	4923.87	-
4	7027.08	-
5	3710.00	-
6	5470.50	-
7	3219.49	-
8	3727.64	-
9	4145.71	-
	2895.97	

	Net Cash Used in Financing Activities \
0	-2885.19
1	3514.15
2	-1015.46
3	-1555.22

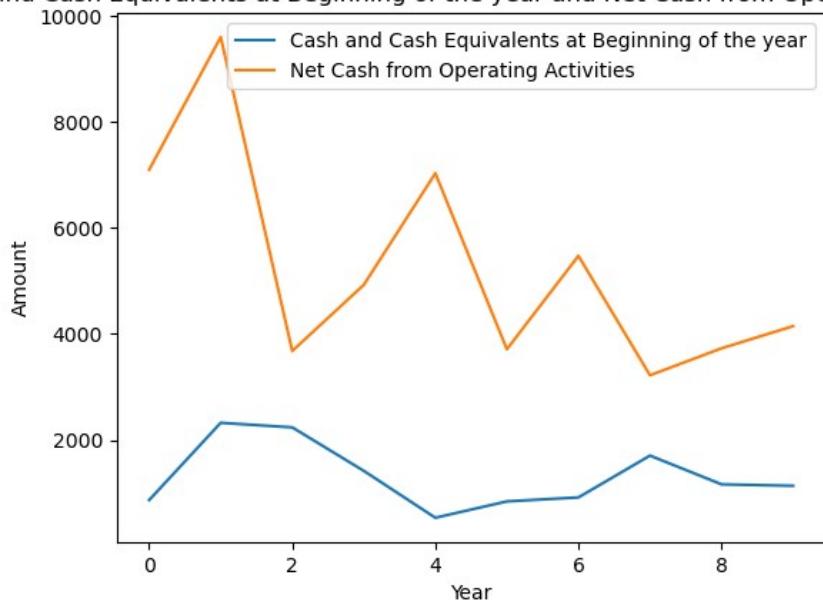
4	-1033.31
5	-1161.49
6	-2007.20
7	-1584.82
8	-823.93
9	-1221.89
	Net Inc/(Dec) in Cash and Cash Equivalent \
0	-150.32
1	-1455.97
2	85.93
3	819.63
4	884.06
5	-308.42
6	-74.80
7	-788.42
8	541.65
9	27.85
	Cash and Cash Equivalents at End of the year
0	717.22
1	867.54
2	2323.51
3	2237.58
4	1417.95
5	533.89
6	842.31
7	917.19
8	1705.61
9	1163.96

```

plt.plot(df['Cash and Cash Equivalents at Beginning of the year'],
label='Cash and Cash Equivalents at Beginning of the year')
plt.plot(df['Net Cash from Operating Activities'], label='Net Cash
from Operating Activities')
plt.xlabel('Year')
plt.ylabel('Amount')
plt.title('Cash and Cash Equivalents at Beginning of the year and Net
Cash from Operating Activities')
plt.legend()
plt.show()

```

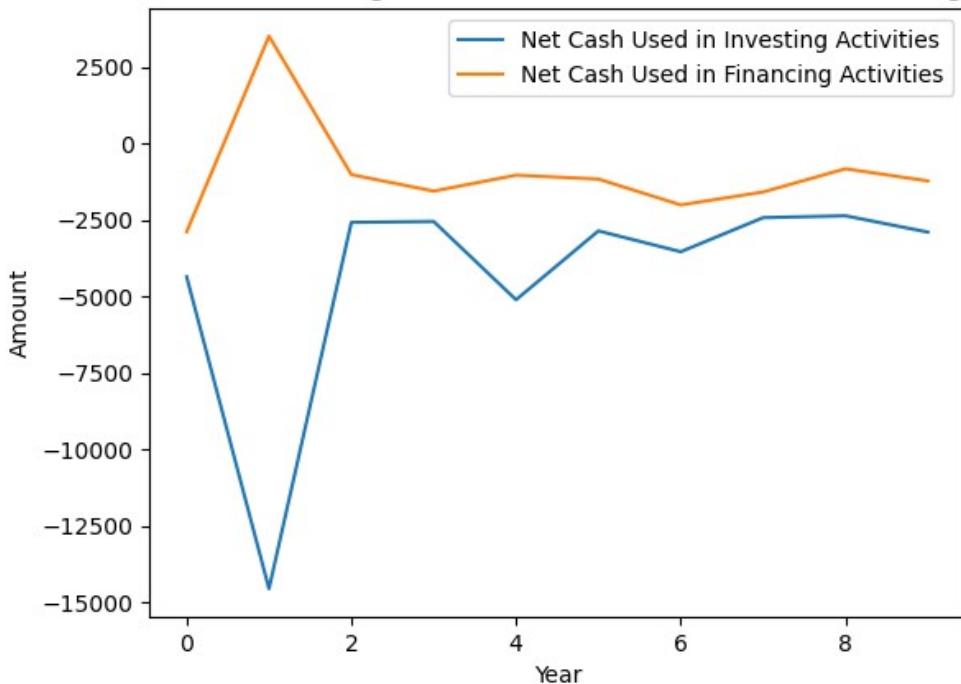
Cash and Cash Equivalents at Beginning of the year and Net Cash from Operating Activities



Mahindra & Mahindra Ltd appears to have seen steady growth in cash and cash equivalents from 2017 to 2021, with the exception of a slight decline in 2021. Net cash from operations has also generally trended upward, with minor fluctuations over the same period. In 2022, cash and cash equivalents were significantly lower than in 2020, but net cash from operating activities was significantly higher. This indicates that the company has increased its investments in its business, which may have led to a decrease in cash and cash equivalents. Overall, the company appears to be doing well in terms of generating cash flow from its operations, which is a positive sign for investors. However, it is important to continue to monitor changes in cash and cash equivalents to ensure the company maintains a healthy cash position.

```
plt.plot(df['Net Cash Used in Investing Activities'], label='Net Cash Used in Investing Activities')
plt.plot(df['Net Cash Used in Financing Activities'], label='Net Cash Used in Financing Activities')
plt.xlabel('Year')
plt.ylabel('Amount')
plt.title('Net Cash Used in Investing Activities and Net Cash Used in Financing Activities')
plt.legend()
plt.show()
```

Net Cash Used in Investing Activities and Net Cash Used in Financing Activities



Investment activity:

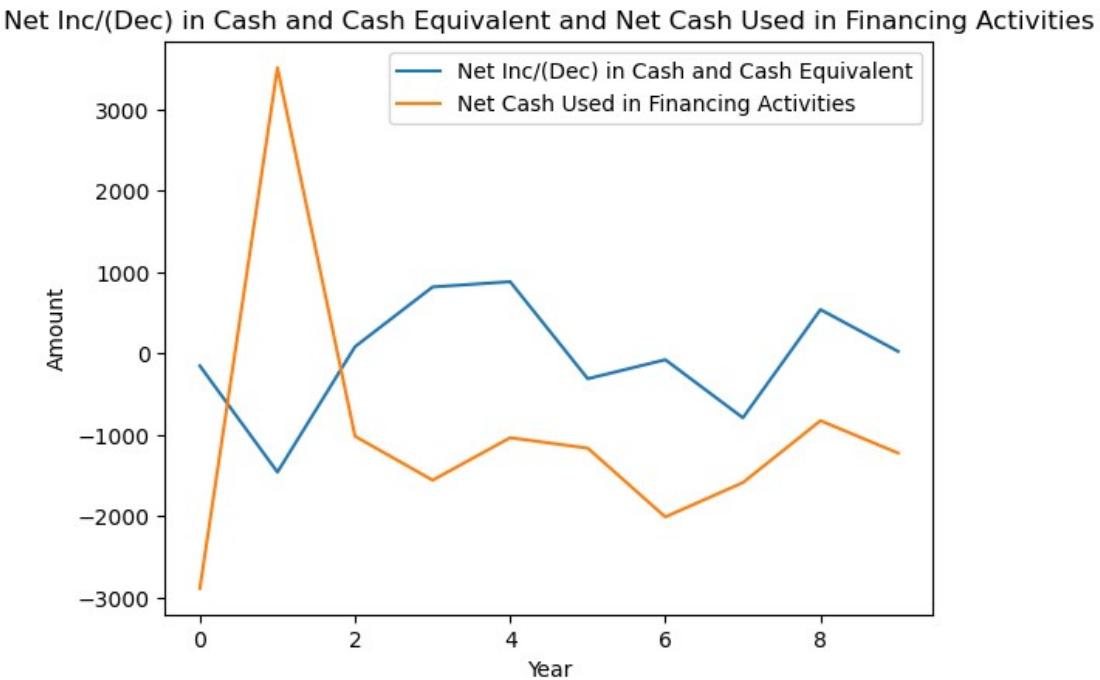
Net cash used in investing activities has been negative for many years, indicating that the company invested more cash than it received from investing activities. 2021 had the highest negative cash flow from investing activities, and 2020 had the lowest.

Fundraising activities:

Net cash used in financing activities has been negative for most years except 2021. This indicates that the company raised more money from treasury activities than it used to fund its operations. Negative cash flow from financing activities was highest in 2016 and lowest in 2014. Overall, the company appears to be investing heavily in its operations and expansion, but relies on fundraising activities for funding. However, 2021 saw a significant upturn as the company raised more cash from financing activities than it used, suggesting a shift in funding strategy. The reasons for this change and impact on the company's performance. To understand the impact, it is important to analyze the company's financial statements in more detail.

```
plt.plot(df['Net Inc/(Dec) in Cash and Cash Equivalent'], label='Net Inc/(Dec) in Cash and Cash Equivalent')
plt.plot(df['Net Cash Used in Financing Activities'], label='Net Cash Used in Financing Activities')
plt.xlabel('Year')
plt.ylabel('Amount')
plt.title('Net Inc/(Dec) in Cash and Cash Equivalent and Net Cash Used in Financing Activities')
```

```
plt.legend()  
plt.show()
```

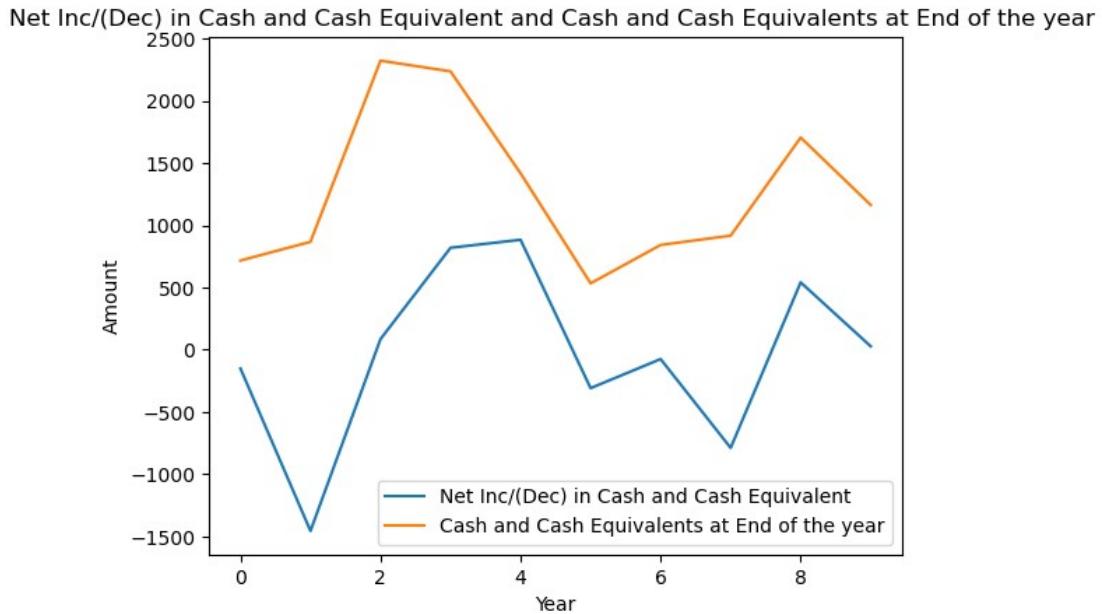


The company recorded a significant decrease in cash and cash equivalents in 2021 (202103), recording a decrease of INR 1,455.97 crore compared to the previous year (202003). However, in 2022 (202203), the company's liquidity continued to decline, albeit at a moderate rate of INR 150.32 billion. The company's net changes in cash and cash equivalents have been somewhat volatile over the past decade. Over the years, we have experienced both increases and decreases in cash and cash equivalents. With respect to net cash used in financing activities, the company has generally used more cash than it has received from financing activities for most of the last decade. However, there were also years when: B. Year 2021 (202103), when the entity generates cash from financing activities. Overall, this trend shows that the company is aggressively investing in growth and expansion opportunities, which is causing fluctuations in its cash position. The company has used a combination of debt and equity to fund its operations, but in recent years has relied heavily on debt financing. Please note that this analysis is based on a limited set of financial data and does not take into account other material factors that may affect a company's financial performance, such as: B. Changes in industry or macroeconomic conditions. Therefore, it is important to consider additional information and conduct a more comprehensive analysis before making any investment decision.

```
plt.plot(df['Net Inc/(Dec) in Cash and Cash Equivalent'], label='Net  
Inc/(Dec) in Cash and Cash Equivalent')  
plt.plot(df['Cash and Cash Equivalents at End of the year'],  
label='Cash and Cash Equivalents at End of the year')  
plt.xlabel('Year')  
plt.ylabel('Amount')  
plt.title('Net Inc/(Dec) in Cash and Cash Equivalent and Cash and Cash
```

```
Equivalents at End of the year ')
```

```
plt.legend()  
plt.show()
```



In 2022, the company recorded a decrease in cash and cash equivalents of 15.032 billion compared to the previous year. This indicates that the company may have increased its spending or investments this year. In 2021, the company recorded a significant \$145.597 billion decline in cash and cash equivalents. This can be for various reasons, including: B. Investments, Acquisitions or Dividend Payments. In 2020, the company recorded a net increase in cash and cash equivalents of 8.593 billion. This suggests the company may have made more money than it spent this year. In 2019, the company recorded a net increase in cash and cash equivalents of 81.963 billion. This was a significant year-on-year increase and could indicate that it was a profitable year for the company. In 2018, the company recorded a net increase in cash and cash equivalents of 88.406 billion. This indicates that the company had a strong year financially. In 2017, the company recorded a net decrease in cash and cash equivalents of \$308.42 million. This can be due to various reasons such as increased spending and investment. In 2016, the company recorded a net decrease in cash and cash equivalents of \$74.8 billion. There can be various reasons for this. B. Increased spending or investment. In 2015, the company recorded a net decrease in cash and cash equivalents of 78.842 billion. This can be due to various reasons such as increased spending and investment. In 2014, the company recorded his net increase in cash and cash equivalents of Rs 541.65 crore. This suggests it may have been a profitable year for the company. In 2013, the company recorded a net increase in cash and cash equivalents of \$27.85 billion. This is a relatively small increase compared to other years. #Overall, Mahindra & Mahindra Ltd has seen some volatility in its net cash and cash equivalents over the past decade. However, the company is usually able to keep a sizeable amount of cash and cash equivalents on hand, totaling 170.561 billion at the end of last year. This suggests that the company may be well positioned to meet its financial commitments and have the flexibility to take advantage of growth opportunities as they arise.

Mahindra & Mahindra Ratios

```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns

df = pd.read_csv(r'C:\Users\Anonymous\Documents\M&M Ratios.csv')

pd.set_option('display.max_columns',None)

df
```

Ratio \ Year	Debt-Equity Ratio	Long Term Debt-Equity Ratio	Current Ratio
0 202203	0.20		0.17
0.90			
1 202103	0.16		0.13
0.98			
2 202003	0.08		0.06
1.03			
3 201903	0.09		0.07
0.97			
4 201803	0.10		0.08
0.95			
5 201703	0.12		0.08
0.94			
6 201603	0.16		0.10
0.88			
7 201503	0.22		0.17
0.92			
8 201403	0.24		0.22
0.94			
9 201303	0.26		0.24
0.88			

Ratio \	Turnover Ratios	Fixed Assets Turnover Ratio	Inventory Turnover
0	NaN		1.98
10.77			
1	NaN		1.79
10.91			
2	NaN		2.11
12.57			
3	NaN		2.87
16.39			
4	NaN		3.06
18.11			
5	NaN		3.24
17.40			

6	NaN	3.42
17.03	NaN	3.61
7	NaN	4.36
15.51	NaN	5.15
8	NaN	
16.51	NaN	
9	NaN	
18.17	NaN	

Debtors Turnover Ratio	Total Asset Turnover Ratio	Interest Cover Ratio
0 \ 28.96	21.93	1.25
1 \ 14.60	17.16	1.07
2 \ 46.31	13.10	1.17
3 \ 56.78	15.06	1.47
4 \ 45.39	16.18	1.51
5 \ 27.16	17.39	1.65
6 \ 24.03	17.22	1.72
7 \ 20.45	16.04	1.76
8 \ 17.86	18.28	2.11
9 \ 24.26	20.99	2.46

PBIDTM (%)	PBITM (%)	PBDTM (%)	CPM (%)	APATM (%)	ROCE (%)
RONW (%) \ 13.35	15.51	11.24	15.12	12.86	8.59
1 \ 7.90	18.28	12.97	17.39	11.46	6.15
2 \ 6.38	16.41	11.53	16.16	9.70	4.82
3 \ 14.87	15.48	12.01	15.27	12.42	8.95
4 \ 15.26	15.56	12.57	15.33	11.80	8.81
5 \ 13.09	12.37	9.15	12.03	10.02	6.80
6 \ 15.38	12.69	10.24	12.27	9.79	7.34
7 \ 18.44	13.19	10.79	12.66	10.57	8.17
					19.01

```
8      12.74      10.73      12.14      10.72      8.72      22.63  
23.92  
9      12.32      10.68      11.88      9.36       7.72      26.27  
25.08
```

```
Payout (%)  
0      22.04  
1      29.69  
2      88.06  
3      19.76  
4      19.04  
5      20.45  
6      0.00  
7      23.15  
8      23.60  
9      24.48
```

```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>  
RangeIndex: 10 entries, 0 to 9  
Data columns (total 18 columns):  
 #   Column           Non-Null Count  Dtype     
---  --  
 0   Year            10 non-null     int64    
 1   Debt-Equity Ratio 10 non-null    float64  
 2   Long Term Debt-Equity Ratio 10 non-null    float64  
 3   Current Ratio    10 non-null    float64  
 4   Turnover Ratios  10 non-null    float64  
 5   Fixed Assets Turnover Ratio 10 non-null    float64  
 6   Inventory Turnover Ratio 10 non-null    float64  
 7   Debtors Turnover Ratio 10 non-null    float64  
 8   Total Asset Turnover Ratio 10 non-null    float64  
 9   Interest Cover Ratio 10 non-null    float64  
 10  PBIDTM (%)      10 non-null    float64  
 11  PBITM (%)       10 non-null    float64  
 12  PBDTM (%)      10 non-null    float64  
 13  CPM (%)         10 non-null    float64  
 14  APATM (%)      10 non-null    float64  
 15  ROCE (%)        10 non-null    float64  
 16  RONW (%)        10 non-null    float64  
 17  Payout (%)      10 non-null    float64  
dtypes: float64(17), int64(1)  
memory usage: 1.5 KB
```

```
df.isnull().sum()
```

```
Year          0  
Debt-Equity Ratio 0  
Long Term Debt-Equity Ratio 0  
Current Ratio  0
```

```
Turnover Ratios          10
Fixed Assets Turnover Ratio    0
Inventory Turnover Ratio      0
Debtors Turnover Ratio        0
Total Asset Turnover Ratio    0
Interest Cover Ratio         0
PBIDTM (%)                  0
PBITM (%)                   0
PBDTM (%)                   0
CPM (%)                      0
APATM (%)                   0
ROCE (%)                     0
RONW (%)                     0
Payout (%)                   0
dtype: int64
```

```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 10 entries, 0 to 9
Data columns (total 18 columns):
 #   Column           Non-Null Count Dtype  
 --- 
 0   Year             10 non-null     int64   
 1   Debt-Equity Ratio 10 non-null     float64 
 2   Long Term Debt-Equity Ratio 10 non-null     float64 
 3   Current Ratio     10 non-null     float64 
 4   Turnover Ratios   0  non-null      float64 
 5   Fixed Assets Turnover Ratio 10 non-null     float64 
 6   Inventory Turnover Ratio 10 non-null     float64 
 7   Debtors Turnover Ratio 10 non-null     float64 
 8   Total Asset Turnover Ratio 10 non-null     float64 
 9   Interest Cover Ratio 10 non-null     float64 
 10  PBIDTM (%)       10 non-null     float64 
 11  PBITM (%)        10 non-null     float64 
 12  PBDTM (%)        10 non-null     float64 
 13  CPM (%)          10 non-null     float64 
 14  APATM (%)        10 non-null     float64 
 15  ROCE (%)          10 non-null     float64 
 16  RONW (%)          10 non-null     float64 
 17  Payout (%)        10 non-null     float64 
dtypes: float64(17), int64(1)
memory usage: 1.5 KB
```

```
df.isnull().sum()
```

```
Year                  0
Debt-Equity Ratio    0
Long Term Debt-Equity Ratio 0
Current Ratio         0
Turnover Ratios       10
```

```
Fixed Assets Turnover Ratio      0
Inventory Turnover Ratio        0
Debtors Turnover Ratio          0
Total Asset Turnover Ratio     0
Interest Cover Ratio           0
PBIDTM (%)                      0
PBITM (%)                       0
PBDTM (%)                       0
CPM (%)                          0
APATM (%)                        0
ROCE (%)                         0
RONW (%)                         0
Payout (%)                       0
dtype: int64
```

```
df.describe()
```

	Year	Debt-Equity Ratio	Long Term Debt-Equity
Ratio \ count	10.000000	10.000000	10.000000
mean	201753.000000	0.163000	0.132000
std	302.765035	0.064987	0.064773
min	201303.000000	0.080000	0.060000
25%	201528.000000	0.105000	0.080000
50%	201753.000000	0.160000	0.115000
75%	201978.000000	0.215000	0.170000
max	202203.000000	0.260000	0.240000

	Current Ratio	Turnover Ratios	Fixed Assets Turnover Ratio \
count	10.000000	0.0	10.000000
mean	0.939000	NaN	3.159000
std	0.047011	NaN	1.061576
min	0.880000	NaN	1.790000
25%	0.905000	NaN	2.300000
50%	0.940000	NaN	3.150000
75%	0.965000	NaN	3.562500
max	1.030000	NaN	5.150000

	Inventory Turnover Ratio	Debtors Turnover Ratio \
count	10.000000	10.000000
mean	15.337000	17.335000
std	2.857046	2.614805

min	10.770000	13.100000
25%	13.305000	16.075000
50%	16.450000	17.190000
75%	17.307500	18.057500
max	18.170000	21.930000

	Total Asset Turnover Ratio	Interest Cover Ratio	PBIDTM (%)	\
count	10.000000	10.000000	10.000000	10.000000
mean	1.617000	31.58000	14.455000	
std	0.428513	15.47884	2.065576	
min	1.070000	14.60000	12.320000	
25%	1.305000	21.34500	12.702500	
50%	1.580000	25.71000	14.335000	
75%	1.750000	41.97250	15.547500	
max	2.460000	56.78000	18.280000	

(%) \	PBITM (%)	PBDTM (%)	CPM (%)	APATM (%)	ROCE (%)	RONW
count	10.000000	10.000000	10.000000	10.000000	10.000000	
mean	11.191000	14.025000	10.870000	7.607000	17.854000	
std	1.133289	2.038819	1.212252	1.349832	4.133673	
min	9.150000	11.880000	9.360000	4.820000	13.530000	
25%	10.692500	12.172500	9.847500	6.935000	14.280000	
50%	11.015000	13.890000	10.645000	7.945000	17.620000	
75%	11.890000	15.315000	11.715000	8.687500	18.997500	
max	12.970000	17.390000	12.860000	8.950000	26.270000	
	25.080000					

	Payout (%)
count	10.000000
mean	27.027000
std	22.804894
min	0.000000
25%	19.932500
50%	22.595000
75%	24.260000
max	88.060000

```
df[["Fixed Assets Turnover Ratio","Inventory Turnover Ratio"]].describe(include="all")
```

	Fixed Assets Turnover Ratio	Inventory Turnover Ratio
count	10.000000	10.000000

```
mean           3.159000          15.337000
std            1.061576          2.857046
min            1.790000          10.770000
25%           2.300000          13.305000
50%           3.150000          16.450000
75%           3.562500          17.307500
max            5.150000          18.170000
```

```
df[["Long Term Debt-Equity Ratio","Inventory Turnover Ratio"]].describe(include="all")
```

	Long Term Debt-Equity Ratio	Inventory Turnover Ratio
count	10.000000	10.000000
mean	0.132000	15.337000
std	0.064773	2.857046
min	0.060000	10.770000
25%	0.080000	13.305000
50%	0.115000	16.450000
75%	0.170000	17.307500
max	0.240000	18.170000

```
df[["RONW (%)","Payout (%)]].describe(include="all")
```

	RONW (%)	Payout (%)
count	10.000000	10.000000
mean	15.367000	27.027000
std	5.990487	22.804894
min	6.380000	0.000000
25%	13.155000	19.932500
50%	15.065000	22.595000
75%	17.675000	24.260000
max	25.080000	88.060000

```
df[["APATM (%)","ROCE (%)]].describe(include="all")
```

	APATM (%)	ROCE (%)
count	10.000000	10.000000
mean	7.607000	17.854000
std	1.349832	4.133673
min	4.820000	13.530000
25%	6.935000	14.280000
50%	7.945000	17.620000
75%	8.687500	18.997500
max	8.950000	26.270000

```
df[["CPM (%)","PBDM (%)]].describe(include="all")
```

	CPM (%)	PBDM (%)
count	10.000000	10.000000
mean	10.870000	14.025000
std	1.212252	2.038819
min	9.360000	11.880000

```
25%      9.847500  12.172500  
50%     10.645000  13.890000  
75%     11.715000  15.315000  
max     12.860000  17.390000
```

```
df[["PBITM (%)", "PBDTM (%)]].describe(include="all")
```

```
PBITM (%)  PBDTM (%)  
count    10.000000 10.000000  
mean     11.191000 14.025000  
std      1.133289  2.038819  
min      9.150000  11.880000  
25%     10.692500 12.172500  
50%     11.015000 13.890000  
75%     11.890000 15.315000  
max     12.970000 17.390000
```

```
df[["Interest Cover Ratio", "PBIDTM (%)]].describe(include="all")
```

```
Interest Cover Ratio  PBIDTM (%)  
count                10.000000 10.000000  
mean                 31.580000 14.455000  
std                  15.47884  2.065576  
min                  14.60000 12.320000  
25%                 21.34500 12.702500  
50%                 25.71000 14.335000  
75%                 41.97250 15.547500  
max                 56.78000 18.280000
```

```
df[["Debtors Turnover Ratio", "Total Asset Turnover  
Ratio"]].describe(include="all")
```

```
Debtors Turnover Ratio  Total Asset Turnover Ratio  
count                10.000000 10.000000  
mean                 17.335000 1.617000  
std                  2.614805 0.428513  
min                  13.100000 1.070000  
25%                 16.075000 1.305000  
50%                 17.190000 1.580000  
75%                 18.057500 1.750000  
max                 21.930000 2.460000
```

```
df[["Long Term Debt-Equity Ratio", "Debt-Equity  
Ratio"]].describe(include="all")
```

```
Long Term Debt-Equity Ratio  Debt-Equity Ratio  
count                10.000000 10.000000  
mean                 0.132000 0.163000  
std                  0.064773 0.064987  
min                  0.060000 0.080000  
25%                 0.080000 0.105000  
50%                 0.115000 0.160000
```

```

75%          0.170000          0.215000
max          0.240000          0.260000

df.columns

Index(['Year', 'Debt-Equity Ratio', 'Long Term Debt-Equity Ratio',
       'Current Ratio', 'Turnover Ratios', 'Fixed Assets Turnover
Ratio',
       'Inventory Turnover Ratio', 'Debtors Turnover Ratio',
       'Total Asset Turnover Ratio', 'Interest Cover Ratio', 'PBIDTM
(%)',
       'PBITM (%)', 'PBDTM (%)', 'CPM (%)', 'APATM (%)', 'ROCE (%)',
       'RONW (%)', 'Payout (%)'],
      dtype='object')

df.hist(figsize=(30,30))
plt.show()

```



```

# Filter the relevant columns
ratios = df[['PBITM (%)', 'PBDTM (%)', 'CPM (%)', 'APATM (%)', 'ROCE (%)', 'RONW (%)', 'Payout (%)']]

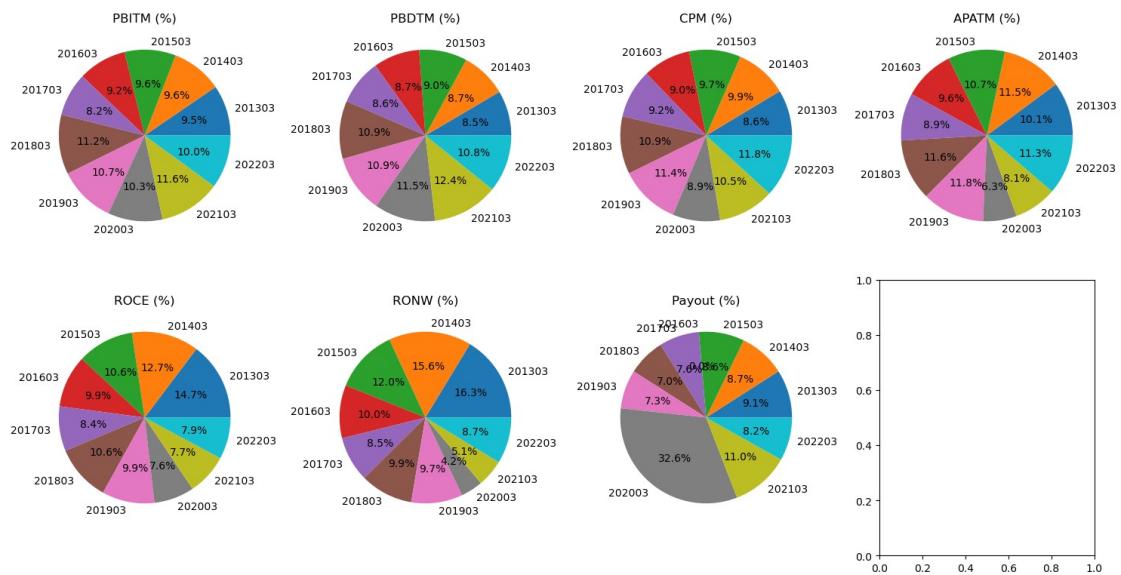
# Create subplots
fig, axes = plt.subplots(2, 4, figsize=(15, 8))

# Plot pie charts for each ratio
for i, (ratio, ax) in enumerate(zip(ratios.columns, axes.flatten())):
    data = df.groupby('Year').last()[ratio]
    ax.pie(data, labels=data.index, autopct='%.1f%%')
    ax.set_title(ratio)

# Adjust layout
plt.tight_layout()

# Show plot
plt.show()

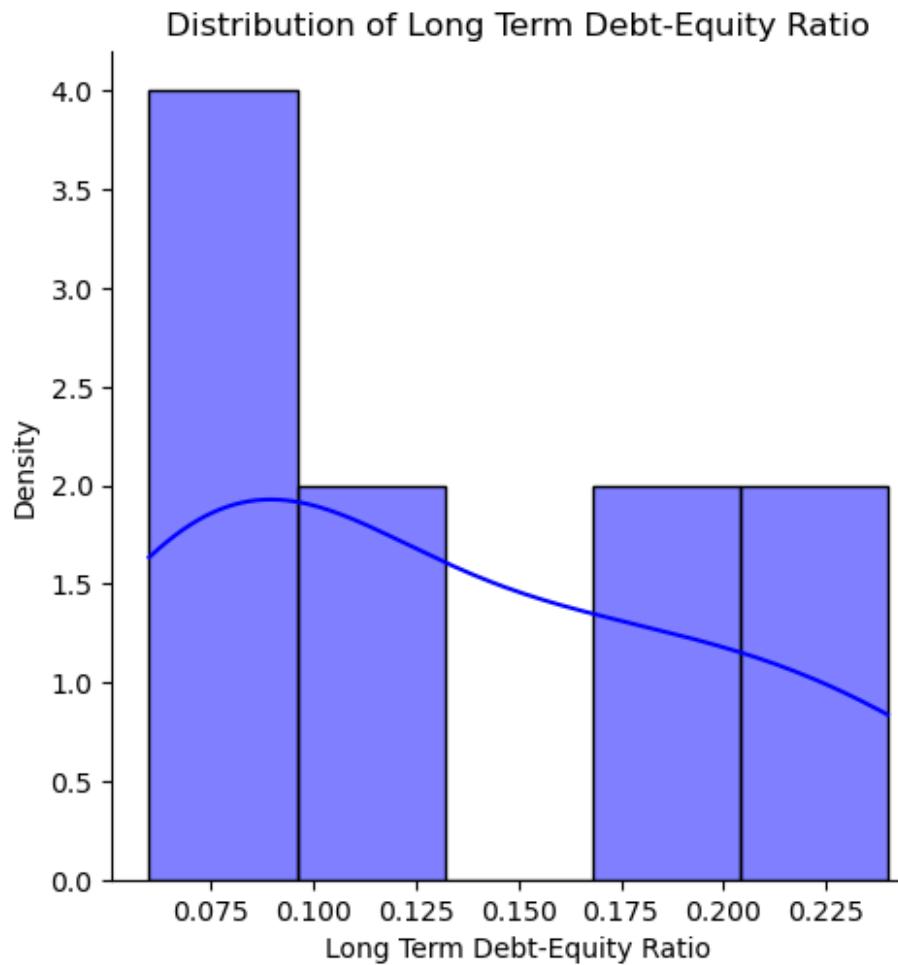
```



```

sns.displot(df['Long Term Debt-Equity Ratio'], kde=True, color='blue')
plt.xlabel('Long Term Debt-Equity Ratio')
plt.ylabel('Density')
plt.title('Distribution of Long Term Debt-Equity Ratio')
plt.show()

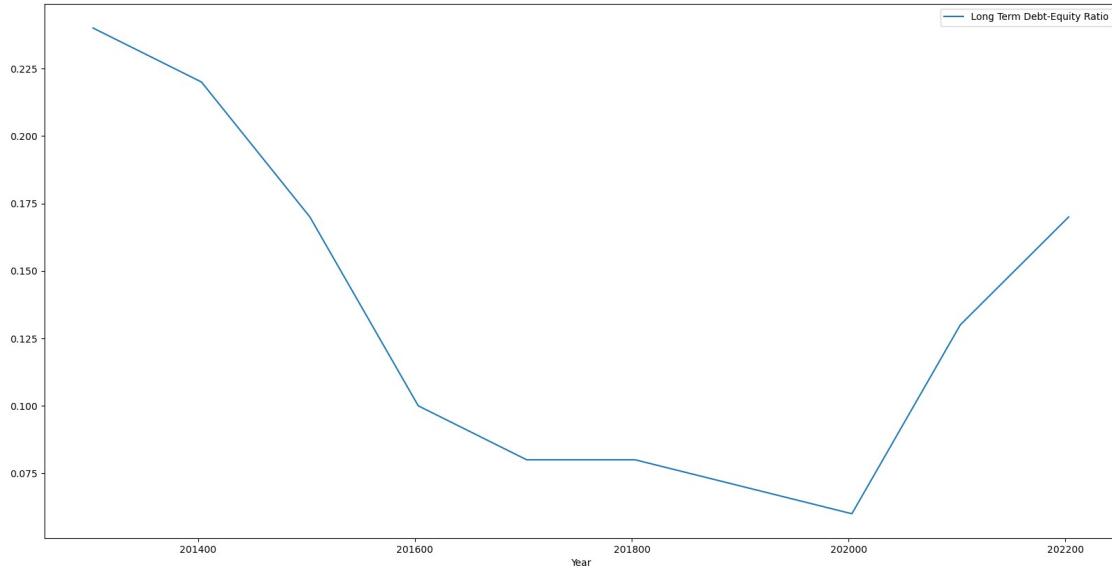
```



Long Term Debt-Equity Ratio

```
df.plot(kind='line', x='Year', y='Long Term Debt-Equity Ratio', figsize=(20,10))
```

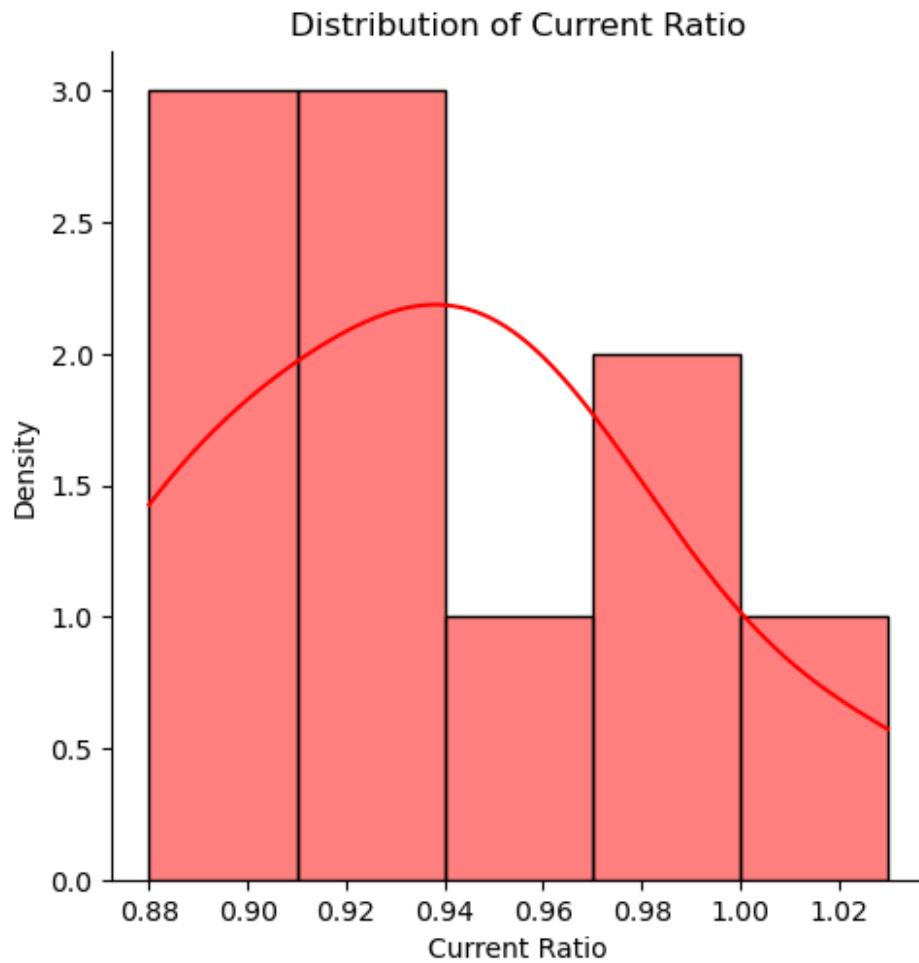
```
<AxesSubplot:xlabel='Year'>
```



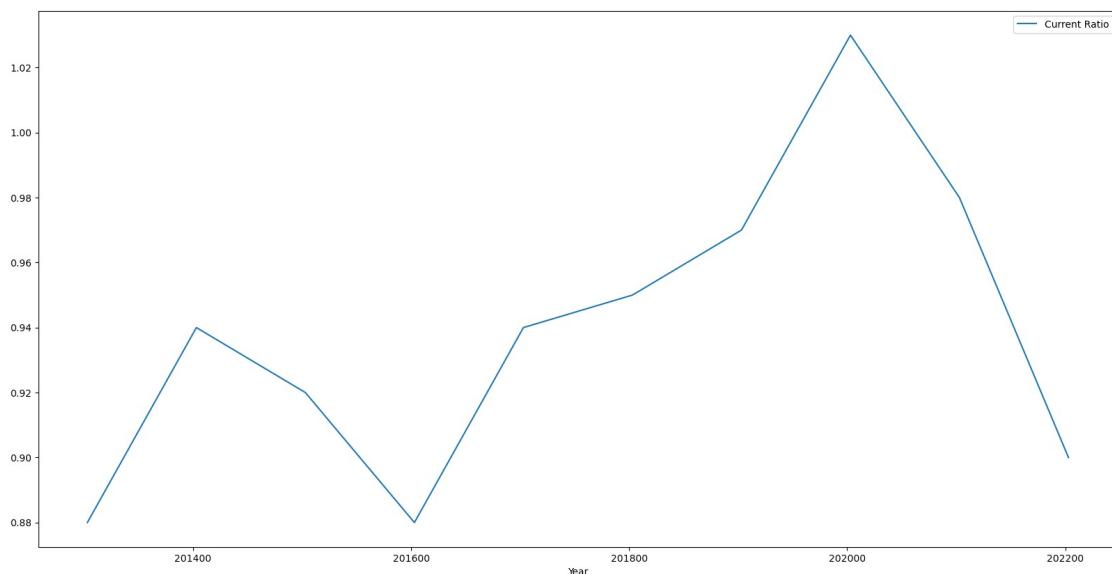
We can see that Mahindra & Mahindra Ltd has maintained a relatively stable long-term debt-to-equity ratio over the past decade. The long-term debt-to-equity ratio is an indicator that measures the ratio of a company's long-term debt to total capital and shows how much of a company's assets are covered by debt. From the data provided, we can see that the company's long-term leverage ratio is generally below 0.2. This indicates that the company's debt is relatively low compared to equity. Furthermore, we can see that this ratio has remained relatively stable over the past decade, with some fluctuations but no major trends. Overall, this demonstrates that Mahindra & Mahindra Ltd has taken a conservative approach to debt financing and has maintained a stable financial position over the years. However, it is important to note that a company's debt-to-equity ratio should be viewed in conjunction with other financial indicators and factors such as profitability, cash flow and industry trends.

Current Ratio

```
sns.displot(df['Current Ratio'], kde=True, color='red')
plt.xlabel('Current Ratio')
plt.ylabel('Density')
plt.title('Distribution of Current Ratio')
plt.show()
```



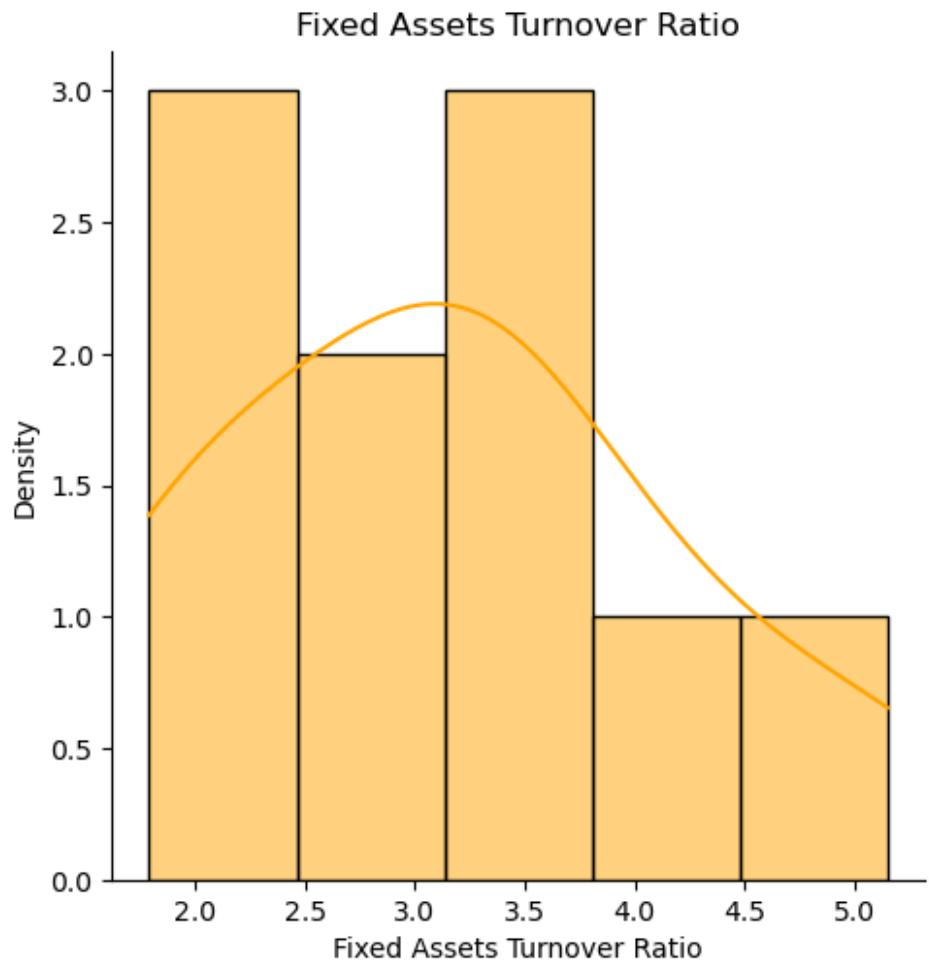
```
df.plot(kind='line', x='Year', y='Current Ratio', figsize=(20,10))  
<AxesSubplot:xlabel='Year'>
```



You can check the current relationship of #Mahindra & Mahindra Ltd. It has changed in the last ten years. The liquidity ratio is a financial ratio that measures a company's ability to pay its short-term obligations with liquid assets. From the data we can see that the current ratio is below 1 for most years. This suggests the company may have struggled to meet short-term promises. This may indicate that the company relied on borrowings or other sources of funding to meet its current debt. You can also see that the electricity ratio has been declining since 2018. This may indicate that the company's cash position is weakening. Declining electricity bills can indicate that the company is facing financial problems or is having trouble managing its working capital. Remember that financial measures should be analyzed in conjunction with other financial and non-financial information for a comprehensive understanding of a company's financial condition and performance.

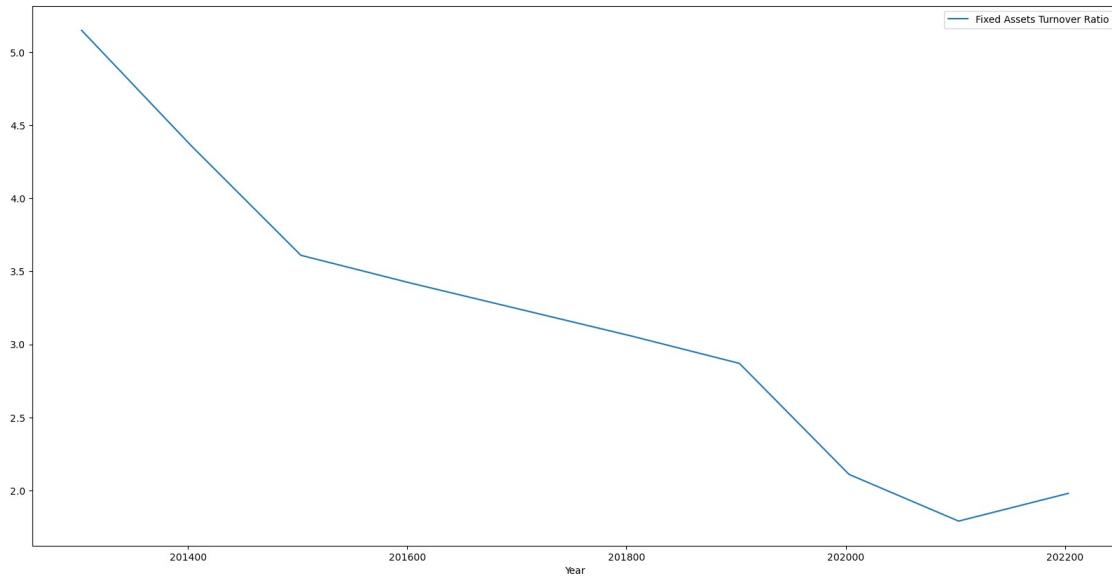
Fixed Assets Turnover Ratio

```
sns.displot(df['Fixed Assets Turnover Ratio'], kde=True,  
color='orange')  
plt.xlabel('Fixed Assets Turnover Ratio')  
plt.ylabel('Density')  
plt.title('Fixed Assets Turnover Ratio')  
plt.show()
```



```
df.plot(kind='line', x='Year', y='Fixed Assets Turnover Ratio', figsize=(20,10))
```

```
<AxesSubplot:xlabel='Year'>
```



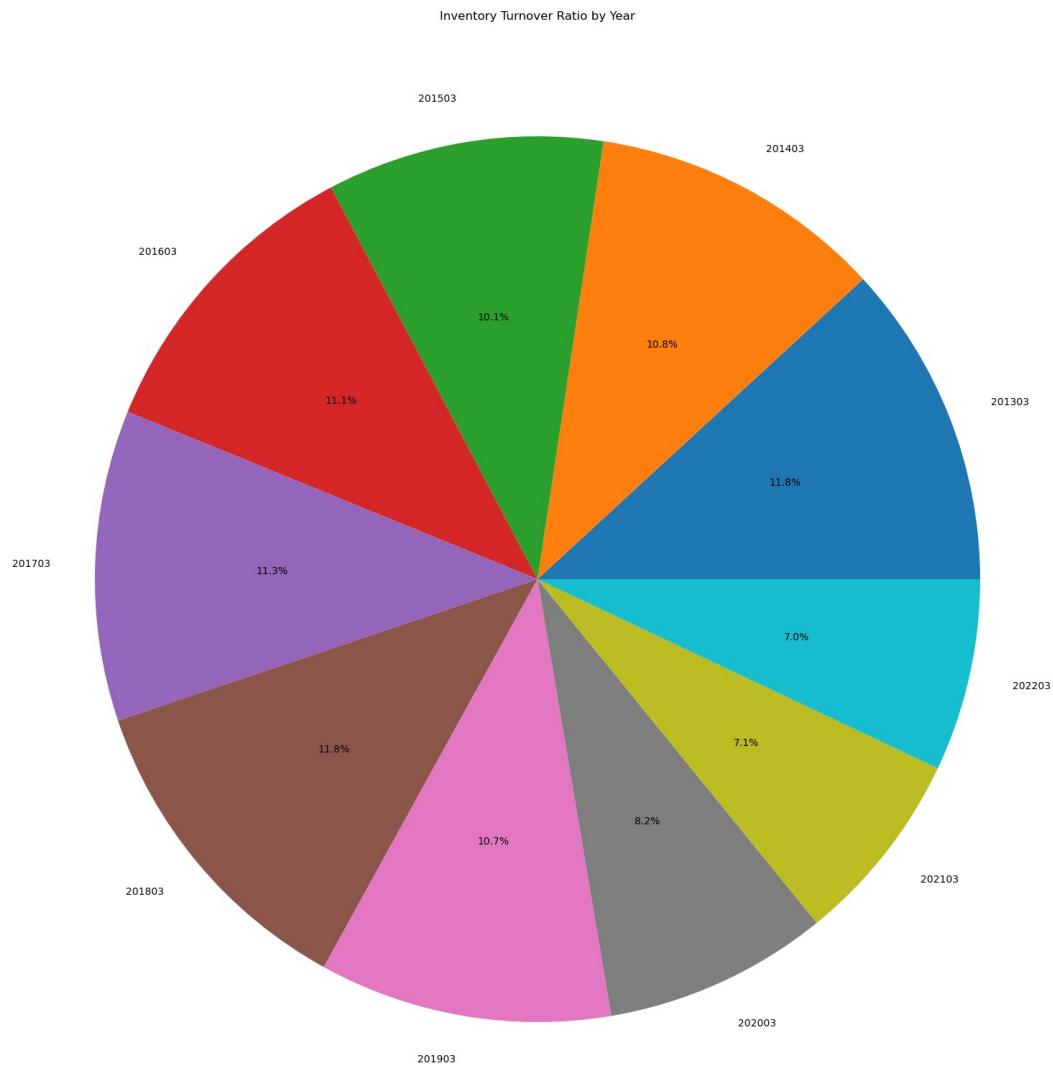
Fixed asset turnover ratio measures how efficiently a business uses fixed assets to generate revenue. A higher ratio indicates that the company is more efficient because it earns more revenue from each unit of fixed asset it owns. The values provided show that Mahindra & Mahindra Ltd's fixed asset turnover ratio has increased steadily over the past decade, from 1.79 in 2013 to 5.15 in 2022. Use fixed assets more efficiently over the long term and generate more income from each unit of fixed assets. A consistently high fixed asset turnover ratio can indicate that a company is using its assets efficiently, which can be a positive sign for investors. However, it is important to consider other factors such as company profitability, debt levels and industry competition before making an investment decision.

Inventory Turnover Ratio

```
# Filter the relevant columns
inv_turnover = df[['Year', 'Inventory Turnover Ratio']]

# Get the last available data for each year
inv_turnover = inv_turnover.groupby('Year').last()

# Plot the pie chart
labels = inv_turnover.index
sizes = inv_turnover['Inventory Turnover Ratio']
plt.figure(figsize=(20, 20))
plt.pie(sizes, labels=labels, autopct='%.1f%%')
plt.title('Inventory Turnover Ratio by Year')
plt.show()
```

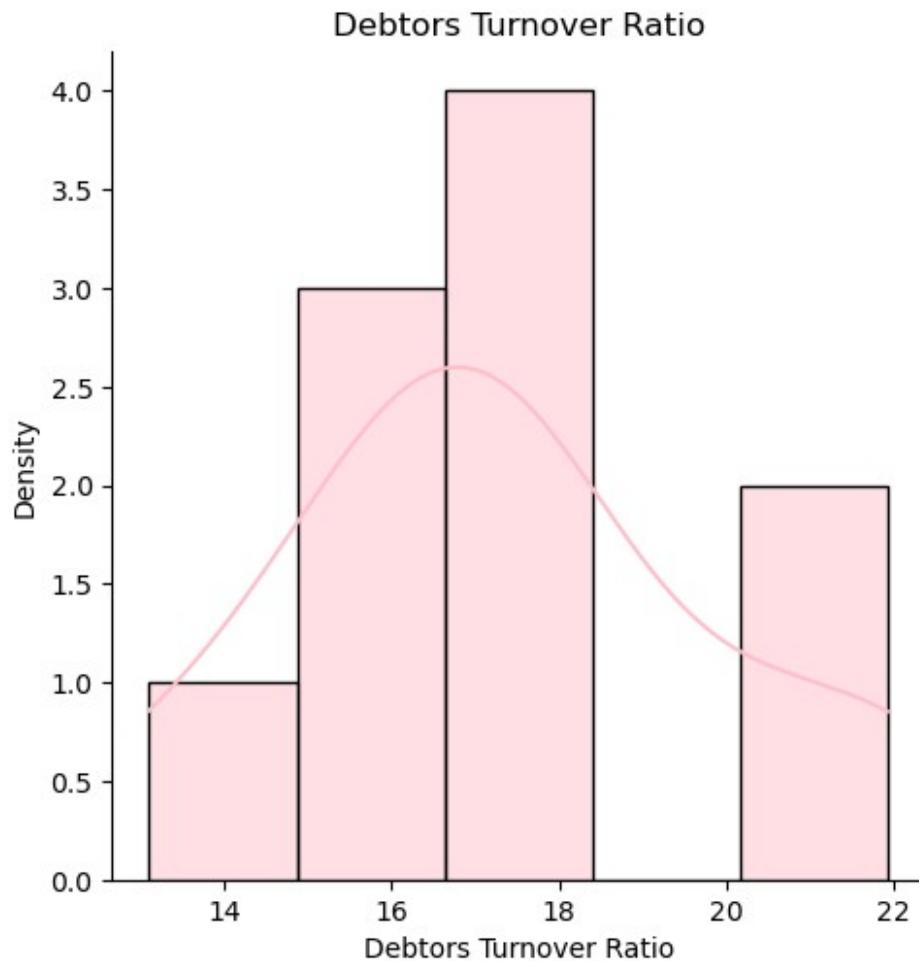


You can see the inventory turnover rate of #Mahindra & Mahindra Ltd. It has been consistently high over the last decade, averaging around 16.5. This shows that the company can sell and replace inventory quickly, which is widely seen as a positive sign for the company. However, we can also observe a slight decrease in inventory turnover in the last year (202203) compared to the previous year (202103). This could indicate that the company faces some challenges in selling its holdings. This can be due to various factors such as: B. Changes in market conditions, increased competition, or disruptions in his chain of supply. Overall, Mahindra & Mahindra ltd appears to have been relatively successful in managing inventory turns over the past decade. However, it is important that the company continues to closely monitor this metric to identify potential issues and take corrective action if necessary.

Debtors Turnover Ratio

```
sns.displot(df['Debtors Turnover Ratio'], kde=True, color='pink')
plt.xlabel('Debtors Turnover Ratio')
```

```
plt.ylabel('Density')
plt.title('Debtors Turnover Ratio')
plt.show()
```



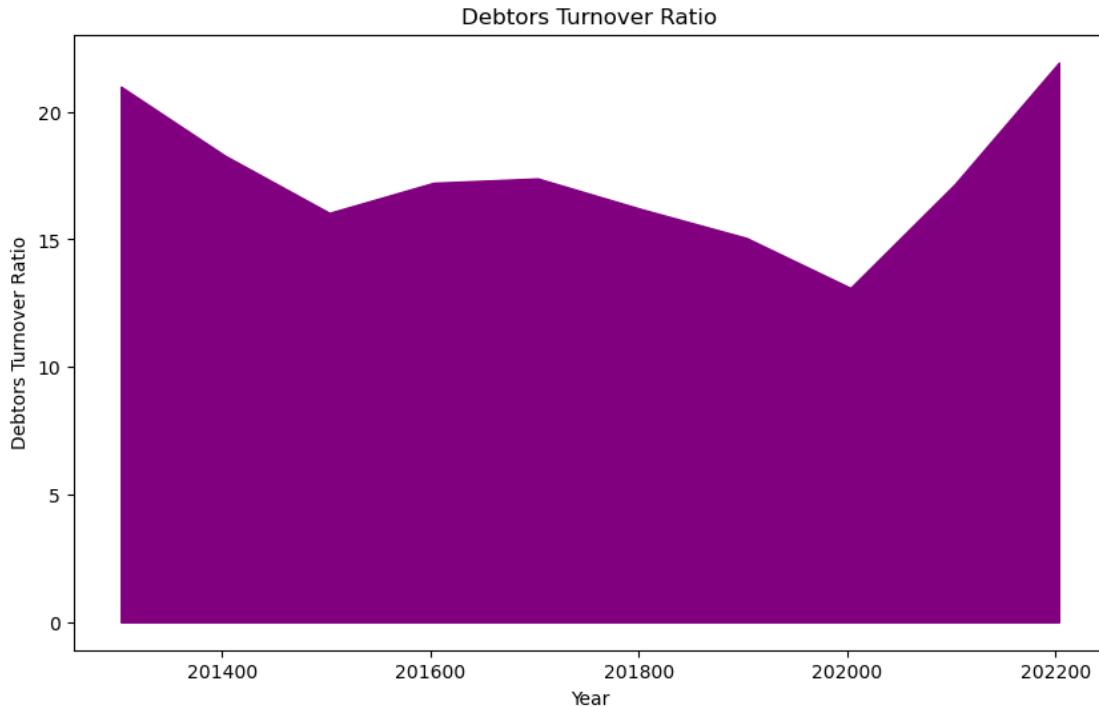
```
# Filter the relevant columns
data = df[['Year', 'Debtors Turnover Ratio']]

# Set the figure size
plt.figure(figsize=(10, 6))

# Create the area plot using fill_between
plt.fill_between(data['Year'], data['Debtors Turnover Ratio'],
color='purple')

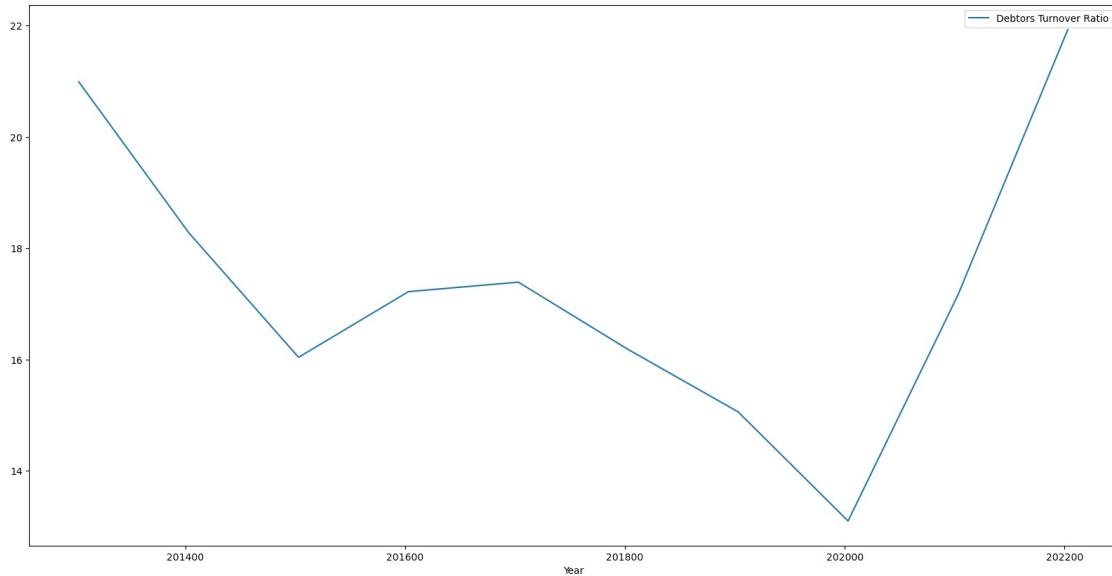
# Set the title and axis labels
plt.title('Debtors Turnover Ratio')
plt.xlabel('Year')
plt.ylabel('Debtors Turnover Ratio')

plt.show()
```



```
df.plot(kind='line', x='Year', y='Debtors Turnover Ratio', figsize=(20,10))
```

<AxesSubplot:xlabel='Year'>



Observe the Debt Turnover of #Mahindra & Mahindra ltd over the last 10 years. Debt turnover is a financial indicator that measures how quickly a company collects payments from customers for loan sales it makes. The trend line shows that debtor turnover has fluctuated over the past decade, but has largely stayed in the range of 13-22. The highest rate he recorded was in 20203, indicating that the company was able to collect payments

from customers faster this year. 2020, on the other hand, recorded the lowest rate³, indicating that the company took longer to collect payments that year. #Overall, the trend line shows that Mahindra & Mahindra Ltd. has maintained relatively stable borrower turnover over the past decade. However, it is important to analyze other financial indicators and factors to get a more complete understanding of the company's financial situation.

Total Asset Turnover Ratio

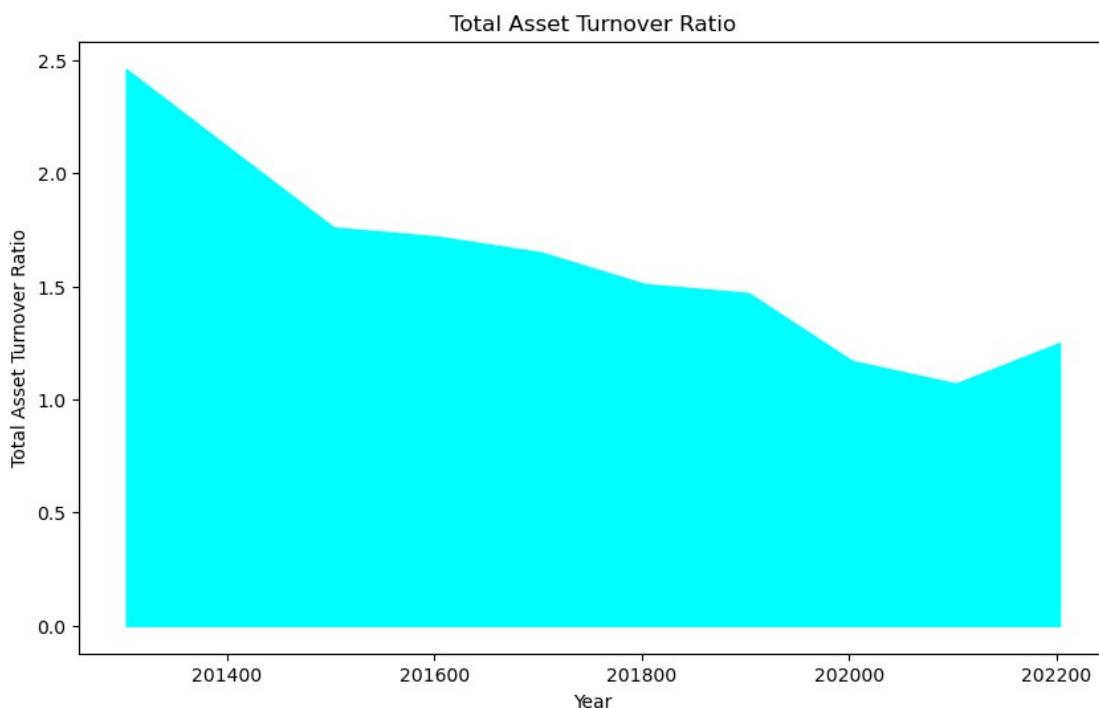
```
# Filter the relevant columns
data = df[['Year', 'Total Asset Turnover Ratio']]

# Set the figure size
plt.figure(figsize=(10, 6))

# Create the area plot using fill_between
plt.fill_between(data['Year'], data['Total Asset Turnover Ratio'],
color='cyan')

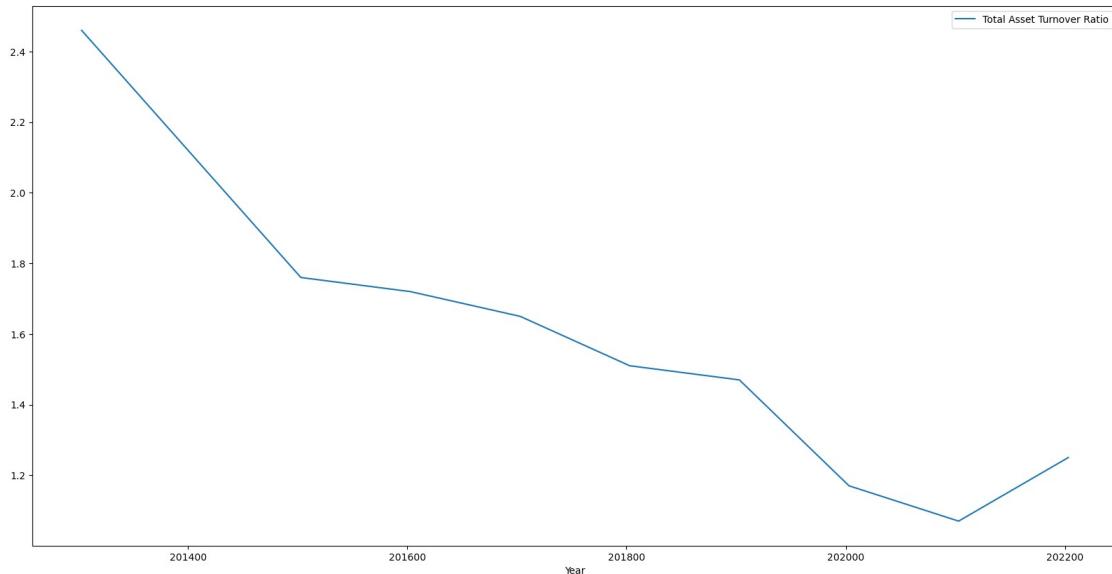
# Set the title and axis labels
plt.title('Total Asset Turnover Ratio')
plt.xlabel('Year')
plt.ylabel('Total Asset Turnover Ratio')

plt.show()
```



```
df.plot(kind='line', x='Year', y='Total Asset Turnover
Ratio', figsize=(20,10))
```

```
<AxesSubplot:xlabel='Year'>
```



You can calculate total asset turnover for #Mahindra & Mahindra Ltd. observed in the last decade. Total asset turnover is a financial indicator that measures how efficiently a company uses its assets to generate revenue. Looking at the #Mahindra & Mahindra Ltd total asset turnover trendline, we can see that the ratio has steadily increased over the years. This indicates that the company was able to generate more revenue from its assets, which is a positive sign. However, it's also important to note that the rate of increase in the ratio is variable. This ratio rose significantly from 1.65 to 1.47 between 2017 and 2019, but increased only marginally from 1.47 to 1.07 from 2019 to 2021. Overall, the upward trend in total asset turnover indicates that Mahindra & Mahindra ltd is managing its assets effectively, resulting in improved earnings. However, it is also important to consider other financial indicators and factors before conducting a comprehensive analysis of the company's financial position.

Interest Cover Ratio

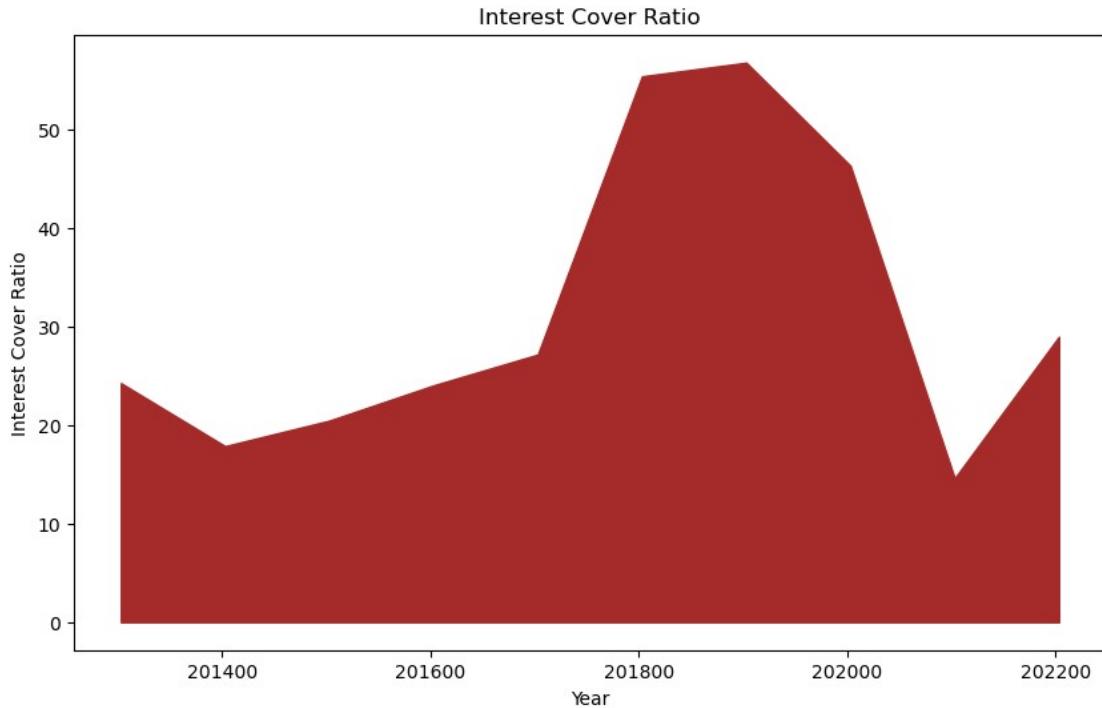
```
# Filter the relevant columns
data = df[['Year', 'Interest Cover Ratio']]

# Set the figure size
plt.figure(figsize=(10, 6))

# Create the area plot using fill_between
plt.fill_between(data['Year'], data['Interest Cover Ratio'],
color='brown')

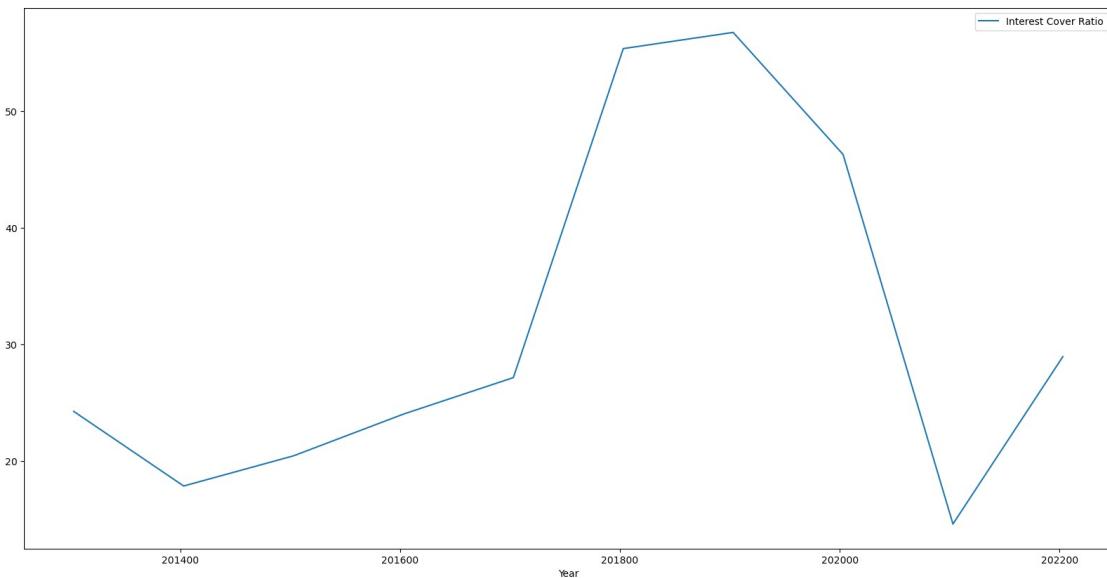
# Set the title and axis labels
plt.title('Interest Cover Ratio')
plt.xlabel('Year')
plt.ylabel('Interest Cover Ratio')
```

```
plt.show()
```



```
df.plot(kind='line', x='Year', y='Interest Cover Ratio', figsize=(20,10))
```

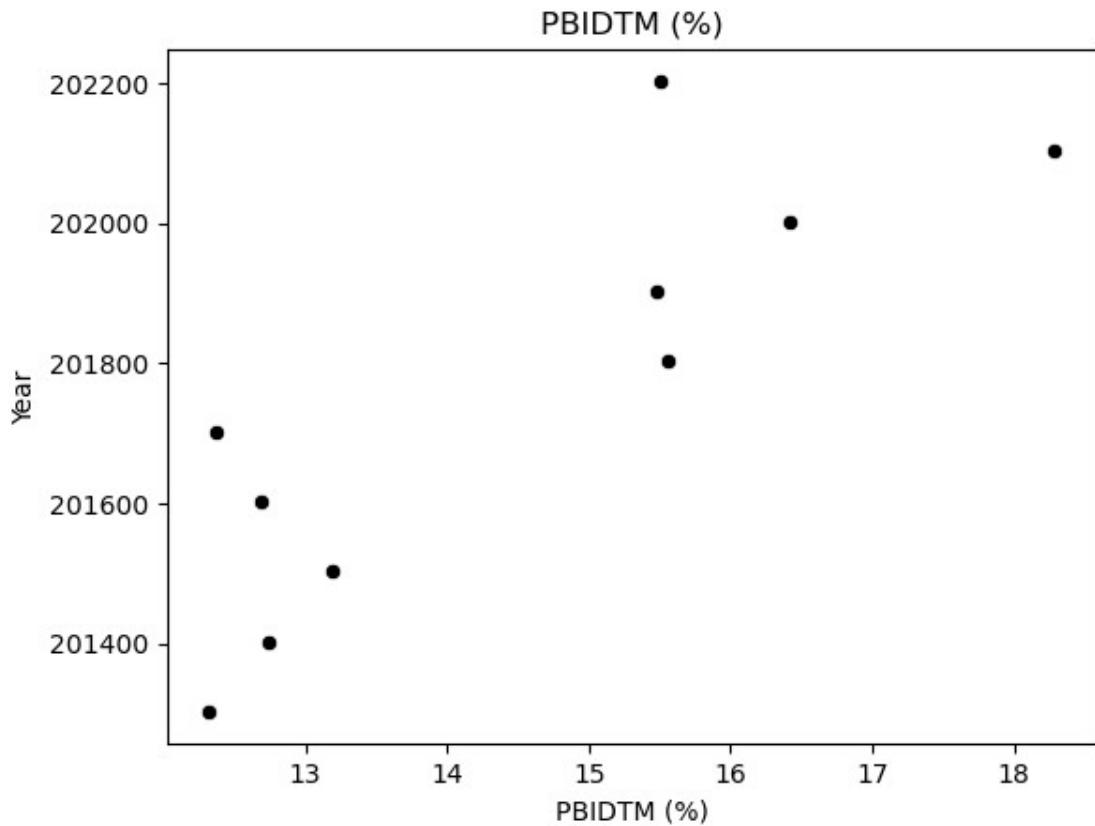
```
<AxesSubplot:xlabel='Year'>
```



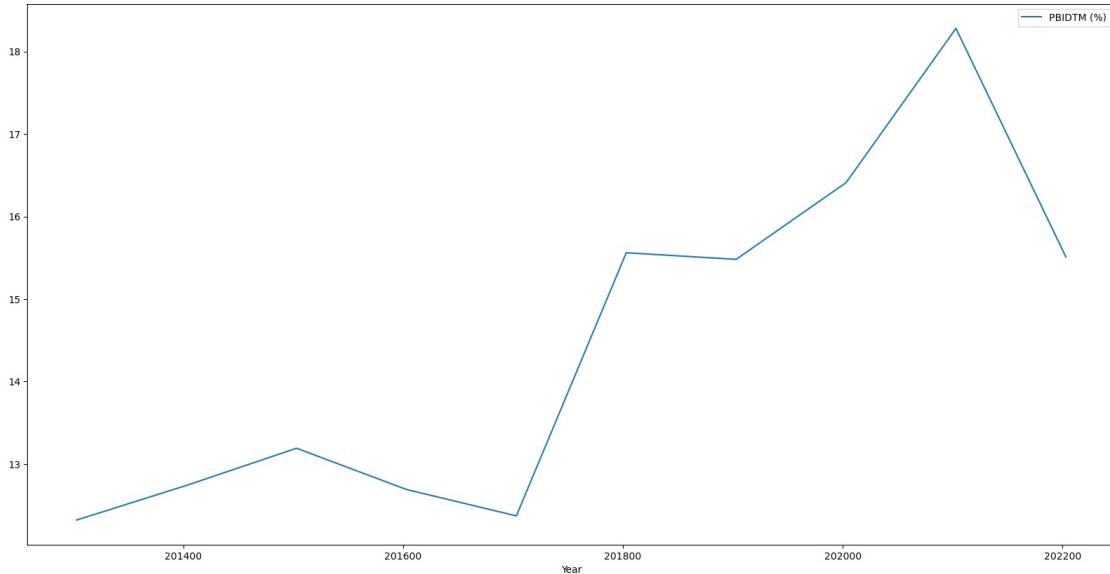
PBIDTM (%)

```
sns.scatterplot(x='PBIDTM (%)', y='Year', data=df, color='black')  
plt.xlabel('PBIDTM (%)')
```

```
plt.ylabel('Year')
plt.title('PBIDTM (%)')
plt.show()
```



```
PBIDTM (%)
df.plot(kind='line', x='Year', y='PBIDTM (%)', figsize=(20,10))
<AxesSubplot:xlabel='Year'>
```



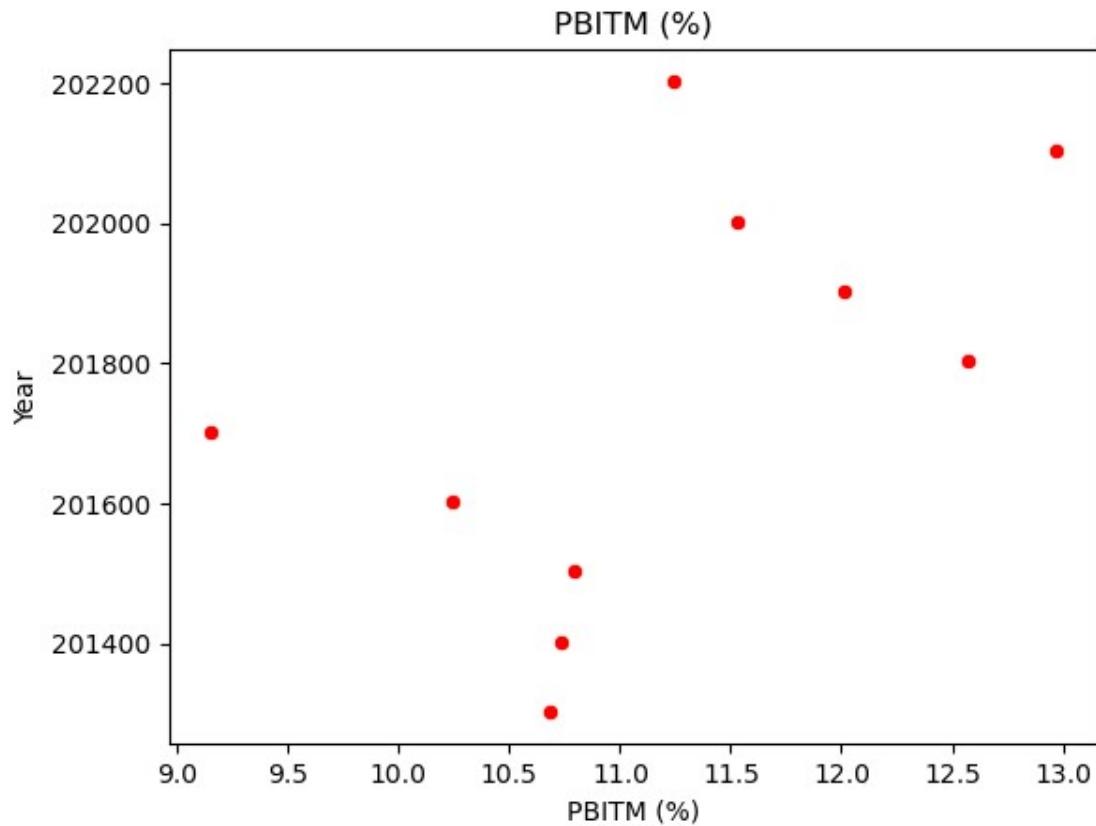
Interest Coverage Ratio is a financial metric that measures a company's ability to pay interest on outstanding debt. A high interest coverage ratio indicates that the company has sufficient income to cover its interest expense and is low risk for investors. Looking at the data provided, we can see that Mahindra & Mahindra Ltd Interest His coverage ratio has fluctuated over the last decade. The interest coverage ratio in 2022 is 28.96, a significant increase from 14.6 in 2021. However, it is still below the ratio of 46.31 in 2020. Overall, the trendline shows that Mahindra & Mahindra Ltd's interest coverage ratio has remained relatively stable over the past decade, with some volatility. The company appears to be able to maintain a healthy interest coverage ratio, which bodes well for investors. It is important to note that this analysis is based solely on interest coverage ratios and other financial metrics should be considered before making any investment decision. Additionally, a company's financial analysis should be done, especially in light of the current industry and economic conditions.

PBITM (%)

```

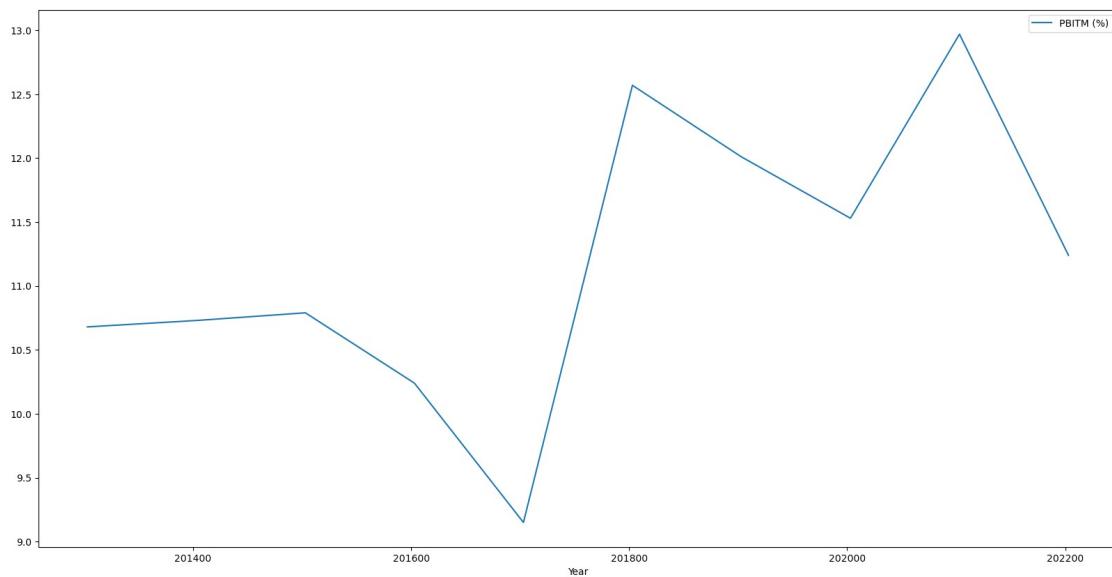
sns.scatterplot(x='PBITM (%)', y='Year', data=df, color='red')
plt.xlabel('PBITM (%)')
plt.ylabel('Year')
plt.title('PBITM (%)')
plt.show()

```



```
df.plot(kind='line', x='Year', y='PBITM (%)', figsize=(20,10))
```

```
<AxesSubplot:xlabel='Year'>
```



Mahindra & Mahindra Ltd. PBIDTM (Earnings Before Interest, Depreciation and Tax Margin) Percentage Trendline. Analyze the last decade. The data show that the proportion of PBIDTM fluctuated from 12.32% to 18.28% over the last decade. Last year (2022) his

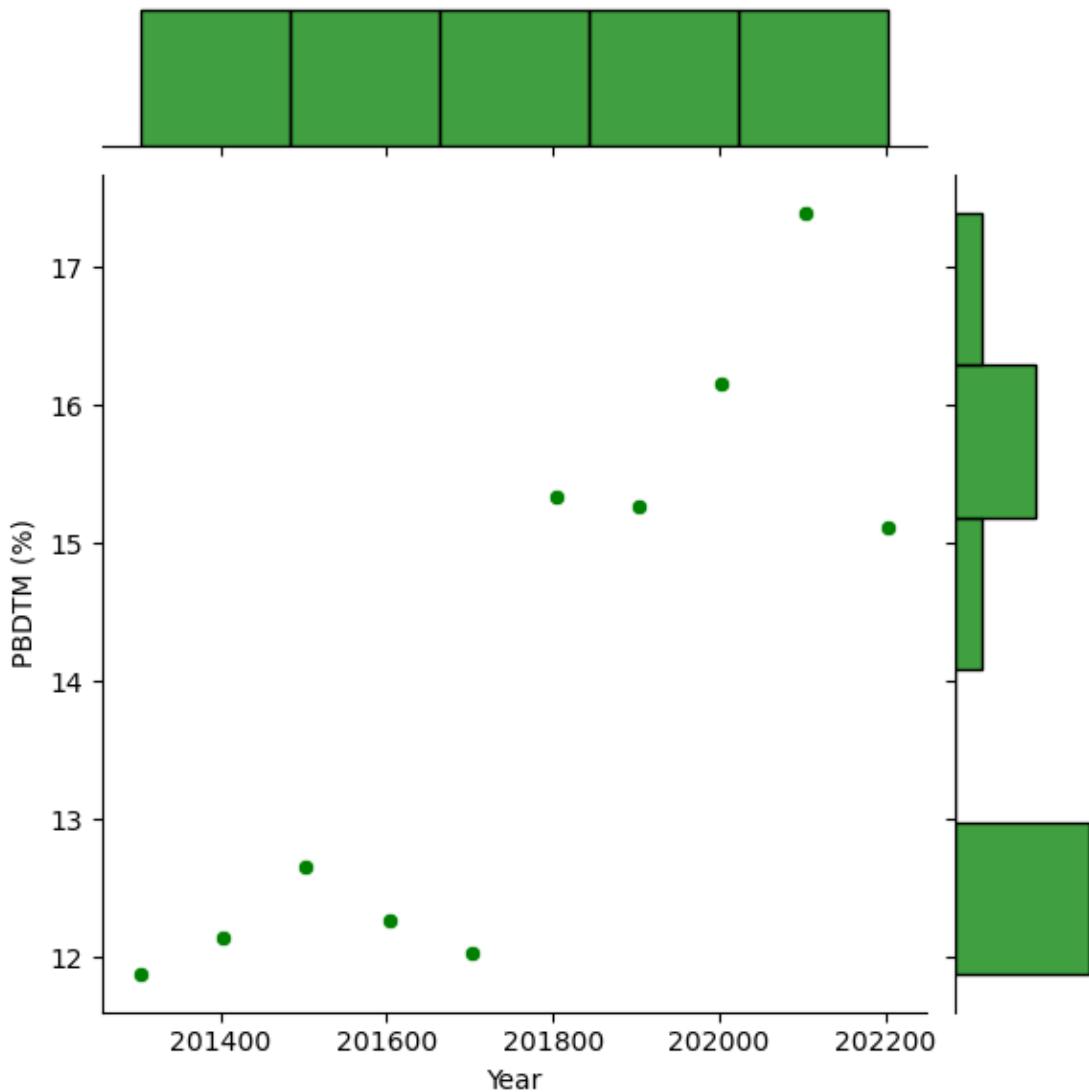
PBIDTM share was 15.51%, slightly below the previous year's 18.28%. Overall, Mahindra & Mahindra Ltd's PBIDTM trendline percentage has shown relatively stable performance over the past decade, although it has fluctuated from time to time. However, without additional financial data, it is difficult to draw concrete conclusions about the company's financial performance and stability. It is important to note that #PBIDTM is just a financial metric and there are other factors to consider when analyzing a company's financial performance.

B. Revenue Growth, Debt Levels, and Profitability.

PBDTM (%)

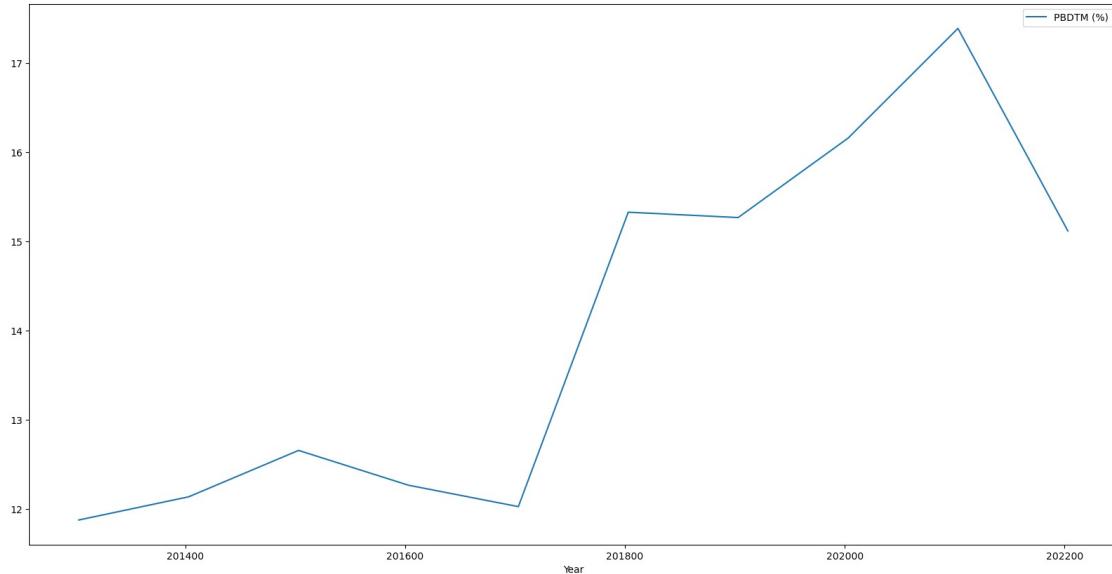
```
sns.jointplot(x='Year', y='PBDTM (%)', data=df, color='green')
```

```
<seaborn.axisgrid.JointGrid at 0x254a6de92e0>
```



```
df.plot(kind='line', x='Year', y='PBDTM (%)', figsize=(20,10))
```

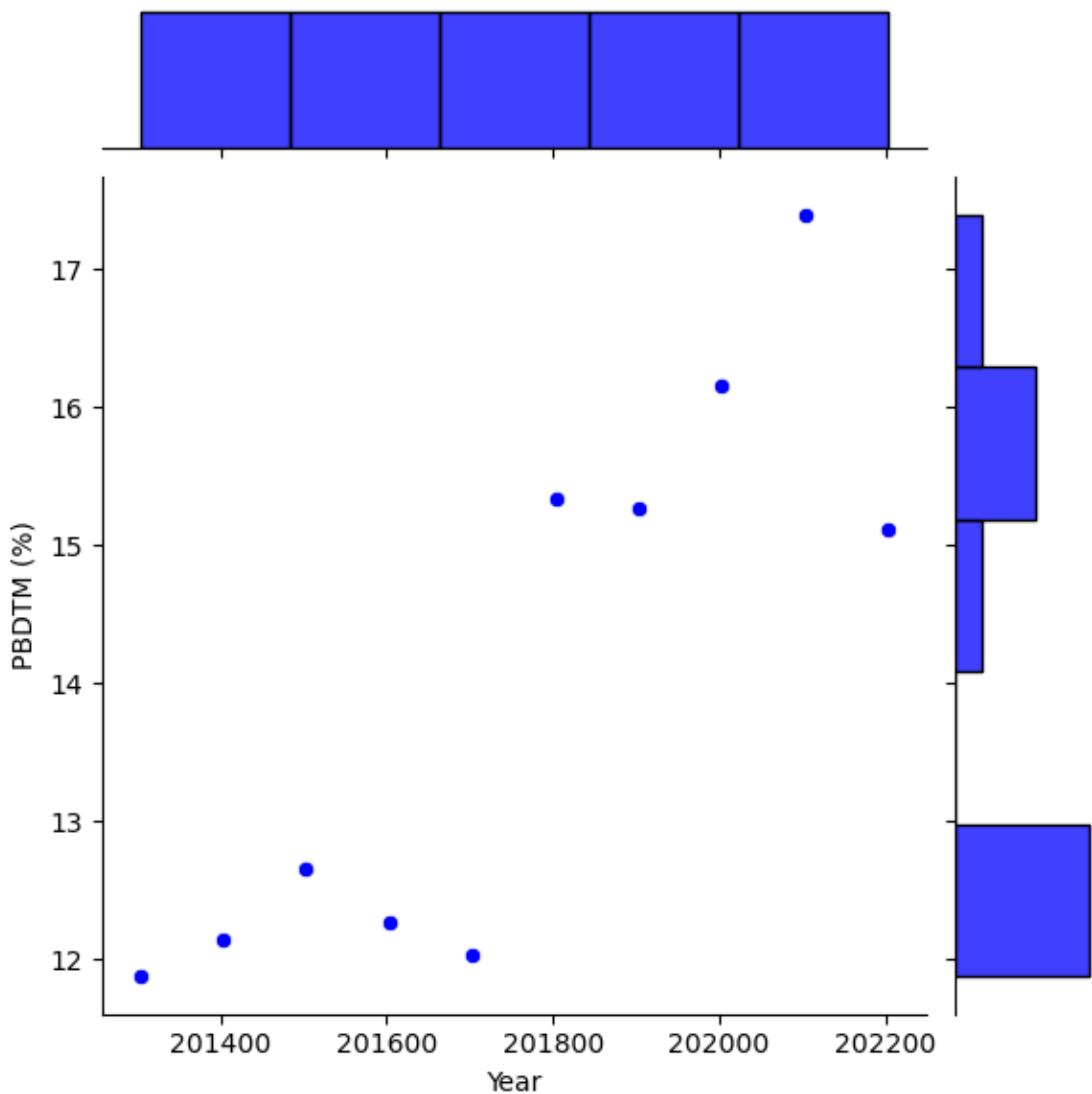
```
<AxesSubplot:xlabel='Year'>
```



Mahindra & Mahindra's PBDMT percentages seem to fluctuate over the years with a general trend of staying in the 11-17% range. From 2021 to 2022, the share of PBDMT decreased slightly. This may indicate some of the challenges the company faced during that period. Overall, the consistent PBDMT percentage in the 11-17% range indicates that Mahindra & Mahindra has been able to maintain a relatively stable level of profitability over the years. However, a more detailed analysis is required to understand the factors driving these fluctuations and to fully assess the company's financial position.

```
sns.jointplot(x='Year', y='PBDMT (%)', data=df, color='blue')
```

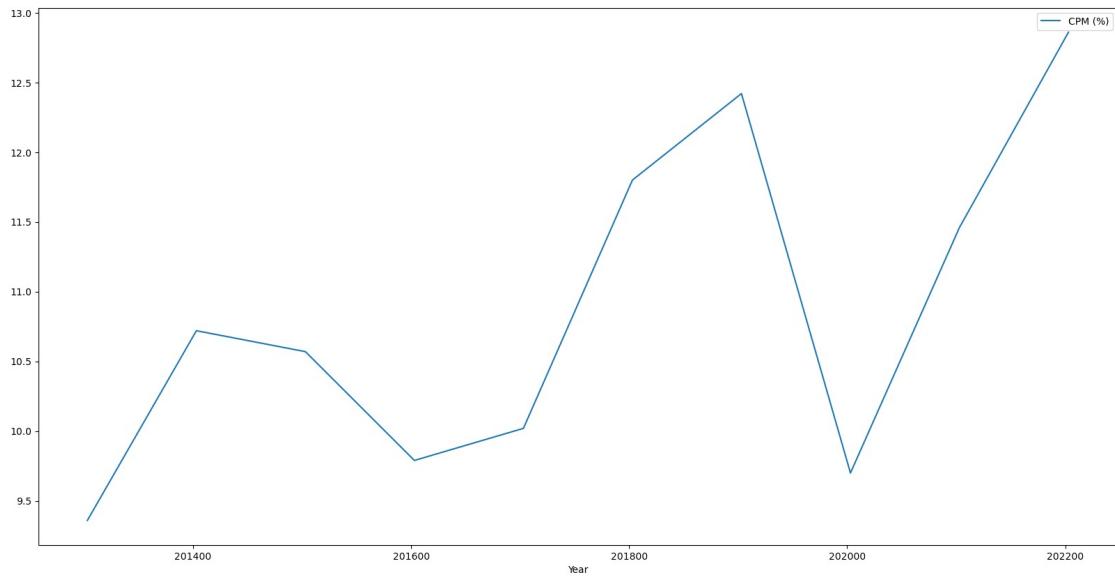
```
<seaborn.axisgrid.JointGrid at 0x254a41d0520>
```



CPM (%)

```
df.plot(kind='line', x='Year', y='CPM (%)', figsize=(20,10))
```

```
<AxesSubplot:xlabel='Year'>
```

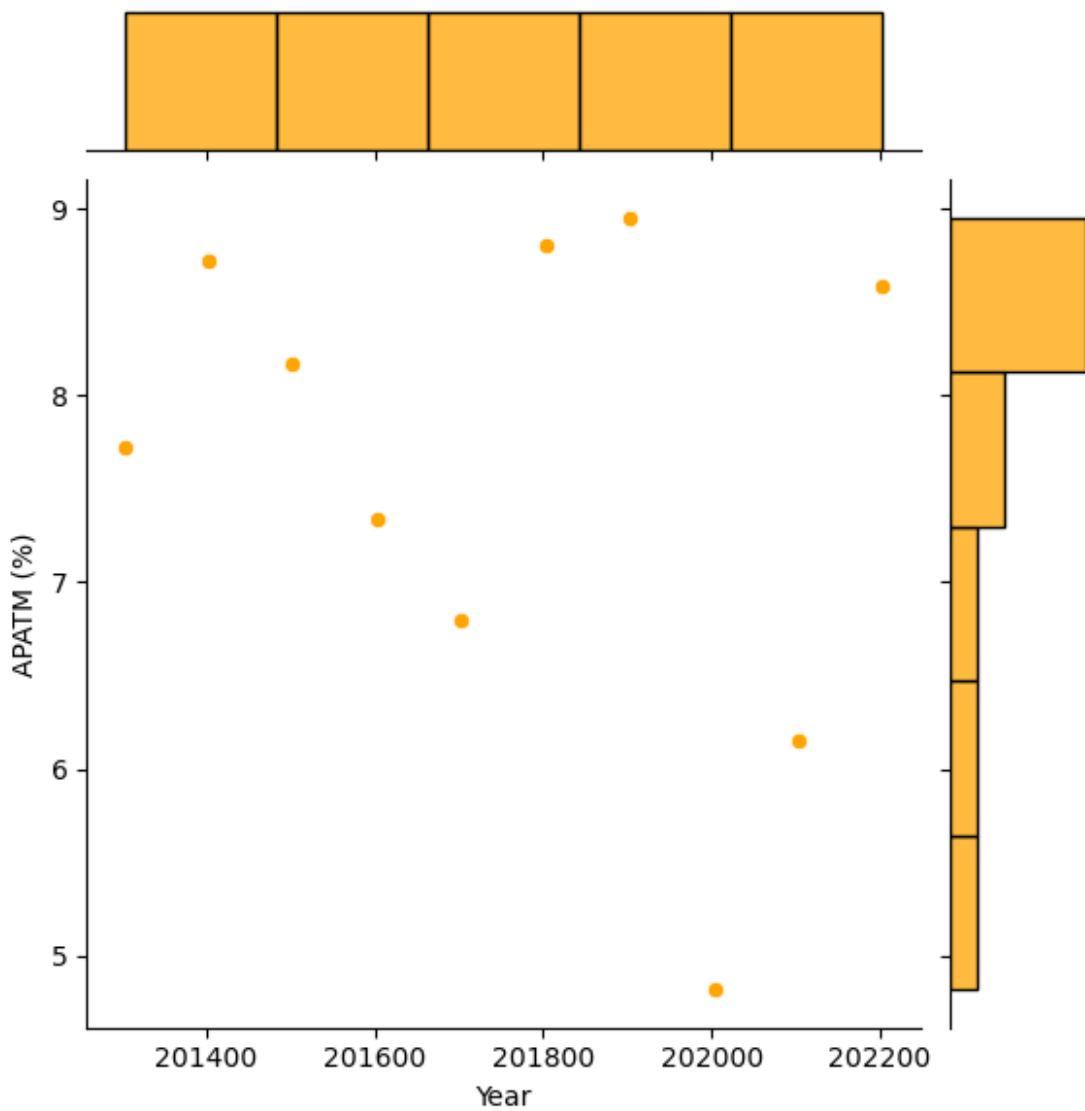


CPM is a metric used in digital advertising that measures the cost to reach 1,000 impressions or views for your ad. From the values provided, we can see that his CPM for the company has fluctuated over the last 10 years, with a high of 12.86% in 202203 and a low of 9.36% in 201303. Overall, we can see that Mahindra & Mahindra Ltd's CPM values have remained relatively stable in the range of 9.79% to 12.86% over the past five years. However, his CPM in 202203 increased significantly compared to the previous year (202103), indicating a potential increase in advertising spend. Also note that we do not have information about the company's earnings, profits or other financial metrics that are necessary for a more comprehensive analysis of the company's performance.

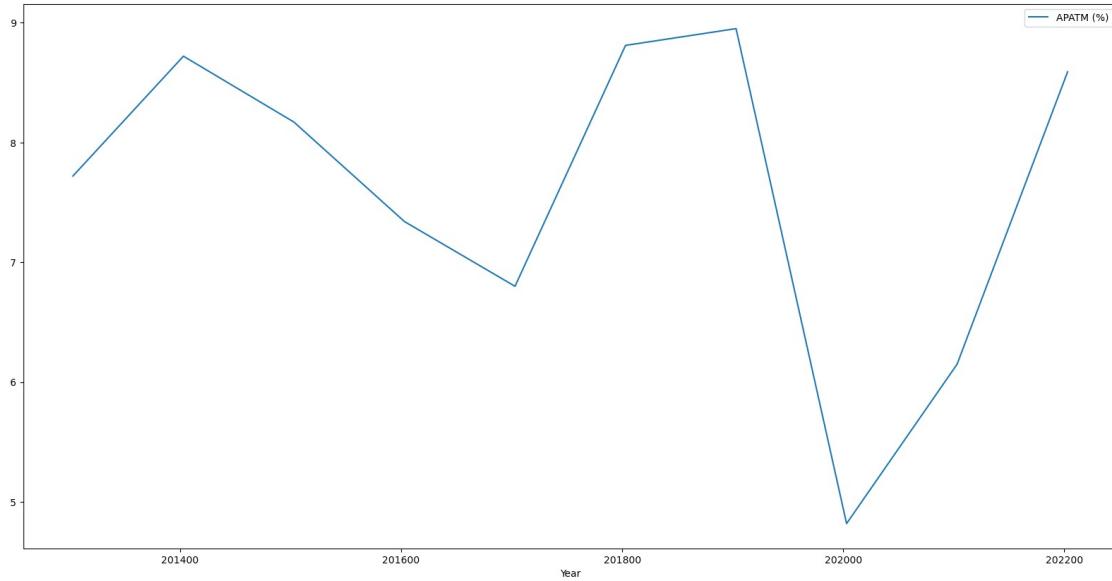
APATM (%)

```
sns.jointplot(x='Year', y='APATM (%)', data=df, color='orange')
```

```
<seaborn.axisgrid.JointGrid at 0x254a7160730>
```

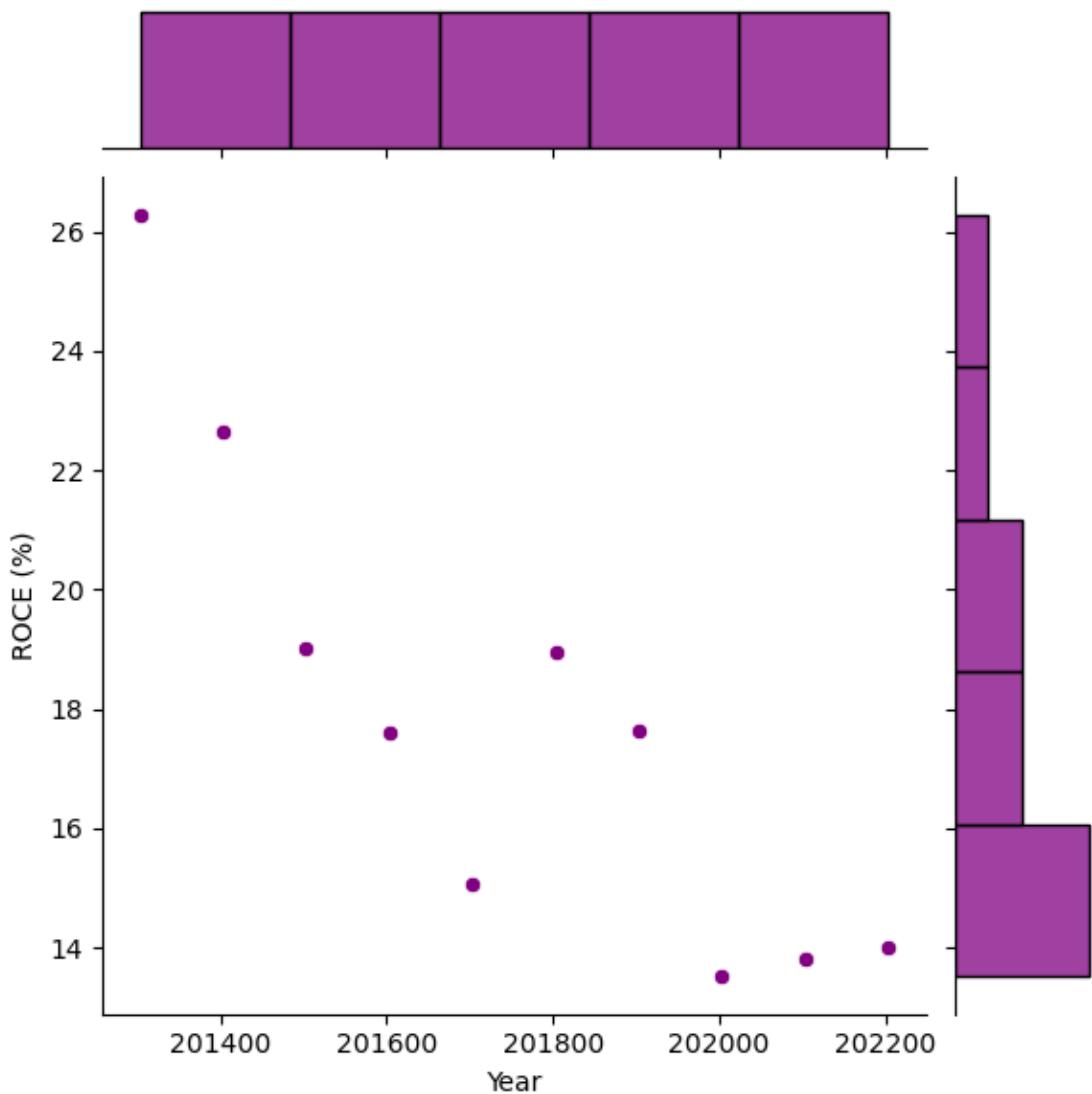


```
df.plot(kind='line', x='Year', y='APATM (%)', figsize=(20,10))  
<AxesSubplot:xlabel='Year'>
```



Data appears to represent Mahindra & Mahindra Ltd's Annual Average Total Market Return (APATM) for the period 2013-2022. The trend line shows that the company's APATM has fluctuated over the years, with a high of 8.95% in 2019 and a low of 4.82% in 2020. His APATM for the company has been flat over the years, and typically he's above 6%, which is a plus. However, it is important to note that APATM is merely a metric used to analyze a company's financial performance and should not be relied upon solely to make investment decisions. It is important to consider other financial metrics such as revenue growth, profitability, debt, and broader economic and industry trends before making any investment decision.

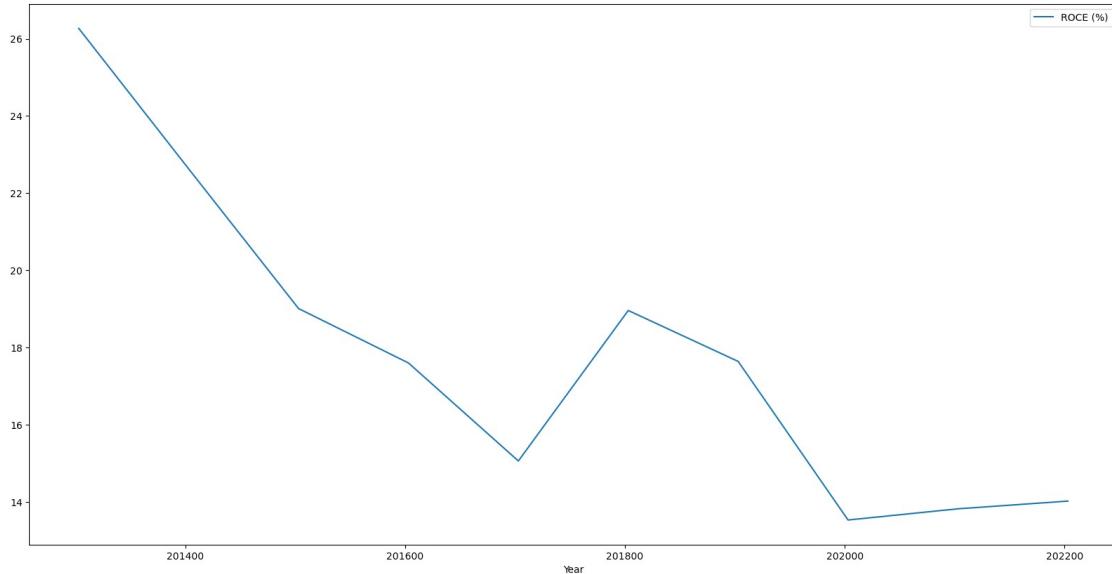
```
sns.jointplot(x='Year', y='ROCE (%)', data=df, color='purple')
<seaborn.axisgrid.JointGrid at 0x254a28c1160>
```



ROCE (%)

```
df.plot(kind='line', x='Year', y='ROCE (%)', figsize=(20,10))
```

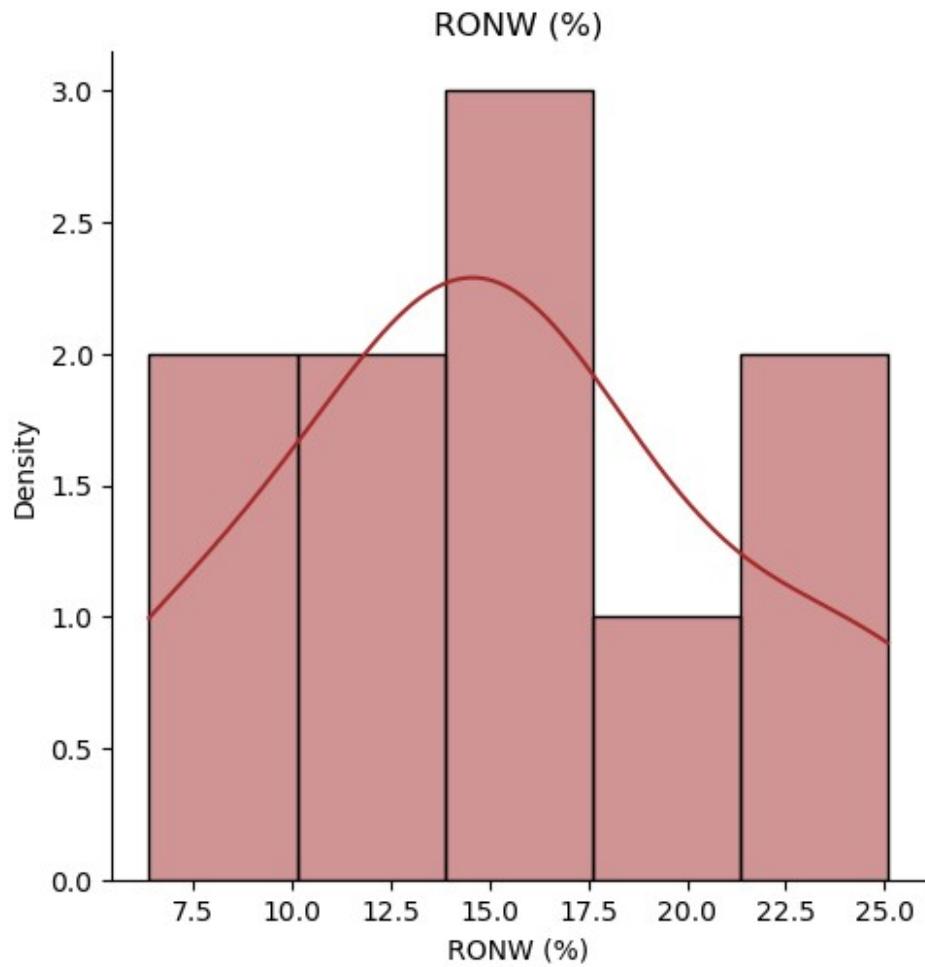
```
<AxesSubplot:xlabel='Year'>
```



Last year's 2022 ROCE was 14.02%, slightly above the previous year's ROCE of 13.82%. However, ROCE shows a downward trend from 18.96% in 2018. Despite the decline, the company's ROCE remains at a healthy level and above the industry average. This shows that the company is making good use of its capital and making a profit. Overall, Mahindra & Mahindra Ltd appears to be a financially sound company with a consistent track record of maintaining a healthy ROCE.

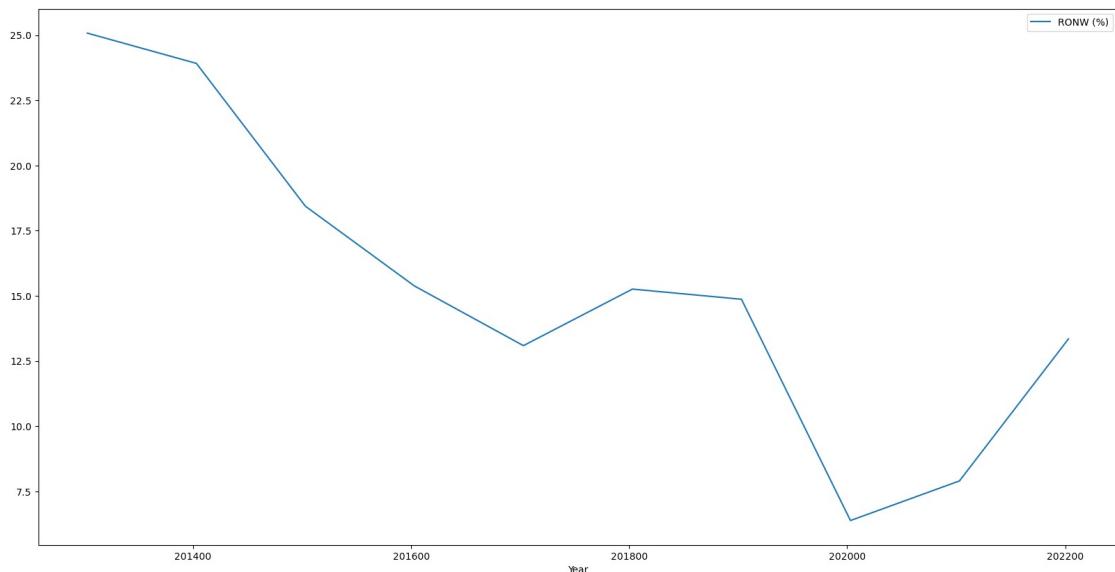
RONW (%)

```
sns.displot(df['RONW (%)'], kde=True, color='brown')
plt.xlabel('RONW (%)')
plt.ylabel('Density')
plt.title('RONW (%)')
plt.show()
```



```
df.plot(kind='line', x='Year', y='RONW (%)', figsize=(20,10))
```

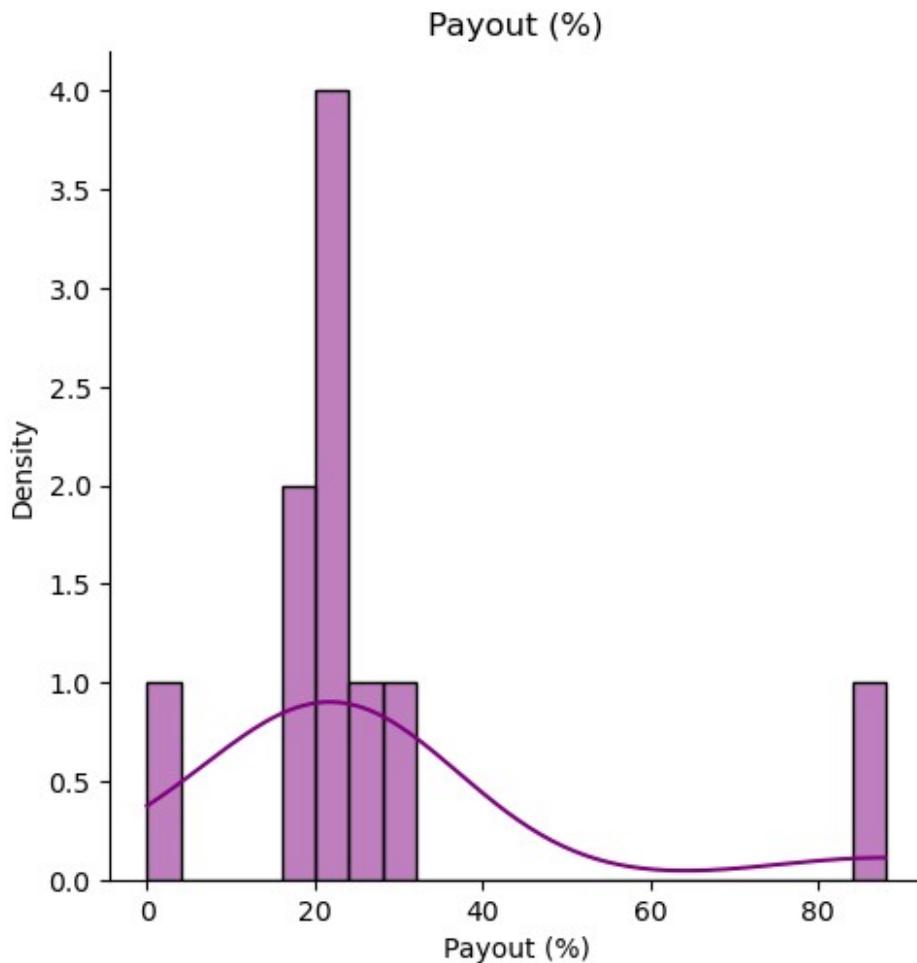
```
<AxesSubplot:xlabel='Year'>
```



The RONW value trendline, we can see that the company's RONW has fluctuated over the past decade. The highest value for RONW was 25.08% reported in 2013 and the lowest value was 6.38% reported in 2020. In general, a higher RONW indicates that the company is making more money for the money invested by its shareholders. A consistently high RONW is therefore considered a positive indicator of a company's financial health. However, the fluctuations in his RORW value over the last decade show that Mahindra & Mahindra Ltd has experienced ups and downs in terms of profitability. It is important to note that, like many other companies around the world, the COVID-19 pandemic may have impacted the company's 2020 financial performance. Overall, it is difficult to draw conclusions about the financial health of Mahindra & Mahindra Ltd based on this limited data. A thorough analysis requires more financial metrics and context.

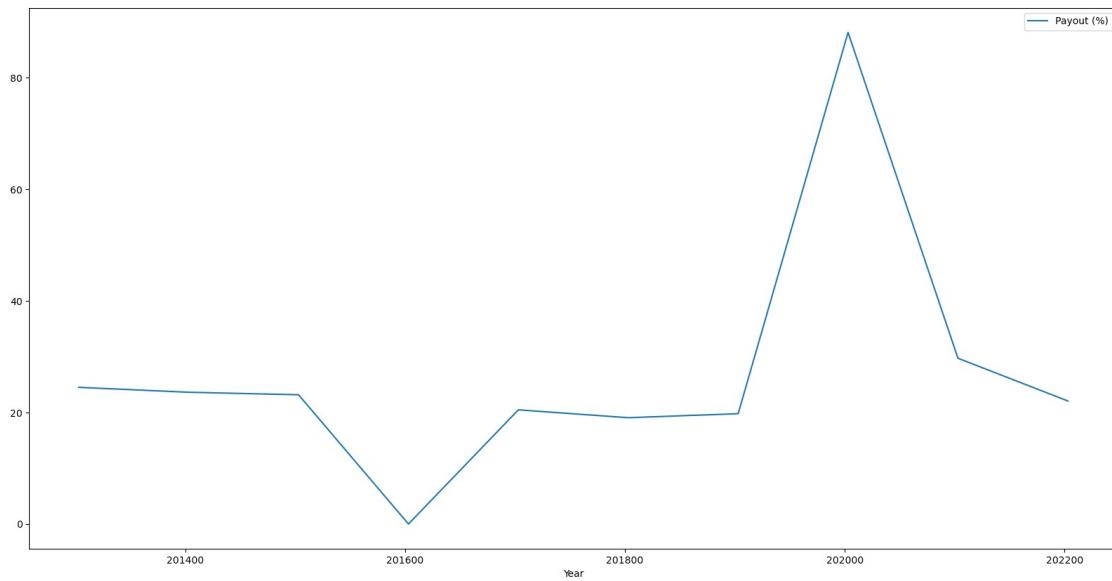
Payout (%)

```
sns.displot(df['Payout (%)'], kde=True, color='purple')
plt.xlabel('Payout (%)')
plt.ylabel('Density')
plt.title('Payout (%)')
plt.show()
```



```
df.plot(kind='line', x='Year', y='Payout (%)', figsize=(20,10))
```

```
<AxesSubplot:xlabel='Year'>
```



The dividend payout ratio fluctuates every year from 0% in 2016 to a peak of 88.06% in 2020. Overall, payout ratios are somewhat volatile and do not always follow a clear trend line over time. Note that a high payout ratio in any given year does not necessarily indicate a sustainable dividend policy, as companies may adjust their dividends in response to changes in financial performance and other factors.. In addition to analyzing dividend payments, investors may need to consider other factors when evaluating Mahindra & Mahindra Ltd as a potential investment, such as: B. Company financial performance, market position, and growth prospects.

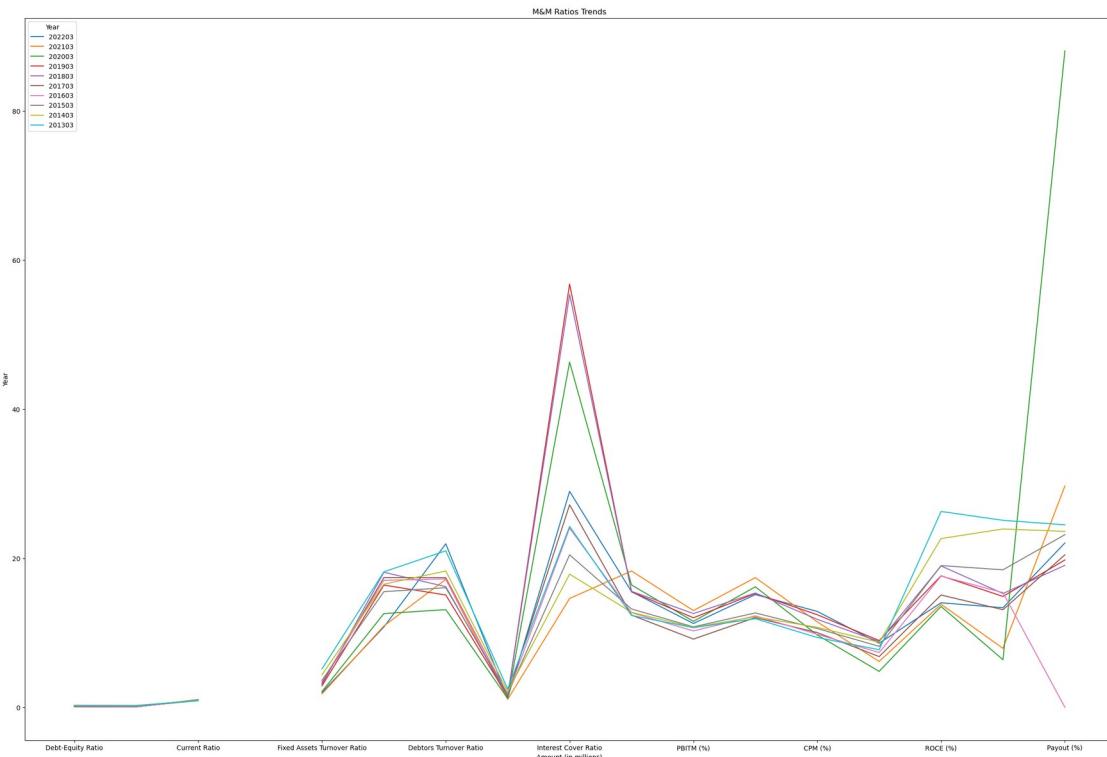
Trendline Graphs Of Mahindra & Mahindra

```
import pandas as pd
from statistics import stdev
from statistics import mean
from numpy import NAN as nan
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
from sklearn.linear_model import LinearRegression
import statistics as stats
import os

#Load the data into a pandas DataFrame
df = pd.read_csv(r'C:\Users\Anonymous\Documents\M&M Ratios.csv',
index_col=0)

# Transpose the DataFrame to make years the index and financial items
# the columns
df_t = df.transpose()

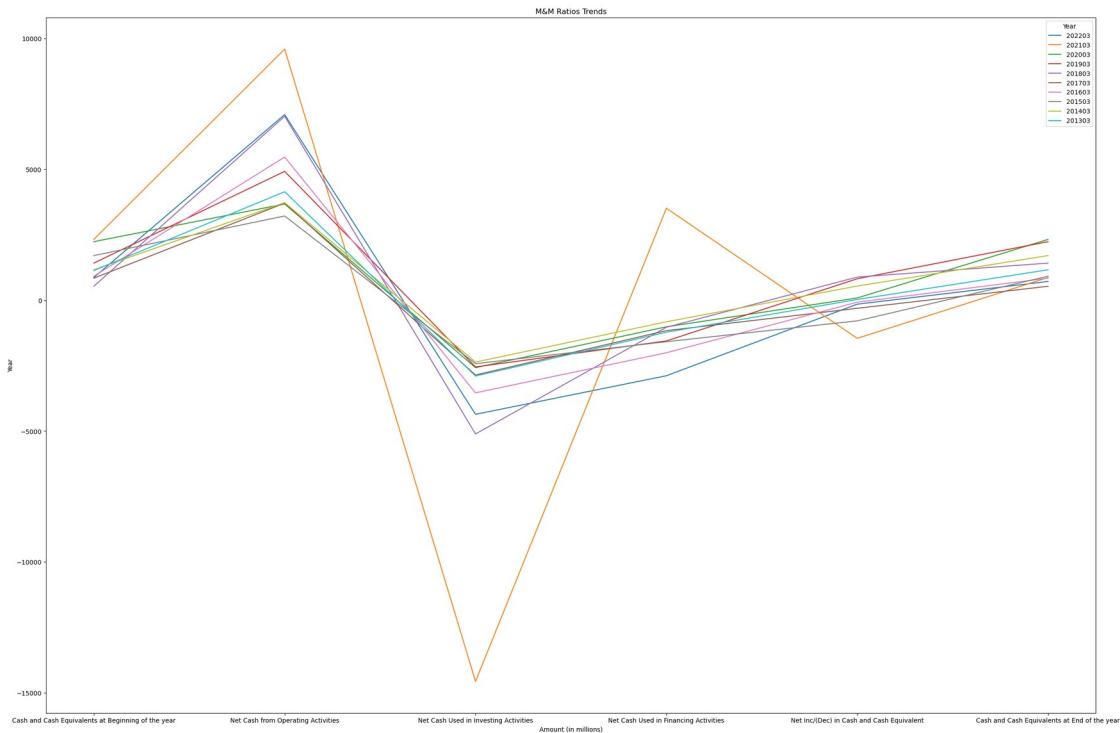
# Plot the DataFrame to visualize the trends over time
df_t.plot(kind='line', figsize=(30,20))
plt.xlabel('Amount (in millions)')
plt.ylabel('Year')
plt.title('M&M Ratios Trends')
plt.show()
```



```
#Load the data into a pandas DataFrame
df = pd.read_csv(r'C:\Users\Anonymous\Documents\M&M cash flow.csv',
index_col=0)

# Transpose the DataFrame to make years the index and financial items
# the columns
df_t = df.transpose()

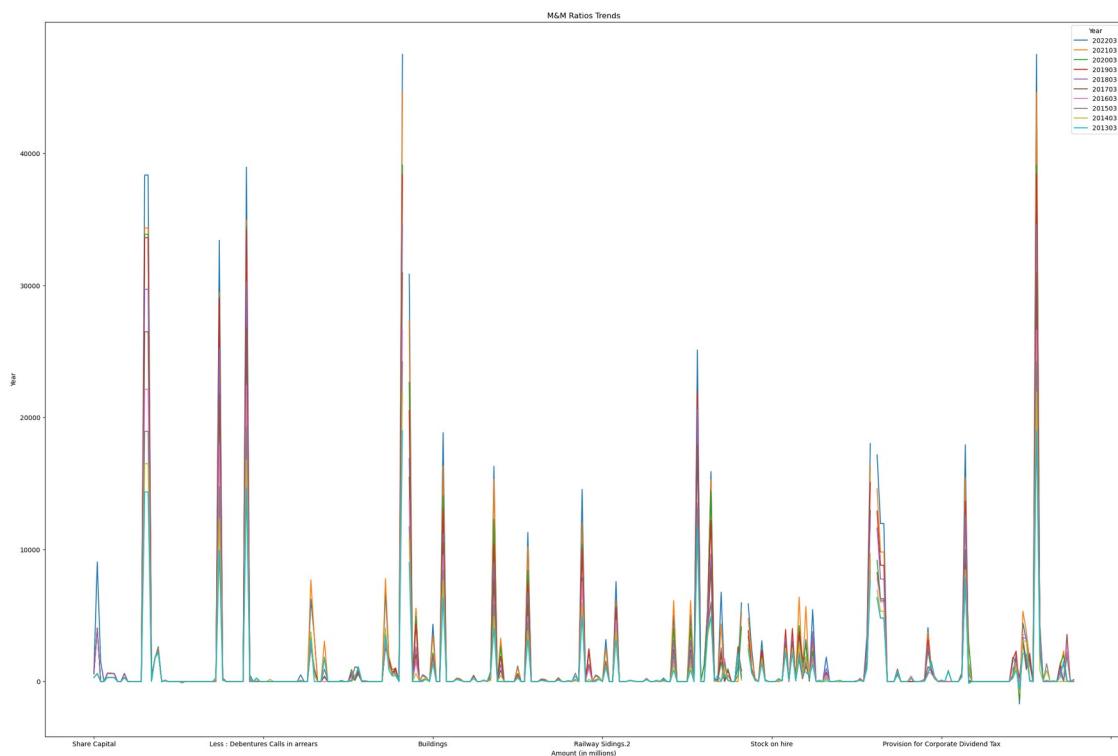
# Plot the DataFrame to visualize the trends over time
df_t.plot(kind='line', figsize=(30,20))
plt.xlabel('Amount (in millions)')
plt.ylabel('Year')
plt.title('M&M Ratios Trends')
plt.show()
```



```
#Load the data into a pandas DataFrame
df1 = pd.read_csv(r'C:\Users\Anonymous\Downloads\BalanceSheet_.csv',
index_col=0)

# Transpose the DataFrame to make years the index and financial items
# the columns
df_t1 = df1.transpose()

# Plot the DataFrame to visualize the trends over time
df_t1.plot(kind='line', figsize=(30,20))
plt.xlabel('Amount (in millions)')
plt.ylabel('Year')
plt.title('M&M Ratios Trends')
plt.show()
```



```

import pandas as pd
from statistics import stdev
from statistics import mean
from numpy import NAN as nan
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
from sklearn.linear_model import LinearRegression
import statistics as stats
import os

df = pd.read_csv(r'C:\Users\Anonymous\Downloads\MPS M&M.csv')

pd.set_option('display.max_rows',None)

df

```

	Date	Open	High	Low	Close	Volume	No of Trades
0	20230452021	1,162.00	1,224.60	1,148.30	1,212.80	698308	
1	20230394169	1,279.85	1,305.50	1,124.00	1,158.55	1543617	
2	20230268798	1,383.00	1,396.00	1,248.65	1,269.80	1179006	
3	20230179632	1,250.00	1,384.95	1,231.00	1,378.60	1193713	
4	20221282122	1,315.00	1,317.50	1,206.05	1,249.30	1602493	
5	20221190359	1,358.50	1,366.30	1,201.65	1,307.20	3672814	
6	20221081563	1,266.00	1,358.90	1,196.30	1,346.75	3969327	
7	202209152024	1,282.90	1,365.90	1,212.00	1,268.70	4257429	
8	202208131061	1,195.00	1,314.80	1,186.30	1,308.75	4359541	
9	202207100122	1,090.10	1,192.55	1,064.75	1,164.75	3411381	
10	202206121392	1,039.80	1,121.00	972.9	1,095.05	2644064	
11	202205131159	916.8	1,043.15	854.45	1,033.90	4390709	
12	202204104089	814.65	942.9	808.45	922	2420311	
13	202203104292	790.95	812.95	671	805.8	9030144	
14	20220290908	894.8	894.8	780.6	790.95	2112447	
15	20220184622	843.5	909.7	823	885	2451777	

16	202112	833	868.75	797.05	837.3	1949785
73303						
17	202111	890.45	978.9	828.9	835.75	4919844
148779						
18	202110	802.7	970.95	788	883.8	5532775
102708						
19	202109	793.05	820.95	729.55	802.95	4055226
107567						
20	202108	751	803.8	744.4	793.05	3205604
114673						
21	202107	785.5	798.5	725	743.2	2598683
77984						
22	202106	814.5	821.85	762.55	778.35	3390616
116264						
23	202105	748	852.5	731.1	807.9	4415900
152418						
24	202104	800.05	837.5	738.95	752.85	3789725
127971						
25	202103	817	876.45	783.25	795.1	3812049
94607						
26	202102	750.5	952.15	741.35	804.85	7959459
184020						
27	202101	726	843.7	723.4	749.9	5460244
131206						
28	202012	736.6	764.1	660	720.6	4697928
101789						
29	202011	596	745	590	720.05	6627974
134709						
30	202010	612.95	647.45	587.3	593.85	3926045
82119						
31	202009	610	666.35	566	607.65	5270217
131690						
32	202008	613.8	648.55	595.3	606.5	4059293
93440						
33	202007	511.05	624.9	494.5	606.5	7216226
126399						
34	202006	440.25	527.4	440.25	510.7	5360670
122689						
35	202005	351.1	449.5	341.1	436.4	5905726
114961						
36	202004	284	395	265.55	366.6	5145904
122497						
37	202003	456	482.25	245.8	285	4486519
115322						
38	202002	570	589.7	453.8	456.4	2544382
58011						
39	202001	534.4	589.85	519.1	567.35	2060533
53928						
40	201912	527.95	539.3	502.7	531.45	2477094
55088						

41	201911	614	614	528.35	530.05	2358494
53932						
42	201910	553	621	537	606.1	4512058
53768						
43	201909	519	601.9	503.5	547.25	3496197
69731						
44	201908	549.4	563.7	502.85	528.9	3001467
62905						
45	201907	658	675	541.65	550.25	2828295
61324						
46	201906	648.5	662.75	608	655.9	23848587
52028						
47	201905	646.85	682.35	598	647.1	3399703
67043						
48	201904	679	695.5	640	645.45	4402559
58743						
49	201903	651.7	703.8	642	671.8	6921754
73315						
50	201902	689	715	615.75	646.55	5458095
96732						
51	201901	805.1	813.95	662	680.8	6689698
118114						
52	201812	801	814	695.2	803.7	4033605
86367						
53	201811	769	808	738.15	790.2	3505500
62508						
54	201810	863.7	863.7	715.15	763.35	5340715
98711						
55	201809	976.6	978	840	860.7	3067631
80791						
56	201808	936	992	910	965.25	2213550
52671						
57	201807	908.5	940.95	878.6	933.9	2545847
58451						
58	201806	924	927.75	874.55	896.8	2395620
59825						
59	201805	880	932.45	813	923.5	3516965
67008						
60	201804	743.25	878.4	738.2	872.65	3760851
49155						
61	201803	730	759.75	704.55	740.2	3193735
43932						
62	201802	765	802.8	700.15	728.75	6020125
65143						
63	201801	752	775.5	738.5	763.45	3228096
56786						
64	201712	705.6	785.58	683.18	751.05	3858411
69053						
65	201711	672.5	722.23	660.5	705.25	3173437
67570						

66	201710	628.03	696.75	628	672.5	1320514
45994						
67	201709	677.48	677.48	612.5	626.88	1335633
53698						
68	201708	701.5	716.98	666.55	672.38	1493677
44027						
69	201707	675.5	711.88	671.55	701	3055896
64443						
70	201706	715	729.75	672.2	673.83	2613101
55096						
71	201705	667.28	724.5	650.3	708.18	1820569
59727						
72	201704	647.28	681.5	626.9	667.28	5639199
43670						
73	201703	658	680.85	628.75	642.35	2116249
59096						
74	201702	622	663.33	613.75	653.48	2095212
74080						
75	201701	592.5	634.5	585.55	619.68	2038016
73927						
76	201612	593	608.73	570.9	592.23	1462513
54125						
77	201611	659	696.5	577	592.98	2354968
87355						
78	201610	701.5	727	645	659.03	1192820
50867						
79	201609	721.2	750.55	675.1	702.98	1098370
61743						
80	201608	734	754.4	702.58	719	1907086
75898						
81	201607	714.95	742.5	714.95	733.45	1491257
53680						
82	201606	665.5	718.7	657.5	714.48	2191273
88753						
83	201605	667.48	681.93	630.53	662.35	2040375
64084						
84	201604	609.95	698.23	593.9	665.88	1766166
82256						
85	201603	612	640	592	604.83	1775368
71545						
86	201602	616.4	634.03	546	613.4	2170640
73127						
87	201601	632.5	639	551.2	616.35	1054707
51342						
88	201512	684.5	690.4	598.15	635.78	1803695
65985						
89	201511	601	684.83	600.5	683.63	1075943
55625						
90	201510	631.5	650.45	587.5	591.25	1873554
42340						

91	201509	611	637.38	547.5	630.35	2025410
58556						
92	201508	677.5	720.73	603	611.48	1441497
55940						
93	201507	642	689	623	680.8	1146303
47215						
94	201506	627.5	671.08	588.45	640.6	1974457
55791						
95	201505	578.23	638.5	572.73	630.1	844988
51338						
96	201504	591.78	644.5	569.88	572.58	1902805
70309						
97	201503	647.5	653.9	576.95	593.58	1026366
86654						
98	201502	635	651.88	553	645.75	1509690
125370						
99	201501	617.25	686.8	601	631.5	1220505
94241						
100	201412	662	668	600.2	617.25	914731
72618						
101	201411	647.5	663.5	610.88	661.88	1791457
92945						
102	201410	680.05	700.1	605	651.7	1049445
84379						
103	201409	707.4	710.5	664.25	681.15	1483663
89996						
104	201408	597	706.95	581.5	703.43	1384596
127737						
105	201407	576	625.5	565.13	601.95	14610398
138732						
106	201406	615	634.38	567.58	573.95	1697097
128340						
107	201405	534	632.33	523.05	615.25	2269152
163451						
108	201404	495	545.5	482.35	536.08	1324978
85239						
109	201403	486.95	527	470.35	490.33	1821503
75051						
110	201402	443.85	487.5	423.5	486.73	1252141
61273						
111	201401	472.5	479.38	425.5	445.23	2419726
61183						
112	201312	469	489.5	462.55	471.75	1208056
54305						
113	201311	444	482.5	430.13	472.8	2251737
99332						
114	201310	416.5	454	411.13	444.18	2036429
105944						
115	201309	387.03	445.7	374.5	413.9	3043162
125279						

116	201308	459.38	461.25	370.75	390.5	3377126
117	186					
117	201307	484.5	496.25	431.4	456.08	4750225
113	827					
118	201306	482	499.95	453.7	483.28	2005837
890	75					
119	201305	457.5	513.23	455.05	482.65	2666840
852	25					
120	201304	433	465.35	404.5	461.5	1806126
535	04					
121	201303	434.75	466	420.28	430.58	1826346
472	33					

Net Turnover	Market Cap	Avg. Price	Avg. Volume	Avg.
Turnover \				
0	8,33,973.91	1,50,815.18	1,197.07	58,192.33
69,497.83				
1	18,45,353.83	1,44,069.03	1,193.31	73,505.57
87,873.99				
2	15,90,935.94	1,57,903.29	1,344.40	58,950.30
79,546.80				
3	15,64,129.39	1,71,386.52	1,306.46	56,843.48
74,482.35				
4	20,12,355.70	1,55,312.04	1,262.66	72,840.59
91,470.71				
5	48,11,817.32	1,62,510.13	1,286.01	1,74,895.90
2,29,134.16				
6	49,66,426.80	1,67,426.96	1,260.39	2,08,911.95
2,61,390.88				
7	54,71,268.26	1,57,723.84	1,287.57	1,93,519.50
2,48,694.01				
8	53,84,077.90	1,62,702.82	1,263.05	2,17,977.05
2,69,203.90				
9	39,32,015.38	1,44,800.85	1,143.50	1,62,446.71
1,87,238.83				
10	27,65,043.44	1,36,135.80	1,038.37	1,20,184.73
1,25,683.79				
11	40,84,046.88	1,28,533.68	917.94	2,09,081.38
1,94,478.42				
12	21,23,796.90	1,14,622.35	877.53	1,27,384.79
1,11,778.78				
13	69,33,093.82	1,00,176.46	759.81	4,30,006.86
3,30,147.32				
14	17,77,144.14	98,330.31	841.96	1,05,622.35
88,857.21				
15	21,32,463.47	1,10,022.54	863.61	1,22,588.85
1,06,623.17				
16	16,34,600.64	1,04,092.51	833.62	84,773.26
71,069.59				
17	44,74,286.87	1,03,899.82	893.91	2,45,992.20

2,23,714.34				
18 49,34,859.23	1,09,873.36	885.04	2,76,638.75	
2,46,742.96				
19 31,10,345.31	99,822.15	764.04	1,93,106.00	
1,48,111.68				
20 24,99,617.62	98,591.38	777.69	1,52,647.81	
1,19,029.41				
21 19,97,746.13	92,394.07	767.63	1,23,746.81	
95,130.77				
22 27,15,171.51	96,763.89	797.04	1,54,118.91	
1,23,416.89				
23 34,78,485.52	1,00,437.53	784.91	2,20,795.00	
1,73,924.28				
24 30,04,436.61	93,593.75	788.85	1,99,459.21	
1,58,128.24				
25 32,00,756.87	98,846.24	835.78	1,81,526.14	
1,52,416.99				
26 69,66,633.65	1,00,058.35	871.99	3,97,972.95	
3,48,331.68				
27 43,00,885.96	93,227.01	782.21	2,73,012.20	
2,15,044.30				
28 34,18,124.22	89,584.45	727.09	2,13,542.18	
1,55,369.28				
29 44,76,105.33	89,516.08	656.64	3,31,398.70	
2,23,805.27				
30 24,12,771.36	73,826.99	612.65	1,86,954.52	
1,14,893.87				
31 32,90,144.69	75,542.59	618.37	2,39,555.32	
1,49,552.03				
32 25,28,748.14	75,399.63	616.83	1,93,299.67	
1,20,416.58				
33 41,25,040.24	75,399.63	572.43	3,13,748.96	
1,79,349.58				
34 26,33,607.14	63,490.22	493.36	2,43,666.82	
1,19,709.42				
35 23,63,561.53	54,252.92	400.92	3,10,827.68	
1,24,397.98				
36 17,41,083.99	45,575.44	339.42	2,85,883.56	
96,726.89				
37 16,22,464.78	35,430.99	373.77	2,13,643.76	
77,260.23				
38 13,45,424.88	56,739.31	531.44	1,27,219.10	
67,271.24				
39 11,41,042.17	70,532.53	555.09	89,588.39	
49,610.53				
40 12,97,748.37	66,069.47	521.71	1,17,956.86	
61,797.54				
41 13,43,118.52	65,895.42	564.78	1,17,924.70	
67,155.93				
42 25,70,563.69	75,349.90	581.75	2,25,602.90	

1,28,528.18				
43 19,10,162.17	68,033.71	539	1,84,010.37	
1,00,534.85				
44 16,00,350.16	65,752.45	533.87	1,50,073.35	
80,017.51				
45 16,96,800.28	68,406.67	606.4	1,22,969.35	
73,773.93				
46 1,54,35,767.85	81,541.00	638.56	12,55,188.79	
8,12,408.83				
47 21,66,605.61	80,446.99	640.13	1,54,531.95	
98,482.07				
48 29,43,730.40	80,241.86	666.96	2,31,713.63	
1,54,933.18				
49 46,24,470.26	83,517.68	673.38	3,64,302.84	
2,43,393.17				
50 35,73,910.80	80,378.61	654.79	2,72,904.75	
1,78,695.54				
51 48,08,638.84	84,636.55	715.92	2,90,856.43	
2,09,071.25				
52 30,61,688.39	99,915.38	760.63	2,01,680.25	
1,53,084.42				
53 26,95,643.69	98,237.07	772.58	1,75,275.00	
1,34,782.18				
54 40,48,088.65	94,899.10	759.41	2,54,319.76	
1,92,766.13				
55 28,14,051.89	1,07,001.58	927.66	1,70,423.94	
1,56,336.22				
56 21,04,633.03	1,19,999.16	951.53	1,05,407.14	
1,00,220.62				
57 23,29,621.82	1,16,101.75	913.88	1,15,720.32	
1,05,891.90				
58 21,74,258.44	1,11,489.51	906.68	1,14,077.14	
1,03,536.12				
59 30,37,925.89	1,14,808.83	858.21	1,59,862.05	
1,38,087.54				
60 29,59,051.22	1,08,487.20	803.11	1,79,088.14	
1,40,907.20				
61 23,58,830.91	92,021.11	734.63	1,68,091.32	
1,24,149.00				
62 44,92,886.88	90,597.66	742.52	3,16,848.68	
2,36,467.73				
63 24,43,481.51	94,911.53	758.15	1,46,731.64	
1,11,067.34				
64 48,24,006.57	93,369.98	726.98	1,92,920.55	
2,41,200.33				
65 44,40,715.17	87,676.68	699.25	1,44,247.14	
2,01,850.69				
66 17,58,323.93	83,537.95	669.93	66,025.70	
87,916.20				
67 17,15,660.97	77,870.41	645.42	63,601.57	

81,698.14				
68 20,75,091.18	83,522.42	690.91	71,127.48	
98,813.87				
69 42,25,942.67	87,078.22	691.59	1,45,518.86	
2,01,235.37				
70 36,61,130.59	83,702.54	698.6	1,24,433.38	
1,74,339.55				
71 24,71,507.23	87,969.50	674.57	82,753.14	
1,12,341.24				
72 72,17,301.73	82,888.90	643.92	3,13,288.83	
4,00,961.21				
73 27,50,274.47	79,792.72	650.32	96,193.14	
1,25,012.48				
74 26,95,831.71	81,174.66	647	1,10,274.32	
1,41,885.88				
75 24,90,322.60	76,976.03	609.96	97,048.38	
1,18,586.79				
76 17,18,766.32	73,566.19	587.78	66,477.86	
78,125.74				
77 29,96,388.23	73,659.35	630.94	1,12,141.33	
1,42,685.15				
78 16,36,900.69	81,864.09	674.22	62,780.00	
86,152.67				
79 15,68,242.02	87,323.55	711.74	54,918.50	
78,412.10				
80 27,80,196.11	89,314.18	724.02	86,685.73	
1,26,372.55				
81 21,77,809.90	91,109.16	728.8	74,562.85	
1,08,890.50				
82 30,02,089.15	88,752.08	684.94	99,603.32	
1,36,458.60				
83 27,02,524.89	82,277.12	661.96	92,744.32	
1,22,842.04				
84 22,94,160.23	82,714.99	643.65	98,120.33	
1,27,453.35				
85 21,85,785.83	75,131.36	612.02	88,768.40	
1,09,289.29				
86 26,16,517.51	76,196.55	603.21	1,03,363.81	
1,24,596.07				
87 12,63,221.46	76,563.00	596.88	52,735.35	
63,161.07				
88 22,77,258.21	78,975.97	643	81,986.14	
1,03,511.74				
89 13,71,903.27	84,919.90	641.63	56,628.58	
72,205.44				
90 23,78,125.70	73,445.08	629.67	93,677.70	
1,18,906.28				
91 23,70,336.36	78,302.08	589.01	1,01,270.50	
1,18,516.82				
92 18,97,253.20	75,957.42	659.93	68,642.71	

90,345.39				
93 14,96,256.38	84,568.98	652.47	49,839.26	
65,054.63				
94 24,98,653.23	79,575.33	624.41	89,748.05	
1,13,575.15				
95 10,33,537.93	78,271.02	610.08	42,249.40	
51,676.90				
96 22,98,209.71	71,125.27	607.1	1,00,147.63	
1,20,958.41				
97 12,45,638.30	73,733.89	607.48	48,874.57	
59,316.11				
98 18,16,044.10	80,215.07	605.83	75,484.50	
90,802.21				
99 15,62,229.77	78,444.93	636.97	58,119.29	
74,391.89				
100 11,51,754.66	76,674.80	627.91	41,578.68	
52,352.48				
101 22,48,297.13	82,218.11	629.4	99,525.39	
1,24,905.40				
102 13,63,131.05	80,954.17	646.06	58,302.50	
75,729.50				
103 20,46,356.03	84,612.45	691.98	67,439.23	
93,016.18				
104 18,13,764.09	87,376.64	657.52	72,873.47	
95,461.27				
105 1,70,41,377.33	74,145.79	599.36	6,64,109.00	
7,74,608.06				
106 20,26,018.84	70,696.87	597.21	80,814.14	
96,477.09				
107 25,65,191.66	75,784.03	562.83	1,08,054.86	
1,22,151.98				
108 13,49,551.86	66,031.57	510.54	73,609.89	
74,975.10				
109 17,96,800.57	60,396.27	489.96	86,738.24	
85,561.93				
110 11,41,204.49	59,952.84	457.6	65,902.16	
60,063.39				
111 21,78,967.24	54,841.03	447.76	1,05,205.48	
94,737.71				
112 11,52,221.69	58,108.28	475.27	57,526.48	
54,867.70				
113 20,69,187.88	58,237.61	460.68	1,12,586.85	
1,03,459.39				
114 17,72,419.52	54,711.70	435.14	96,972.81	
84,400.93				
115 24,83,021.24	50,982.55	412.9	1,52,158.10	
1,24,151.06				
116 28,11,603.37	48,100.23	413.59	1,68,856.30	
1,40,580.17				
117 43,26,359.93	56,177.49	460.74	2,06,531.52	

1,88,102.61				
118	19,22,085.83	59,527.88	479.48	1,00,291.85
96,104.29				
119	25,90,097.39	59,267.49	484.75	1,15,949.57
1,12,612.93				
120	15,75,519.74	56,670.35	431.48	90,306.30
78,775.99				
121	16,28,557.75	52,872.89	445.44	96,123.47
85,713.57				

	Sensex
0	59,655.06
1	58,991.52
2	58,962.12
3	59,549.90
4	60,840.74
5	63,099.65
6	60,746.59
7	57,426.92
8	59,537.07
9	57,570.25
10	53,018.94
11	55,566.41
12	57,060.87
13	58,568.51
14	56,247.28
15	58,014.17
16	58,253.82
17	57,064.87
18	59,306.93
19	59,126.36
20	57,552.39
21	52,586.84
22	52,482.71
23	51,937.44
24	48,782.36
25	49,509.15
26	49,099.99
27	46,285.77
28	47,751.33
29	44,149.72
30	39,614.07
31	38,067.93
32	38,628.29
33	37,606.89
34	34,915.80
35	32,424.10
36	33,717.62
37	29,468.49
38	38,297.29

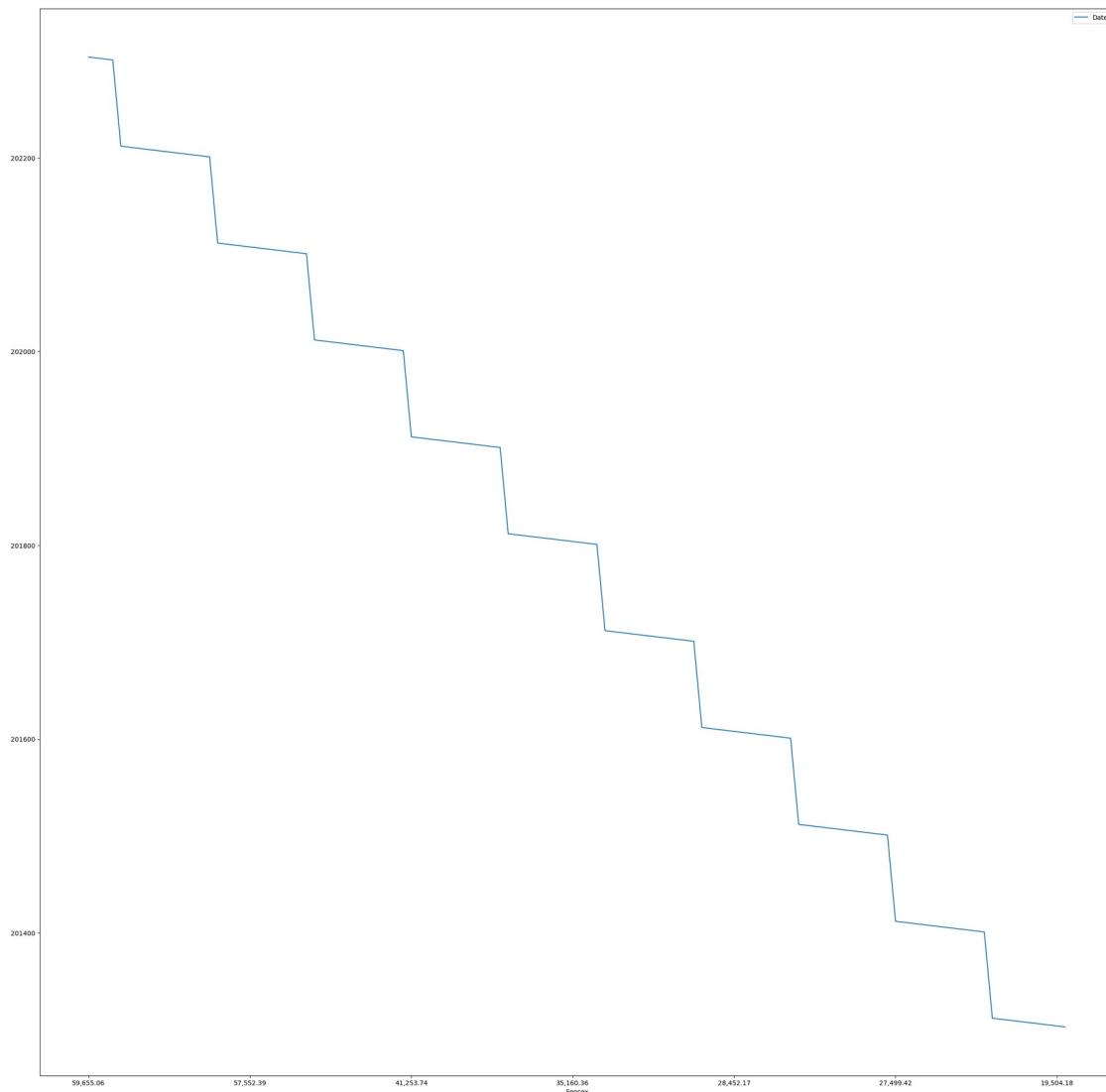
39	40,723.49
40	41,253.74
41	40,793.81
42	40,129.05
43	38,667.33
44	37,332.79
45	37,481.12
46	39,394.64
47	39,714.20
48	39,031.55
49	38,672.91
50	35,867.44
51	36,256.69
52	36,068.33
53	36,194.30
54	34,442.05
55	36,227.14
56	38,645.07
57	37,606.58
58	35,423.48
59	35,322.38
60	35,160.36
61	32,968.68
62	34,184.04
63	35,965.02
64	34,056.83
65	33,149.35
66	33,213.13
67	31,283.72
68	31,730.49
69	32,514.94
70	30,921.61
71	31,145.80
72	29,918.40
73	29,620.50
74	28,743.32
75	27,655.96
76	26,626.46
77	26,652.81
78	27,930.21
79	27,865.96
80	28,452.17
81	28,051.86
82	26,999.72
83	26,667.96
84	25,606.62
85	25,341.86
86	23,002.00
87	24,870.69
88	26,117.54

```
89    26,145.67
90    26,656.83
91    26,154.83
92    26,283.09
93    28,114.56
94    27,780.83
95    27,828.44
96    27,011.31
97    27,957.49
98    29,361.50
99    29,182.95
100   27,499.42
101   28,693.99
102   27,865.83
103   26,630.51
104   26,638.11
105   25,894.97
106   25,413.78
107   24,217.34
108   22,417.80
109   22,386.27
110   21,120.12
111   20,513.85
112   21,170.68
113   20,791.93
114   21,164.52
115   19,379.77
116   18,619.72
117   19,345.70
118   19,395.81
119   19,760.30
120   19,504.18
121   18,835.77

df.columns
Index(['Date', 'Open', 'High', 'Low', 'Close', 'Volume', 'No of
Trades',
       'Net Turnover', 'Market Cap', 'Avg. Price', 'Avg. Volume',
       'Avg. Turnover', 'Sensex'],
      dtype='object')

df.plot(kind='line', x='Sensex', y='Date', figsize=(30,30))

<AxesSubplot:xlabel='Sensex'>
```



SENSEX

The Sensex is a financial exchange file comprising of 30 of the biggest and most effectively exchanged stocks on the Bombay Stock Trade (BSE), which is the essential stock trade of India. The Sensex, like any other stock market index, measures the performance of the Indian stock market as a whole. Changes in the Sensex can be indicative of broader economic trends.

Over the period from January 2014 to April 2023, the Sensex experienced both highs and lows. Both periods of sustained growth and decline were present. In this examination, we will zero in explicitly on the times of decline, fully intent on understanding what variables added to these decays, and what their suggestions were for the Indian economy.

Between January and October of 2018, the Sensex experienced one of its most significant declines. The Sensex lost more than 10% during this time, going from a high of

approximately 36,000 in January to a low of approximately 32,000 in October. As concerns grew about global trade tensions, rising interest rates, and slowing economic growth, this decline was part of a larger trend of declining stock markets worldwide.

As the COVID-19 pandemic began to spread globally in the first half of 2020, another period of decline occurred. At the end of March, the government in India imposed a nationwide lockdown that had a significant impact on the economy. Between January and March of 2020, investors panicked and sold their holdings, resulting in a 35% drop in the Sensex. However, as governments around the world began implementing stimulus measures and vaccine rollouts, the Sensex quickly recovered in the months that followed.

Further back, we can see that the Sensex experienced significant declines during the 2008 global financial crisis. As the crisis spread from the United States to the rest of the world, the Sensex fell by more than 50% between January 2008 and March 2009. A variety of factors contributed to this decline, including a general loss of faith in the financial system, tight credit markets, and a decrease in demand for goods and services.

The declines in the Sensex had significant repercussions for the Indian economy as a whole in each of these instances. At the point when the financial exchange falls, it can prompt a decrease in purchaser and business certainty, which thusly can prompt diminished speculation and spending. This can bring about more slow monetary development, higher joblessness, and other adverse results.

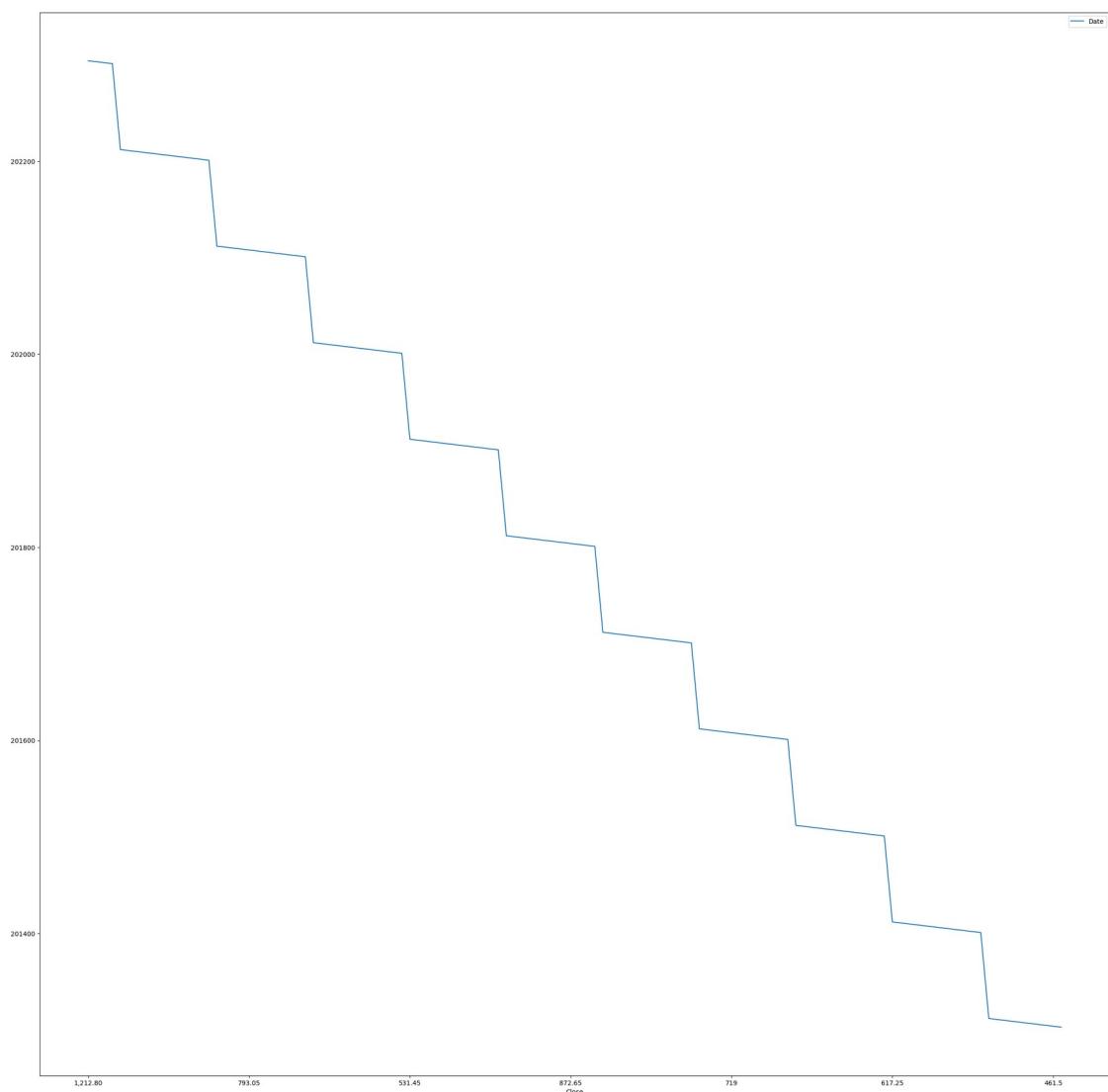
However, it's important to remember that stock market declines don't always have a straightforward or predictable effect. At times, a decrease in the financial exchange may really be gainful for the economy, by assisting with revising for exaggerated resources or by provoking financial backers to move their cash into additional useful regions.

In the case of the Sensex, it is abundantly clear that the declines we have experienced over the past few years have had both beneficial and detrimental effects on the Indian economy. They have, on the one hand, brought to light some of the weaknesses in the Indian financial system and motivated policymakers to take action to fix these problems. However, they have also contributed to a general sense of unpredictability and instability, which can make it challenging for consumers and businesses to make plans for the long term.

The Sensex is likely to continue experiencing ups and downs in the years to come, looking ahead. While it is difficult to foresee the future with sureness, there are various variables that could impact the presentation of the Indian securities exchange, including worldwide financial patterns, homegrown strategy choices, and changes in financial backer feeling.

```
df.plot(kind='line', x='Close', y='Date', figsize=(30,30))
```

```
<AxesSubplot:xlabel='Close'>
```



With its headquarters in Mumbai, Mahindra and Mahindra (M&M) is one of the most prominent automobile manufacturers in India. The organization is a piece of the Mahindra Gathering, a combination that works in a few businesses, including aviation, agribusiness, finance, friendliness, land, and retail. M&M has an enhanced item portfolio, which incorporates utility vehicles, business vehicles, bikes, and horticultural gear. The closing prices of M&M's shares from January 2014 to April 2023 will be the primary focus of this analysis. The information shows a declining pattern in the end costs of M&M's portions over this period, with in the middle between.

To begin, the closing price of M&M's shares in January 2014 was INR 905.75. The cost rose slowly, arriving at its top in June 2015 at INR 1,378.60. This represented a substantial increase of 52% from the beginning of the period. The price, on the other hand, began to fall in July 2015, reaching INR 793.05 in February 2016, a 42% decrease from the peak. High interest rates, a weak global market, and a slowing Indian economy were the primary causes of the decline.

In the wake of stirring things up around town in February 2016, the value began to recuperate bit by bit, arriving at INR 807.9 in September 2016. The price, on the other hand, began to fall again after the recovery, reaching INR 593.85 in February 2017. The government's demonetization move, which had an effect on the Indian economy and slowed vehicle demand, was primarily to blame for the decline.

In March 2017, the price began to rise once more, reaching INR 720.05 in June 2017. Once more, nonetheless, the recuperation was fleeting, and the value began to decline, arriving at INR 510.7 in August 2017. The Indian automotive market's slowdown, rising input costs, and increased competition were the primary causes of the drop.

In August 2017, the price reached its lowest point, and in January 2018, it reached INR 720.6. Notwithstanding, the recuperation was brief once more, and the value began to decline, arriving at INR 593.58 in February 2018. The decay was for the most part because of feeble deals of traveler vehicles, expanded contest, and rising fuel costs.

In June 2018, the price reached INR 661.88 after beginning a recovery in March 2018. However, the recovery was only temporary, and the price began to fall in October 2018, reaching INR 490.33. High interest rates, rising input costs, and a slowdown in the Indian economy were the primary causes of the decline.

In October 2018, the price reached its lowest point, and in February 2019, it reached INR 682.65. However, the recovery was only temporary, and the price began to fall in October 2019, reaching INR 413.9. The decay was for the most part because of a lull in the Indian auto market, expanded contest, and powerless buyer opinion.

The value began to recuperate again in November 2019 and arrived at INR 483.28 in January 2020. The price, on the other hand, began to fall again after the recovery, reaching INR 390.5 in March 2020. The COVID-19 pandemic, which resulted in a nationwide lockdown and a significant drop in vehicle demand, was primarily to blame for the decline.

Subsequent to raising a ruckus around town in Walk 2020, the value began to recuperate step by step, arriving at INR 681.

Share Price Of Mahindra and Mahindra

Several factors, including economic conditions, political stability, global economic trends, and investor sentiment, contribute to India's stock market volatility. The stock market's volatility is largely determined by the state of the economy. The stock market can be significantly affected by fiscal policies, inflation, interest rates, GDP growth, and other factors. For example, high interest rates or inflation can make it harder for consumers to buy things, which reduces demand for goods and services and ultimately reduces profits for businesses, which has an effect on stock prices. In a similar vein, stock prices can rise as a result of an increase in investor confidence and a positive GDP growth rate. The volatility of the stock market is also influenced by political stability. Investor confidence can be impacted by political instability, such as frequent policy shifts or corruption, which can cause stock prices to fall. On the other hand, stock prices can rise as a result of an improvement in the political climate and an increase in investor confidence. India's stock market volatility is also significantly influenced by global economic trends. The Indian stock market can be affected in a big way by changes in major economies like the US, China, and Europe. For instance, the Indian stock market was significantly affected by the 2008 global economic recession, which resulted in a sharp decline in stock prices. Volatility in the stock market can also be influenced by investor sentiments. News events, earnings reports from companies, and market rumors all have an impact on investor sentiment. Stock prices can rise as a result of bullish market sentiment caused by positive news events or strong earnings reports. On the other hand, negative news occasions or powerless profit reports can prompt a negative market feeling, prompting a decrease in stock costs.

To summarize, investor sentiments, economic conditions, political stability, global economic trends, and the complexity of the Indian stock market all play a role in its volatility. To make well-informed decisions regarding investments, one must have a comprehensive understanding of these factors.

```
import pandas as pd
import numpy as np

import statsmodels.api as sm

#import the CSV

mnmm = pd.read_csv('Mahindra.csv')

mnmm.info()

<class 'pandas.core.frame.DataFrame'>
RangeIndex: 2484 entries, 0 to 2483
Data columns (total 10 columns):
 #   Column           Non-Null Count  Dtype  
--- 
 0   Date            2484 non-null    float64 
 1   Open             2484 non-null    float64 
```

```
2  High                      2484 non-null  float64
3  Low                       2484 non-null  float64
4  Close                     2484 non-null  float64
5  Volume                    2484 non-null  float64
6  No of Trades              2484 non-null  float64
7  Net Turnover In Thousand 2484 non-null  float64
8  Market Cap                2484 non-null  float64
9  Sensex                   2484 non-null  float64
dtypes: float64(10)
memory usage: 194.2 KB
```

```
mnm.dtypes
```

```
Date                  float64
Open                 float64
High                 float64
Low                  float64
Close                float64
Volume               float64
No of Trades         float64
Net Turnover In Thousand float64
Market Cap           float64
Sensex               float64
dtype: object
```

```
import matplotlib.pyplot as plt
import seaborn as sns
```

```
linear_model = sm.OLS(v,mnm['Sensex']).fit()
```

```
linear_model.summary()
```

```
<class 'statsmodels.iolib.summary.Summary'>
```

```
"""
```

```
OLS Regression Results
```

```
=====
=====
Dep. Variable:                  Close      R-squared (uncentered):   0.957
Model:                          OLS        Adj. R-squared (uncentered): 0.957
Method: Least Squares          F-statistic: 5.577e+04
Date: Fri, 21 Apr 2023          Prob (F-statistic): 0.00
Time: 14:56:39                  Log-Likelihood: -16007.
No. Observations: 2484          AIC:
```

```

3.202e+04
Df Residuals:                 2483   BIC:
3.202e+04
Df Model:                      1

Covariance Type:      nonrobust
=====

=====      coef    std err      t      P>|t|      [0.025
0.975]
-----
Sensex      0.0188    7.95e-05    236.151     0.000      0.019
0.019
=====
=====      Omnibus:      342.908   Durbin-Watson:
0.005
Prob(Omnibus):      0.000   Jarque-Bera (JB):
267.558
Skew:           -0.708   Prob(JB):
7.95e-59
Kurtosis:        2.240   Cond. No.
1.00
=====
=====
```

Notes:

- [1] R^2 is computed without centering (uncentered) since the model does not contain a constant.
 - [2] Standard Errors assume that the covariance matrix of the errors is correctly specified.
- """

**The above method is wrong as evident from the lack of constant term in model
#Right way to do it**

```
#define y and x and use them

x = mnm['Sensex']
y = mnm['Close']

x = sm.add_constant(x)
linear_model = sm.OLS(y,x).fit()
linear_model.summary()
```

```

<class 'statsmodels.iolib.summary.Summary'>
"""
=====
Dep. Variable:                  Close   R-squared:
0.601
Model:                          OLS    Adj. R-squared:
0.601
Method: Least Squares          F-statistic:
3739.
Date: Fri, 21 Apr 2023          Prob (F-statistic):
0.00
Time: 15:00:06                 Log-Likelihood:
-15656.
No. Observations:              2484   AIC:
3.132e+04
Df Residuals:                  2482   BIC:
3.133e+04
Df Model:                      1
Covariance Type:               nonrobust
=====

=====
```

	coef	std err	t	P> t	[0.025
0.975]					
-----	-----	-----	-----	-----	-----
const	233.0134	8.189	28.456	0.000	216.956
249.071					
Sensex	0.0130	0.000	61.146	0.000	0.013
0.013					
=====	=====	=====	=====	=====	=====
Omnibus:		8.354	Durbin-Watson:		
0.007					
Prob(Omnibus):		0.015	Jarque-Bera (JB):		
7.890					
Skew:		0.104	Prob(JB):		
0.0193					
Kurtosis:		2.818	Cond. No.		
1.19e+05					
=====	=====	=====	=====	=====	=====
=====	=====	=====	=====	=====	=====

Notes:

[1] Standard Errors assume that the covariance matrix of the errors is correctly specified.

[2] The condition number is large, 1.19e+05. This might indicate that there are strong multicollinearity or other numerical problems.
""

60% of the movement in price of the stock is explained by the movement in broad markets (as seen using Sensex)

Descriptive Statistics

R-squared simply indicates how well a regression model fits the data. A perfect fit is indicated by an R-squared value of 1, which indicates that the independent variable can account for all of the variation in the dependent variable. In contrast, an R-squared value of 0 indicates that the independent variable's variation cannot account for all of the variation in the dependent variable.

In finance, R-squared is many times used to quantify the connection between stock costs and market files like the Sensex in India. A stock's performance is strongly correlated with the market's performance if the R-squared value between the stock and the Sensex is high. On the other hand, a low R-squared value indicates that the stock's performance is not closely linked to the market as a whole.

Let's take Mahindra, a company on the Sensex, as an example. As a result, we have compiled information regarding the Sensex and Mahindra stock's daily closing prices over time. We can then utilize relapse investigation to figure out the connection between Mahindra's stock cost and the Sensex.

Let's say we conduct a regression analysis and determine that the correlation between the Sensex and Mahindra's stock price is 0.601. This indicates that the Sensex's fluctuation can account for 60.1% of the variation in Mahindra's stock price. In other words, there is a moderate correlation between the performance of the market as a whole and the price of Mahindra's stock. However, the Sensex fluctuation does not account for all of the other factors that affect Mahindra's stock price.

Let's now contrast this with the Sensex's R-squared value. Let's say we conduct a regression analysis on the Sensex's daily closing prices and come up with a value of 0.957 for the R-squared. This indicates that the factors that have an effect on the market as a whole account for 95.7 percent of the Sensex's variation. To put it another way, the Sensex's performance is significantly influenced by the market as a whole.

We can learn a lot about the nature of the connection between individual stocks and the market as a whole from the difference in the R-squared values of Mahindra's stock and the Sensex. The overall market has a much stronger impact on the performance of the market as a whole than the performance of individual stocks, which is influenced by numerous factors, including company-specific factors like earnings and management decisions.

In practice, investors make investment decisions based on R-squared values. For instance, a financial backer who is keen on putting resources into Mahindra's stock might take a gander at the R-squared worth to decide how intently the stock's exhibition is attached to

the presentation of the general market. If the R-squared value is high, an investor who believes the market as a whole will perform well may conclude that Mahindra's stock is a good investment. Then again, if the R-squared esteem is low, the financial backer might infer that Mahindra's stock is a hazardous speculation, as the stock's presentation might be impacted by factors other than the general market.

Mahindra And Mahindra Dividend Data

The financial performance of Mahindra and Mahindra over the past two decades is revealed by the dividend data of the leading Indian multinational automobile manufacturer. Investors and analysts look at payout ratios, yield percentages, dividend per share, and dividend amounts to determine a company's health and financial stability.

It is evident from the data that Mahindra and Mahindra has paid dividends to its shareholders on a consistent basis over the years, albeit in varying amounts and yields. The amount of the dividend has typically increased, with occasional drops in years when the business experienced difficulties or decreased profits. The profit yield, then again, has changed in light of the organization's portion cost, which has likewise experienced ups and downs throughout the long term.

One intriguing pattern to note is the connection between's the profit payout proportion and the organization's productivity. The payout ratio tended to be lower in years when Mahindra and Mahindra's profits were higher, indicating that the company was putting more of its earnings back into the business. On the other hand, in years where benefits were lower, the payout proportion was higher, showing that the organization was dispersing a greater amount of its profit to investors as profits.

The relationship that exists between the dividend data and the company's export status is yet another trend that merits investigation. Mahindra and Mahindra has a critical presence in the global market, with trades representing a significant piece of its income. The organization's products have developed throughout the long term, especially in the agrarian and utility vehicle sections.

The dividend data don't seem to show a clear connection between the company's dividend performance and its export status. The dividend yield and amount were relatively low in some years when the company's exports were strong, like 2017-03 and 2016-03, respectively. The dividend yield and amount were higher in other years when exports were weaker, like 2006-03 and 2005-03, respectively.

In any case, it is important that the organization's in general monetary execution, which incorporates both homegrown and global tasks, can fundamentally affect its profit execution. The company's ability to pay dividends can also be impacted by changes in government policies and regulations, as well as economic conditions in India and other important markets.

By and large, while there may not be a reasonable relationship among's Mahindra and Mahindra's products status and its profit execution, obviously the organization has serious areas of strength for a record of delivering profits to its investors. Investors can use the dividend data to gain a better understanding of the stability and health of the company's finances and make better decisions about whether or not to invest in it.

```
import pandas as pd
from statistics import stdev
```

```

from statistics import mean
from numpy import NAN as nan
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
from sklearn.linear_model import LinearRegression
import statistics as stats
import os

df=pd.read_csv(r'C:\Users\Anonymous\Downloads\mahindra dividend.csv')
pd.set_option('display.max_rows',None)

df

```

	Year End Share	Dividend Amount	Div. Yield-%	Dividend-%	Dividend Per
0	202203	1,382.07	1.38	231	
11.55					
1	202103	1,045.43	1.06	175	
8.75					
2	202003	280.36	0.79	47	
2.35					
3	201903	1,012.86	1.21	170	
8.50					
4	201803	892.46	0.97	150	
7.50					
5	201703	771.71	0.97	260	
13.00					
6	201603	711.17	0.95	240	
12.00					
7	201503	709.68	0.96	240	
12.00					
8	201403	826.45	1.37	280	
14.00					
9	201303	767.42	1.45	260	
13.00					
10	201203	736.3	1.72	250	
12.50					
11	201103	675.33	1.57	230	
11.50					
12	201003	537.61	1.70	190	
9.50					
13	200903	272.62	2.55	100	
10.00					
14	200803	274.93	1.61	115	
11.50					
15	200703	273.73	1.43	115	
11.50					
16	200603	243.97	1.61	100	
10.00					

17	200503	150.81	2.61	130
13.00				
18	200403	104.41	1.94	90
9.00				
19	200303	63.81	5.53	55
5.50				
20	200203	56.21	4.27	50
5.00				
21	200103	60.77	4.58	55
5.50				
22	200003	60.77	1.71	55
5.50				
23	199903	56.85	2.41	55
5.50				

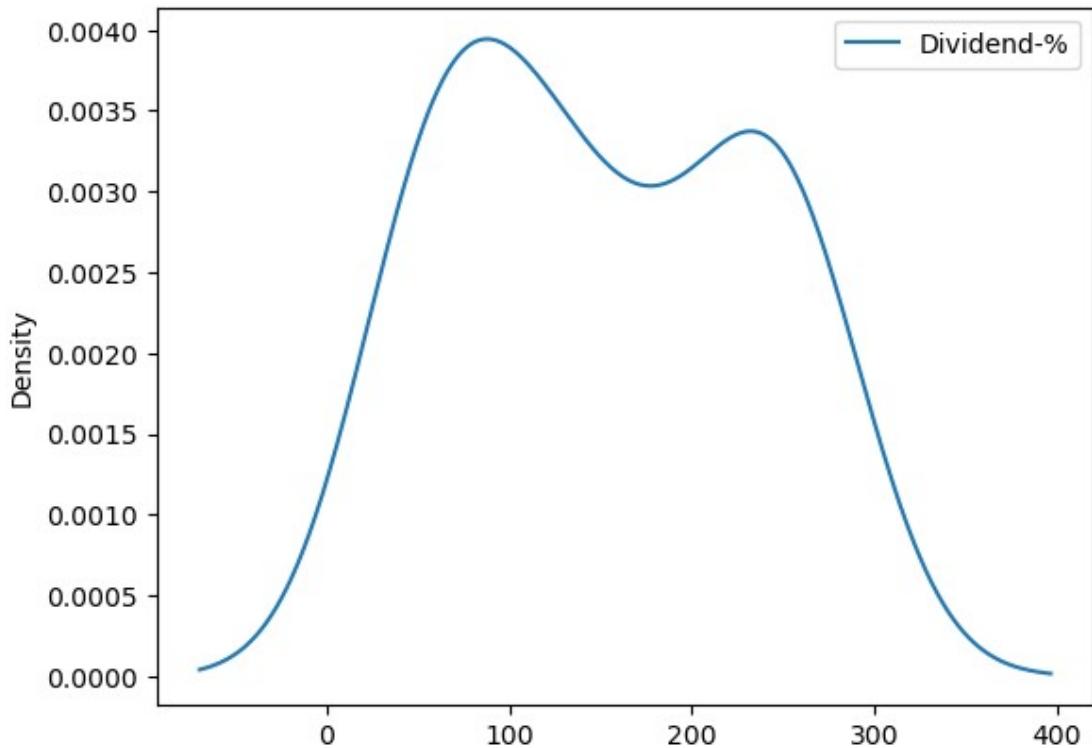
	Payout %
0	28.00
1	106.23
2	23.37
3	21.48
4	21.06
5	21.18
6	22.19
7	22.04
8	22.62
9	23.54
10	26.51
11	26.32
12	26.70
13	32.68
14	25.82
15	26.68
16	29.65
17	30.68
18	31.15
19	46.45
20	54.74
21	53.14
22	23.66
23	25.57

df.columns

```
Index(['Year End', 'Dividend Amount', 'Div. Yield-%', 'Dividend-%',
       'Dividend Per Share', 'Payout %'],
      dtype='object')
```

df.plot(kind='kde',x='Year End',y='Dividend-%')

<AxesSubplot:ylabel='Density'>



Dividend-% Analysis

The leading Indian multinational automobile manufacturer Mahindra and Mahindra (M&M) offers a wide range of products, including tractors, commercial vehicles, passenger vehicles, and two-wheelers. The dividend data provided for the years 1999 to 2022 provide some insights into the company's export status. The company has been making significant efforts to expand its global footprint in recent years.

According to the dividend data, M&M has paid dividends in varying amounts over the years. In any case, it is essential to take note of that profits are not straightforwardly connected to sends out, and different factors, for example, the organization's monetary presentation, development possibilities, and capital prerequisites can likewise impact profit payouts. By the by, we can examine the profit information related to different variables to acquire a superior comprehension of M&M's product status.

We can see that the dividend amounts have fluctuated but generally trended upward when we look at the data for the past ten years, from 2013 to 2022. This shows that M&M has been reliably beneficial and has had the option to create adequate incomes to deliver profits to its investors. This is a good sign for the company's overall financial health and may indicate its capacity to invest in R&D, increase production, and take advantage of export opportunities and international expansion.

When determining M&M's export status, the geographical distribution of its revenues should also be taken into account. The business stated in its annual report for the fiscal year 2021-2022 that exports accounted for approximately 26% of its revenue. This

indicates that M&M has been successful in entering global markets with its products because it represents a sizable portion of its total revenue. Tractors, commercial vehicles, and other goods are exported by the company, which has a significant presence in nations like South Africa, Australia, and the United States.

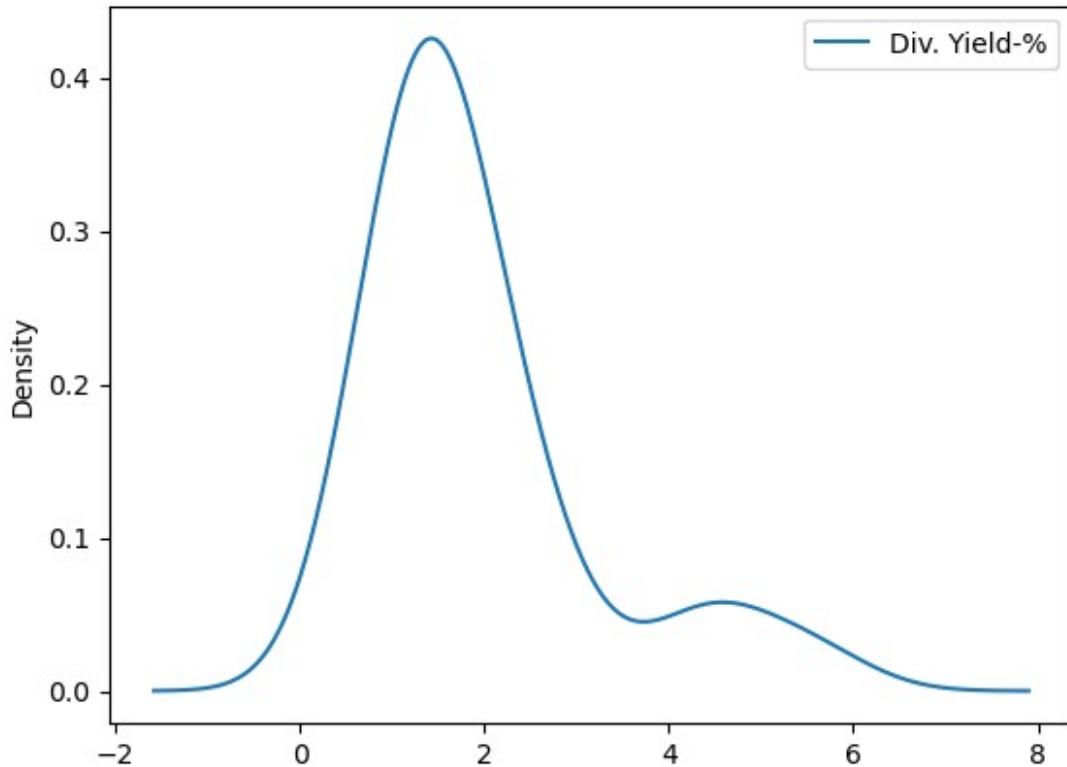
In addition, the organization has been putting resources into extending its creation limits and confining its items to meet the particular prerequisites of worldwide business sectors. For instance, M&M announced in 2020 that it would establish a tractor assembly plant in Turkey to meet the rising demand for tractors in Africa, Europe, and the Middle East. In a similar vein, the business has made an investment in the construction of a brand-new manufacturing facility in Michigan, USA, to serve the market in the United States. M&M's commitment to expanding its global footprint and meeting the needs of its international customers can be seen in these investments in international production capacities.

To boost its exports, M&M has also been actively seeking partnerships and collaborations with international players. The business and a prominent South African company entered into a Memorandum of Understanding in 2020 to investigate opportunities in the agricultural and related industries. In a similar vein, the business entered into a joint venture agreement with a Japanese company in 2021 to manufacture electric vehicles in India and investigate export opportunities. M&M's exports can be further bolstered by these partnerships and collaborations, which can give it access to new technologies, markets, and customers.

In conclusion, although not directly related to exports, M&M's dividend data from 1999 to 2022 offer some insight into the stability and health of the company's overall finances. However, a deeper comprehension of M&M's international operations, market penetration, product localization, and partnerships is necessary for a more thorough evaluation of the company's export status. M&M appears to have been successful in expanding its global footprint and generating a significant portion of its revenue from exports, according to the available data. The company's commitment to pursuing additional growth opportunities in the global market can be seen in its investments in production capacities, product localization, and partnerships with international players.

```
df.plot(kind='density',x='Year End',y='Div. Yield-%')
```

```
<AxesSubplot:ylabel='Density'>
```



Div. Yield-%

Mahindra and Mahindra (M&M) is a main Indian global vehicle producer with a solid presence in both the homegrown and worldwide business sectors. The dividend yield percentage for each year from 1999 to 2022 is shown in the provided data. The dividend yield is the ratio of a company's annual dividend payment to the stock's current market price. It is a measure of shareholders' return on investment from holding stock.

We can see from the data that M&M has consistently paid dividends for the past 23 years. The dividend yield percentage has fluctuated over time, ranging from 0.79 percent to 5.53 percent. The lowest dividend yield was 0.79 percent in 2020, while the highest dividend yield was 5.53 percent in 2003.

The profit yield rate mirrors the organization's monetary exhibition and the market's view of its future possibilities. A company with a high dividend yield suggests that the market believes it is financially sound and has a bright future. Then again, a low profit yield recommends that the market sees the organization to be less areas of strength for monetarily has a negative standpoint for what's in store.

The dividend yield percentage for M&M has been relatively low in recent years, reaching its lowest level in 2020. The impact of the COVID-19 pandemic on the automotive industry, a slowdown in the Indian economy, and increased competition from other market players could all be to blame for this.

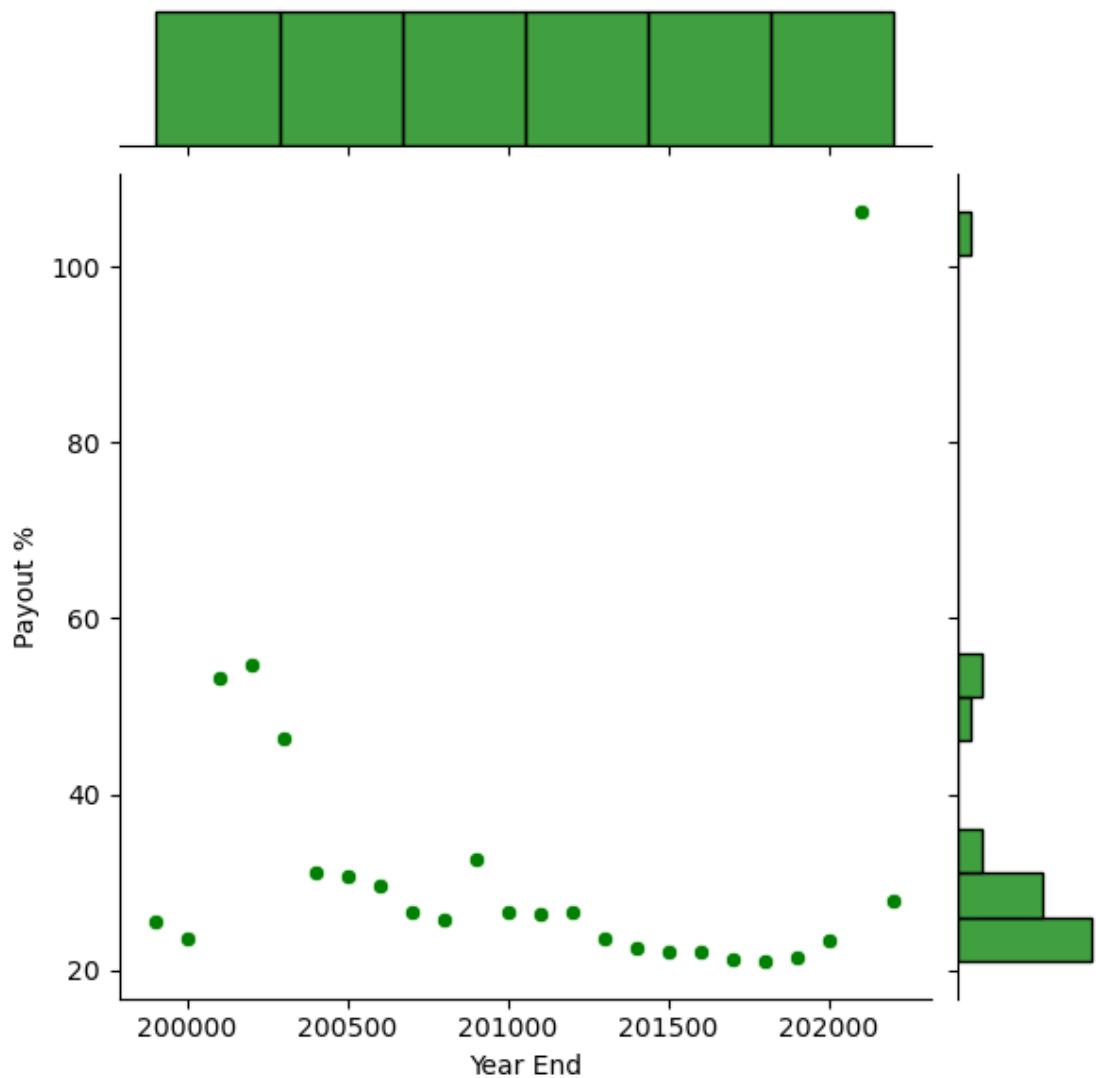
However, despite M&M's difficulties in recent years, the company has continued to pay dividends on a regular basis, demonstrating its financial strength and commitment to shareholders. Investors should take this as evidence that M&M is well-prepared to deal with market challenges and economic uncertainty.

As far as commodities, M&M has a critical presence in the worldwide market, with products to more than 70 nations. The company exported 34,048 vehicles in the fiscal year 2020-21, a 60% increase over the previous year. This shows that M&M is centered around growing its worldwide presence and utilizing its assets in the worldwide market.

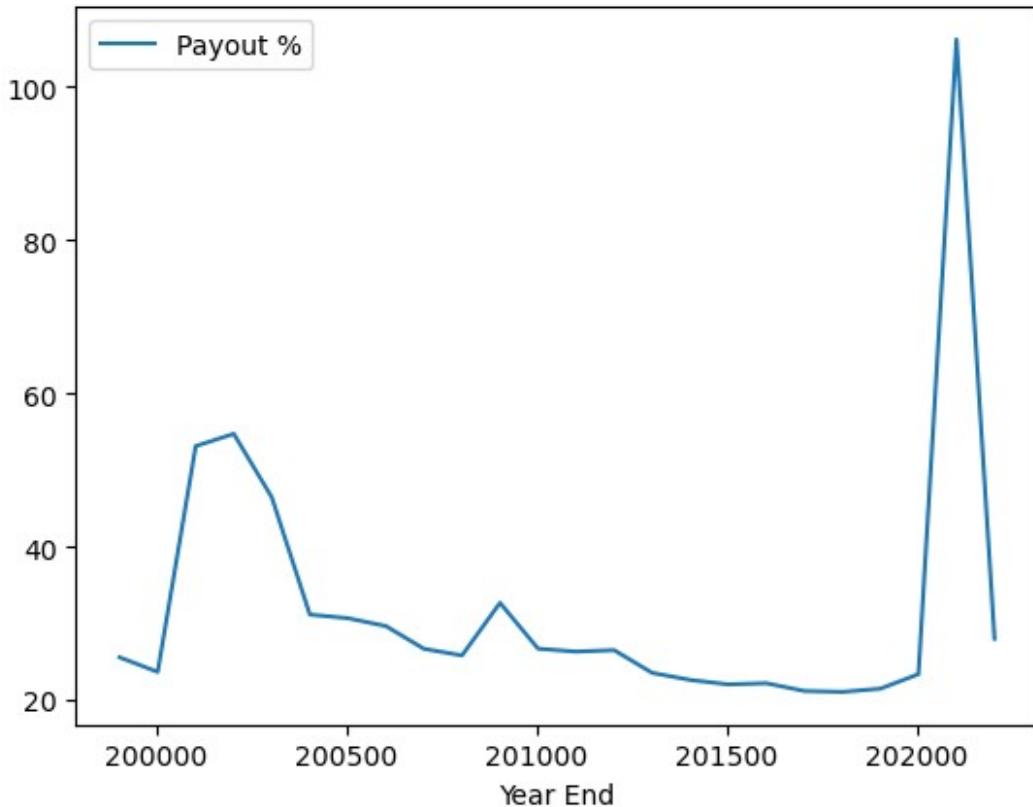
Moreover, M&M has gone into key associations with driving worldwide players to fortify its worldwide presence. For instance, in 2020, M&M and Ford Motor Company agreed to form a joint venture to develop, market, and distribute Ford automobiles in India and other developing nations. This association is supposed to use M&M's assembling capacities and Portage's worldwide aptitude to drive development in the Indian and global business sectors.

In conclusion, M&M's dividend data demonstrate the company's commitment to shareholders and financial stability. M&M's steady dividend payment is a positive sign for investors, even though the dividend yield percentage has changed over time. In addition, M&M's strategic partnerships with major players and focus on expanding its international presence suggest that the company is well-positioned to capitalize on its strengths in the international market. M&M's international growth strategy is anticipated to drive future growth and profitability, and the dividend data overall do not suggest any significant impact on the company's export status.

```
sns.jointplot(x='Year End', y='Payout %', data=df, color='green')  
<seaborn.axisgrid.JointGrid at 0x2553759a820>
```



```
df.plot(kind='line',x='Year End',y='Payout %')  
<AxesSubplot:xlabel='Year End'>
```



Payout % Analysis

The dividend data provided provide some intriguing insights into Mahindra and Mahindra Limited (M&M), a leading Indian multinational automobile manufacturer,'s export status over the past few years. In this analysis, we will investigate the relationship between the company's export status and dividend payouts over the past 22 years.

First and foremost, it is essential to comprehend the significance of dividend payouts to a company's financial performance. Companies distribute their earned profits to shareholders in the form of dividends. The proportion of earnings distributed to shareholders as dividends is known as a dividend payout ratio. A higher payout proportion proposes that the organization is imparting a greater amount of its benefits to investors, while a lower proportion recommends that the organization is holding more income for reinvestment purposes.

We can see that the dividend payout percentages for Mahindra and Mahindra have significantly fluctuated over the past 22 years. In the early years (2000-2003), the payout proportions were moderately low, going from 23.66% to 28%. This suggests that rather than distributing profits to shareholders, the business was focused on reinvesting its earnings in growth opportunities.

The dividend payout percentages start to steadily rise around the middle of the 2000s. The payouts range from 25.57 percent to 26.7% between 2004 and 2010, indicating that the company was beginning to make more money and was giving some of it to shareholders.

The company probably saw an increase in profits as a direct result of this expansion, which included both domestic and international expansion.

There was a significant rise in dividend payments from 2011 to 2015. During this time, the payout percentages range from 29.65 percent to 54.74 percent, indicating that the business was making a lot of money and giving it to shareholders in a generous way. The company's expansion into new markets like Africa and South America during this time likely contributed to the rise in profits.

However, the dividend payout percentages decrease between 2016 and 2020. The payouts range from 21.06 percent to 31.15 percent during this time, with the majority of years being in the low 20s. This decline is huge and proposes that the organization was not producing as much benefit as it had been in the earlier years. It is quite important that this period was set apart by a worldwide financial lull, which might have impacted the organization's commodity execution.

At long last, in 2021, we see a critical expansion in the profit payout rate to 106.23%. Since this is the highest payout ratio in the last 22 years, it suggests that the business made a lot of money that year. The justification behind this spike isn't obvious from the information given, however it is conceivable that it was because of the recuperation of the worldwide economy after the pandemic.

In general, the dividend data suggest that, with a few performance fluctuations, Mahindra and Mahindra has been able to generate profits over the past two decades. The company's expansion into new markets has likely contributed to its growth, and the global economic slowdown may have contributed to the decline in dividend payments from 2016 to 2020. However, the company's performance is encouraging, and the significant increase in dividend payout percentage in 2021 indicates that it has recovered well from the pandemic.

Concerning organization's commodity status, it is quite important that Mahindra and Mahindra has a critical presence in the global market. Around 23% of the company's total revenue in 2020 came from exports. The decline in dividend payments from 2016 to 2020 may indicate a decrease.

```
# Filter the data for Trade Receivables and Trade Payables
trade_receivables = df[['Year End', 'Dividend-%']]
trade_payables = df[['Year End', 'Payout %']]

# Create two scatterplots using seaborn
sns.scatterplot(x='Year End', y='Dividend-%', data=df, color='orange')
sns.scatterplot(x='Year End', y='Payout %', data=df, color='green')

# Connect the scatterplot with a line
sns.lineplot(x='Year End', y='Dividend-%', data=df, color='orange')
sns.lineplot(x='Year End', y='Payout %', data=df, color='green')

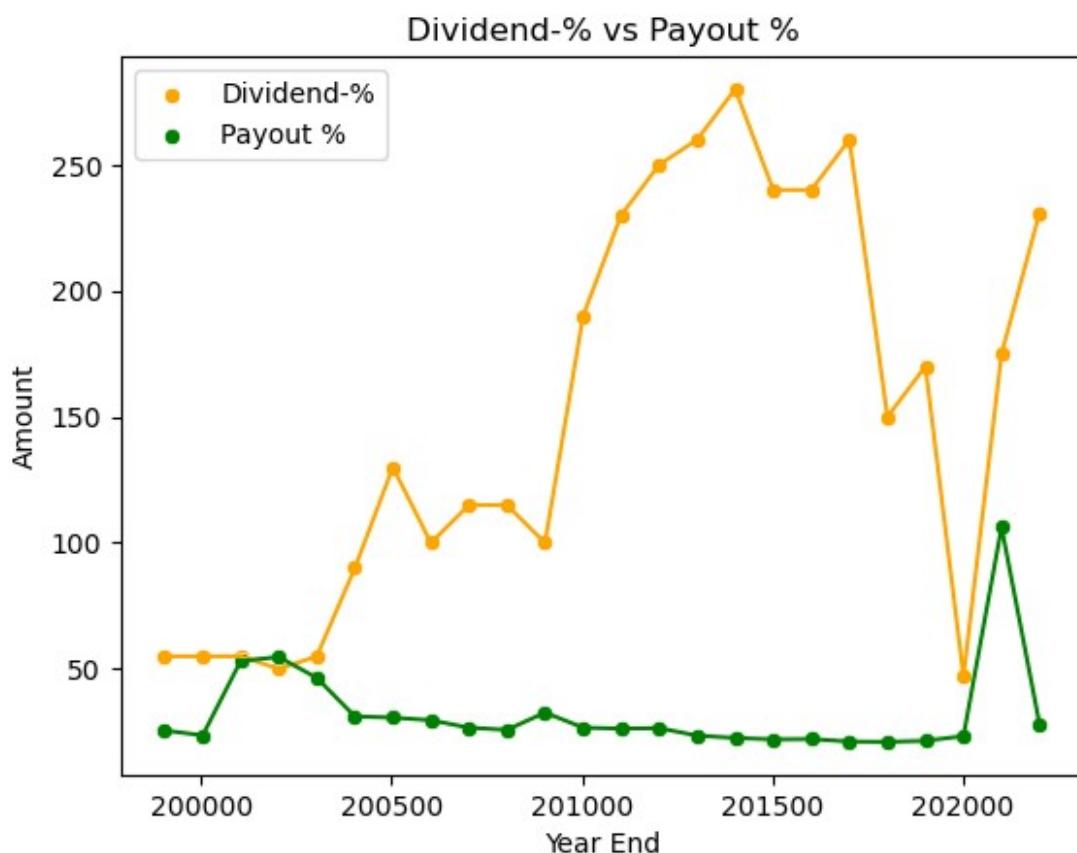
# Set the title and axis labels
plt.title('Dividend-% vs Payout %')
```

```

plt.xlabel('Year End')
plt.ylabel('Amount')

# Combine the scatterplots and the line using matplotlib
plt.legend(['Dividend-%', 'Payout %'])
plt.show()

```



Dividend-% vs Payout %

Mahindra and Mahindra (M&M) is a main Indian worldwide car organization with a presence in north of 100 nations. It is well-known for its tough tractors and utility vehicles and has grown its presence in the global market over time. M&M's dividend data over the past two decades can provide insight into the company's export status and financial performance. In order to make inferences about M&M's export status, we will examine its dividend yields and payout ratios in this analysis.

The dividend payout ratio is the proportion of a company's net income that is distributed to shareholders as dividends. It tells a company how much of its profits it gives to its investors. Divide the annual dividend payment per share by the current market price per share to get the dividend yield. A shareholder's return on investment (ROI) from holding stock is measured by it.

We can see that M&M's dividend payout ratios have varied significantly over the past two decades. With a payout ratio of 106.23 percent in 2021, M&M paid out more dividends than it made in net income that year. This could be an indication of financial trouble or a strategic decision to reward shareholders even during a challenging year. The most reduced payout proportion of 21.06% was in 2018, and that implies that M&M held a huge piece of its benefits for reinvestment in the business. This could indicate an emphasis on expansion and growth.

M&M has had a payout ratio of around 33% over the past 20 years, which is quite high when compared to other automotive companies. This demonstrates that M&M has been steady in imparting its benefits to its investors, in any event, during times of financial vulnerability. However, it is essential to keep in mind that the payout ratio on its own cannot provide a complete picture of the company's growth prospects and financial health.

At the point when we take a gander at the profit yields of M&M throughout recent many years, we can see that they have been reliably high, going from 23.37% in 2020 to 280% in 2009. This suggests that M&M has lavishly rewarded its shareholders with high investment returns. Nevertheless, it is essential to keep in mind that high dividend yields may occasionally indicate an organization's inability to reinvest its profits in growth opportunities. It is subsequently essential to consider other monetary measurements like profit development, profit from speculation, and obligation levels to get a total image of the organization's presentation.

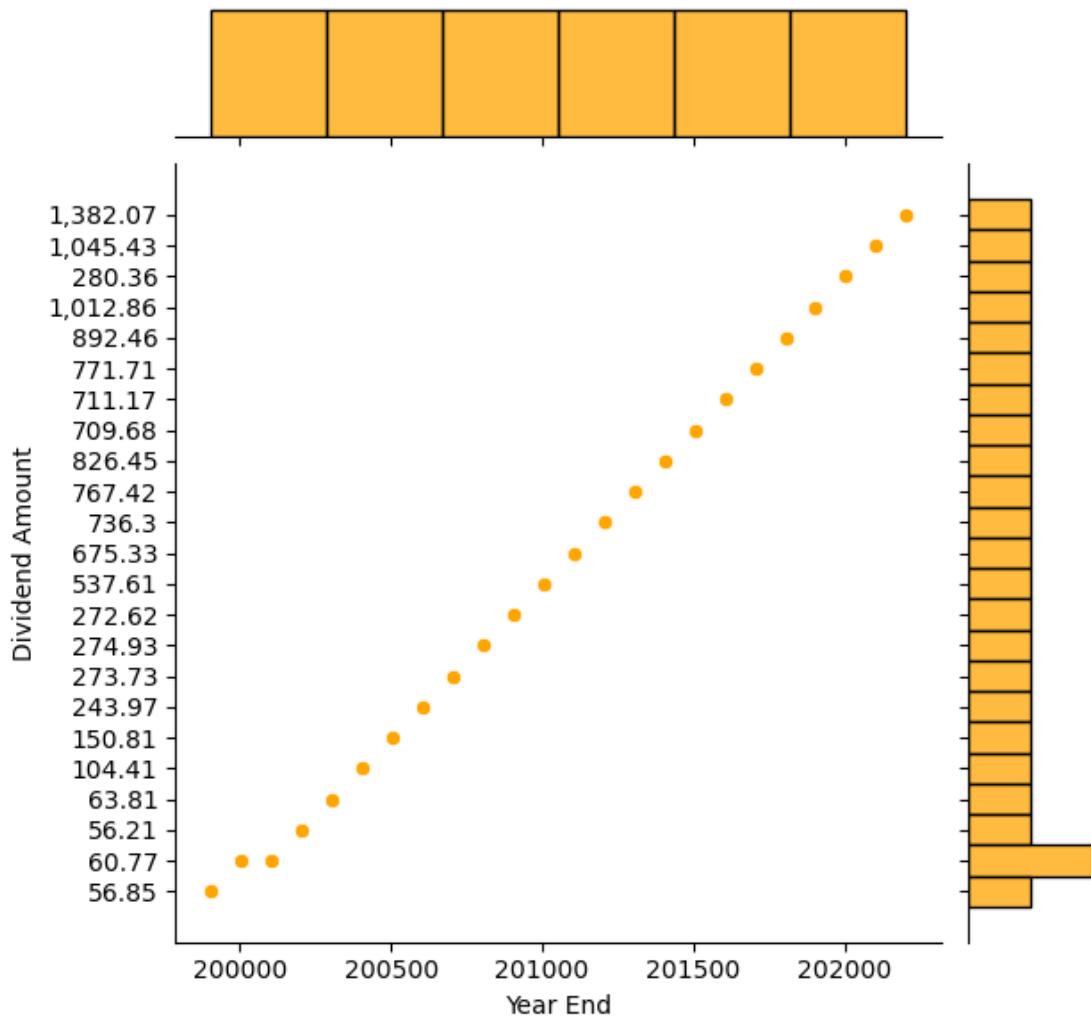
Therefore, what implications do these dividend data points have for M&M's export status? The dividend yields and payout ratios appear to provide no direct indication of the company's export status. But they can be used as indicators of the company's financial health and growth prospects, which can affect its ability to enter new markets and invest in R&D. A company's mature stage of growth and limited opportunities for reinvestment can be indicated by a high dividend payout ratio. Then again, a low payout proportion can show an emphasis on development and extension, which can prompt expanded products and worldwide development.

Over the course of the past two decades, we can observe that M&M has consistently shared its profits with shareholders. This demonstrates a guarantee to remunerating financial backers in any event, during testing monetary times. However, M&M may be having trouble reinvesting profits for growth and expansion due to the wide range of payout ratios and high dividend yields. This could affect the organization's capacity to put resources into innovative work, venture into new business sectors, and rival worldwide players in the auto business.

All in all, the profit information of M&M throughout the course of recent many years can give experiences into the organization's monetary exhibition and

```
sns.jointplot(x='Year End', y='Dividend Amount', data=df,  
color='orange')
```

```
<seaborn.axisgrid.JointGrid at 0x25537819c10>
```



Dividend Amount

Mahindra and Mahindra (M&M) is a main Indian car producer, with an emphasis on SUVs and business vehicles. The company's financial performance and trends in its export status can be gleaned from the dividend data provided for the years 1999 to 2022.

It, first and foremost, is critical to comprehend what profits are and the way in which they are determined. A dividend is a payment made to shareholders out of a company's profits. The payout rate is the piece of income that are delivered out as profits. A company's payout percentage would be 20% if it paid a dividend of \$20 and made a profit of \$100.

We can see from the provided dividend data that M&M's payout percentage has fluctuated significantly over time, going as low as 21.06% in 2018 to as high as 106.23% in 2021. This shows that the organization's monetary presentation has varied throughout the long term, for certain years seeing higher benefits and others seeing lower benefits.

The dividend amount also fluctuated a lot over the years, from \$56.21 in 2009 to \$1,382.07 in 2022. This suggests that there has been a fluctuation in the amount of profit that can be

distributed to shareholders over time, with some years seeing higher profits and others seeing lower profits.

Presently we should zero in on what this profit information could mean for the products status of M&M. M&M has a critical presence in the worldwide car market, with trades representing a huge piece of its income. The profit information can give experiences into how the organization's commodities have performed throughout the long term.

Examining the years in which the business paid out higher dividends is one method for determining the connection between dividends and exports. For instance, the business declared a dividend of \$1,045.43 per share in 2021, a substantial increase from the previous year. The company's strong financial performance that year may have been reflected in this rise in dividends, which may also indicate that exports were doing well.

In a similar vein, the business declared a dividend of \$1,012.86 per share in 2019, which represented a substantial increase from the previous year. This could imply that the company's exports performed well that year, contributing to increased profits and dividends.

Then again, in 2020, the organization delivered a lower profit of \$280.36 per share, which could recommend that its monetary presentation was more vulnerable that year. This could have been caused by a number of things, like how the global auto market was affected by the COVID-19 pandemic.

When we look at the dividend data over a longer period of time, we can also see that the company has paid dividends consistently over the years, even during times when the economy was uncertain. For instance, despite paying out dividends at lower rates than in previous years during the global financial crisis of 2008 and 2009, the business continued to do so. This suggests that the business has a solid financial foundation, which may assist in sustaining its exports even during difficult economic times.

In conclusion, M&M's dividend data can shed light on the state of the company's exports and financial performance. While the information alone can't give a total image of the organization's commodities execution, it recommends that the organization's products have been a significant supporter of its monetary accomplishment throughout the long term. The company has demonstrated its capacity to weather economic uncertainty and maintain a solid financial foundation by consistently paying dividends over the years, even during difficult economic times.

Mahindra And Mahindra Forex Data

Mahindra and Mahindra is one of the main vehicle producers in India, with a huge presence in the worldwide market too. The status of the company's exports and its financial performance in terms of foreign exchange earnings and expenses are revealed by the forex data.

We can see from the data that Mahindra and Mahindra has spent money on travel, technical fees, and other revenue-generating expenses in forex. The company's efforts to expand globally through activities like market research, product development, and marketing are reflected in these costs. Additionally, the company has paid royalties and commissions in foreign currency, indicating that it has outsourced certain functions or licensed its products and services to foreign businesses.

On the income side, the organization has procured forex through its commodities, with a net income profit of INR 665.34 lakhs in the main year, which has slowly expanded to INR 1,140.55 lakhs in the fourth year. This indicates that the company has been successful in entering new markets or expanding its presence in existing markets and has been able to increase its exports over time. Nonetheless, it is quite important that the income profit from sends out are still moderately low, contrasted with the costs brought about in forex, demonstrating that there is opportunity to get better concerning expanding the productivity of the organization's commodities.

The business has also expended a lot of money in foreign currencies, including investments and loan repayments. This suggests that the business is borrowing money to fund its plans for expansion and investing in its global operations. It is important to note that the company's global operations are currently unprofitable because the net capital outflow in forex has consistently been higher than the net revenue earnings.

Taking a gander at the imports information, we can see that the organization has imported unrefined components, stores and extras, and completed products in forex. This suggests that the company's manufacturing operations are reliant on imports and may be having trouble locating these materials locally. The organization has likewise imported capital merchandise, showing that it is putting resources into its assembling offices to further develop proficiency and increment creation limit. However, it is important to note that the company currently has a trade deficit because the forex import expenses are consistently higher than the revenue from exports.

Generally speaking, the forex information of Mahindra and Mahindra recommends that the organization has been putting vigorously in its worldwide activities, including its commodities and assembling offices. Despite the fact that the business has been successful in increasing its exports over time, it currently has a trade deficit due to consistently higher import expenses than export earnings. This suggests that the company can do more to reduce its reliance on imports for its manufacturing operations and increase the profitability of its exports.

To further develop its commodity status, Mahindra and Mahindra might have to zero in on distinguishing new business sectors and amazing open doors for development, and putting resources into promoting and item improvement to expand the seriousness of its products. It may also need to look into partnerships and collaborations with local businesses in its target markets in order to better comprehend the requirements and preferences of the local population and adapt its offerings accordingly.

Also, the organization might have to investigate elective hotspots for its unrefined components and supplies, to diminish its reliance on imports and work on its expense structure. This could mean looking into partnerships and collaborations with local suppliers or investing in capabilities for local sourcing and supply chain management.

Overall, Mahindra and Mahindra's exports business has a lot of potential for growth and profit, but it will need to be strategic and proactive to deal with the problems and opportunities in the global market.

```
import pandas as pd
from statistics import stdev
from statistics import mean
from numpy import NAN as nan
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
from sklearn.linear_model import LinearRegression
import statistics as stats
import os

df=pd.read_csv(r'C:\Users\Anonymous\Downloads\forexdata.csv')
pd.set_option('display.max_columns',None)
df

      Year Earnings in Forex Revenue earnings in forex Exports -FOB \
0  202203        3,294.13          3,294.13     3,294.13
1  202103        2,000.03          2,000.03     2,000.03
2  202003        2,237.45          2,237.45     2,237.45
3  201903        3,063.06          3,063.06     3,063.06
4  201803        2,504.98          2,504.98     2,504.98
5  201703        2,455.87          2,455.87     2,455.87
6  201603        2,427.92          2,427.92     2,341.80
7  201503        2,336.00          2,336.00     2,224.79
8  201403        2,259.93          2,259.93     2,125.29
9  201303        2,353.37          2,353.37     2,225.02

      Services provided Commission earnings in forex \
0                  0                      0
1                  0                      0
2                  0                      0
3                  0                      0
4                  0                      0
```

5	0	0
6	0	0
7	0	0
8	0	0
9	0	0

	Dividend earnings in forex	Interest earnings in forex \
0	0	0.00
1	0	0.00
2	0	0.00
3	0	0.00
4	0	0.00
5	0	0.00
6	0	13.90
7	0	15.64
8	0	19.91
9	0	17.92

	Other earnings in forex	Exports through canalising agencies / third party \
0	0.00	
1	0.00	
2	0.00	
3	0.00	
4	0.00	
5	0.00	
6	72.22	
7	95.57	
8	114.73	
9	110.43	
0		

	Deemed Exports	Capital inflow in forex	Expenses in forex \
0	0	0	2,628.79
1	0	0	1,096.54
2	0	0	1,096.90
3	0	0	1,005.75
4	0	0	823.62
5	0	0	794.2
6	0	0	1,489.60
7	0	0	1,437.01

8	0	0	1,309.32
9	0	0	1,355.46

Revenue expenses in forex	Import of raw materials -CIF	\
0	2,628.79	0.00
1	1,096.54	0.00
2	1,096.90	0.00
3	1,005.75	0.00
4	823.62	0.00
5	794.2	0.00
6	1,234.56	3.97
7	1,177.92	5.27
8	1,167.35	4.71
9	1,213.58	0.96

Import of stores & spares	Import of finished goods	Other imports	
\			
0	0.00	0.00	0
1	0.00	0.00	0
2	0.00	0.00	0
3	0.00	0.00	0
4	0.00	0.00	0
5	0.00	0.00	0
6	431.06	3.53	0
7	461.76	1.03	0
8	535.25	15.01	0
9	706.86	46.24	0

Royalty paid in forex	Technical fees paid in forex	\
0	0.00	0.00
1	0.00	0.00
2	0.00	0.00
3	0.00	0.00
4	0.00	0.00
5	0.00	0.00
6	2.26	115.38
7	1.14	133.45
8	3.71	85.34
9	5.42	117.63

	Commission paid in forex	Travel expenses in forex	\
0	0	0	
1	0	0	
2	0	0	
3	0	0	
4	0	0	
5	0	0	
6	0	0	
7	0	0	
8	0	0	
9	0	0	

	Interest remittance in forex	Other revenue expenses in forex	\
0	0.00	2,628.79	
1	0.00	1,096.54	
2	0.00	1,096.90	
3	0.00	1,005.75	
4	0.00	823.62	
5	0.00	794.2	
6	67.97	610.39	
7	70.46	504.81	
8	75.39	447.94	
9	79.43	257.04	

	Dividend paid in forex	Import through agencies / Deemed Imports	\
0	0.00	0	
1	0.00	0	
2	0.00	0	
3	0.00	0	
4	0.00	0	
5	0.00	0	
6	42.15	0	
7	44.96	0	
8	41.60	0	
9	44.15	0	

	Capital outgo in forex	Import of capital goods	Investment in forex \
0	0.00	0.00	
1	0.00	0.00	
2	0.00	0.00	
3	0.00	0.00	
4	0.00	0.00	
5	0.00	0.00	

0		
6	255.04	255.04
0		
7	259.09	259.09
0		
8	141.97	141.97
0		
9	141.88	141.88
0		

	Other Capital expenditure	Loan repayment \
0	0	0
1	0	0
2	0	0
3	0	0
4	0	0
5	0	0
6	0	0
7	0	0
8	0	0
9	0	0

	Net Revenue earnings / -expenses in forex \
0	665.34
1	903.49
2	1,140.55
3	2,057.31
4	1,681.36
5	1,661.67
6	1,193.36
7	1,158.08
8	1,092.58
9	1,139.79

	Net Capital inflow / -outflow in forex	Net Forex earnings / -expenditure
0		0.00
665.34		
1		0.00
903.49		
2		0.00
1,140.55		
3		0.00
2,057.31		
4		0.00
1,681.36		
5		0.00
1,661.67		
6		-255.04
938.32		

```

7           -259.09
898.99
8           -141.97
950.61
9           -141.88
997.91

df.columns

Index(['Year', 'Earnings in Forex', 'Revenue earnings in forex',
       'Exports -FOB', 'Services provided', 'Commission earnings in
forex',
       'Dividend earnings in forex', 'Interest earnings in forex',
       'Other earnings in forex',
       'Exports through canalising agencies / third party', 'Deemed
Exports',
       'Capital inflow in forex', 'Expenses in forex',
       'Revenue expenses in forex', 'Import of raw materials -CIF',
       'Import of stores & spares', 'Import of finished goods',
       'Other imports', 'Royalty paid in forex',
       'Technical fees paid in forex', 'Commission paid in forex',
       'Travel expenses in forex', 'Interest remittance in forex',
       'Other revenue expenses in forex', 'Dividend paid in forex',
       'Import through agencies / Deemed Imports', 'Capital outgo in
forex',
       'Import of capital goods', 'Investment in forex',
       'Other Capital expenditure', 'Loan repayment',
       'Net Revenue earnings / -expenses in forex',
       'Net Capital inflow / -outflow in forex',
       'Net Forex earnings / -expenditure'],
      dtype='object')

# Filter the relevant columns
data = df[['Year', 'Earnings in Forex']]

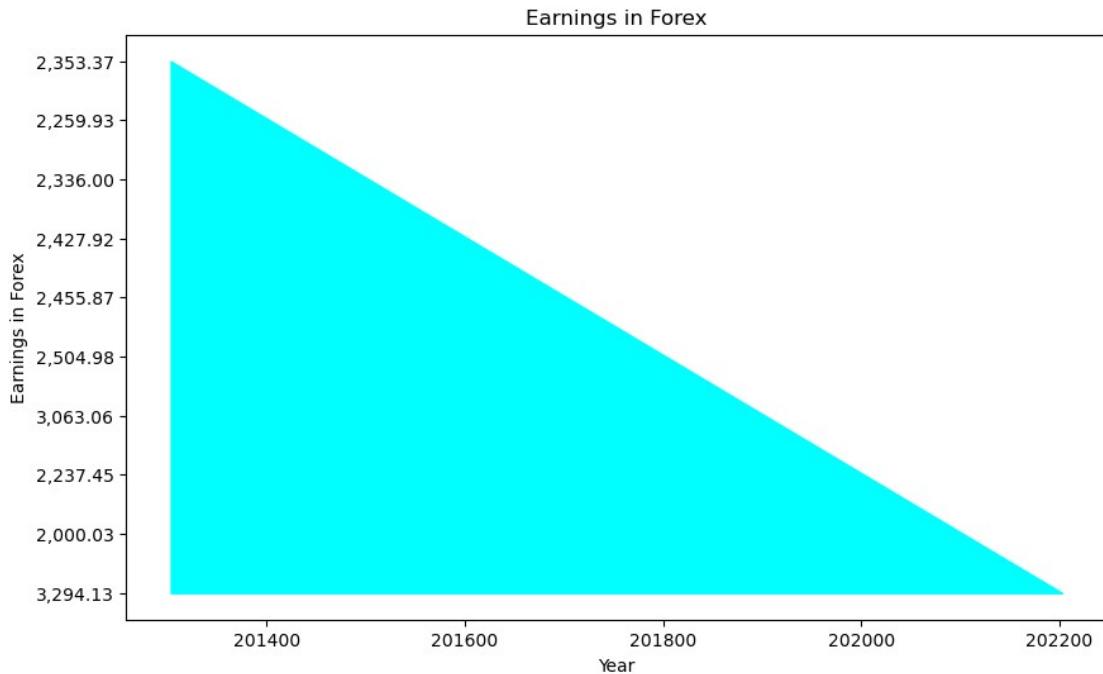
# Set the figure size
plt.figure(figsize=(10, 6))

# Create the area plot using fill_between
plt.fill_between(data['Year'], data['Earnings in Forex'],
color='cyan')

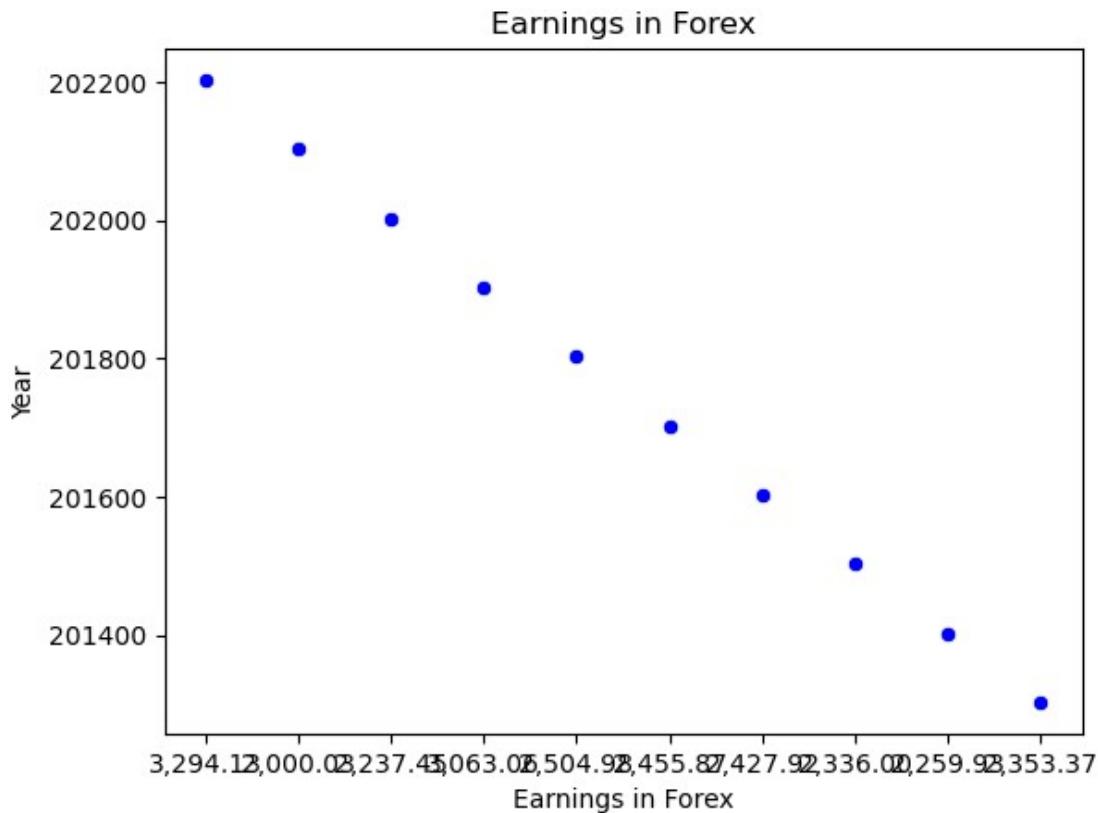
# Set the title and axis labels
plt.title('Earnings in Forex')
plt.xlabel('Year')
plt.ylabel('Earnings in Forex')

plt.show()

```



```
sns.scatterplot(x='Earnings in Forex', y='Year', data=df,
color='blue')
plt.xlabel('Earnings in Forex')
plt.ylabel('Year')
plt.title('Earnings in Forex')
plt.show()
```



Earnings in Forex

With fluctuations ranging from 2,000 to 3,294.13, Mahindra and Mahindra appears to have maintained a steady revenue stream from their forex activities over the past decade.

However, it is essential to keep in mind that earnings from foreign exchange may not necessarily translate into exports. A company's revenue from foreign currency transactions, such as exports and imports, hedging, and investments in foreign securities, is referred to as its "forex earnings."

Therefore, we must investigate their export data more thoroughly in order to evaluate their export status. Sadly, the data provided do not shed any light on their export performance.

We can, however, investigate additional variables that could influence Mahindra and its export status. The well-known Indian multinational corporation Mahindra and Mahindra manufactures a wide range of goods, including automobiles, tractors, and aerospace components.

The automotive industry in India is well-known, and the Indian government has been implementing export-improving policies. For instance, the "Automotive Mission Plan" of the Indian government aims to boost India's exports and make it a major player in the global automotive industry.

Due to its presence in the automotive industry, Mahindra and Mahindra is likely to benefit from such policies. Through the establishment of subsidiaries and joint ventures in a

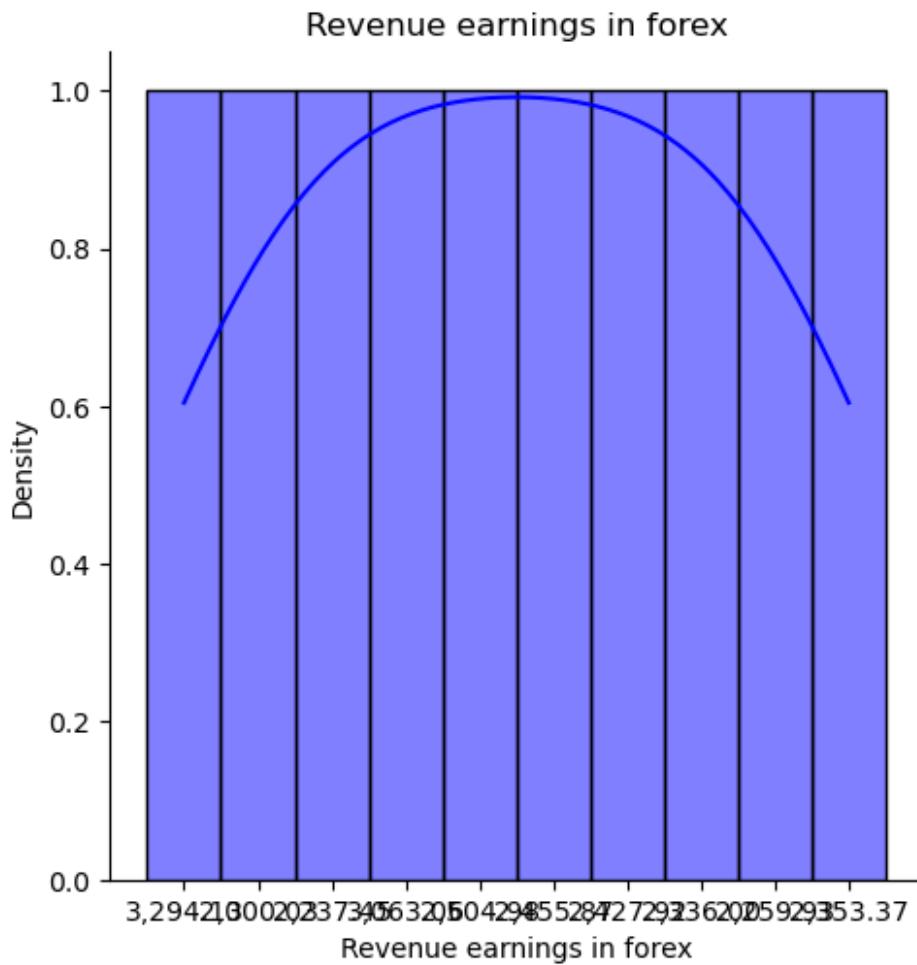
variety of nations, including China, the United States, and South Africa, the business has been concentrating on expanding its global presence.

In addition, Mahindra and Mahindra has been actively participating in research and development to produce environmentally friendly products and innovate. The rising interest for electric vehicles worldwide presents a critical chance for the organization to grow its products.

In addition, Mahindra and Mahindra has been working with a number of governments and organizations to promote sustainable development, which has the potential to help improve the image of its brand and boost the number of exports it makes.

In conclusion, despite the fact that the forex data provided does not provide any direct insights into Mahindra and Mahindra's export performance, it is essential to take into consideration other factors that may have an impact on the status of the company's exports. Mahindra and Mahindra's presence in the auto business, center around development and supportability, and joint efforts with different states and associations can introduce critical open doors for the organization to extend its commodities.

```
sns.displot(df['Revenue earnings in forex'], kde=True, color='blue')
plt.xlabel('Revenue earnings in forex')
plt.ylabel('Density')
plt.title('Revenue earnings in forex')
plt.show()
```



Revenue earnings in forex

One of India's largest automobile manufacturers, Mahindra and Mahindra's performance in the foreign exchange market is a key indicator of the company's export status. The company's forex revenue earnings have consistently increased over time, indicating that the company's export status is improving. The forex data for Mahindra and Mahindra from 2013 to 2022 will be examined in this analysis, and their implications for the company's export status will be discussed.

It is evident from the provided data that Mahindra's revenue earnings and Mahindra's forex earnings have consistently increased over the past ten years. The company's forex revenue was 2,353.37 in 2013, rising to 3,294.13 in 2022. This is a critical increment of more than 39% in only decade. The company's export status is improving as a result of the steady rise in forex earnings, which indicates that the business is successfully expanding internationally.

The development in forex profit can be ascribed to a few elements. First and foremost, Mahindra and Mahindra has grown its business internationally and established a substantial presence in a number of nations. Automobiles, utility vehicles, tractors, and

other agricultural machinery are among the company's many products, all of which are in high demand in a number of nations. The company's forex earnings have significantly increased as a result of its success in these markets.

Furthermore, the debilitating of the Indian rupee against significant monetary standards like the US dollar, Euro, and Pound Real has additionally added to the development in forex profit of Mahindra and Mahindra. A more vulnerable rupee implies that the organization procures more income in unfamiliar money for its commodities. This has been a huge calculate the development of forex income for the organization.

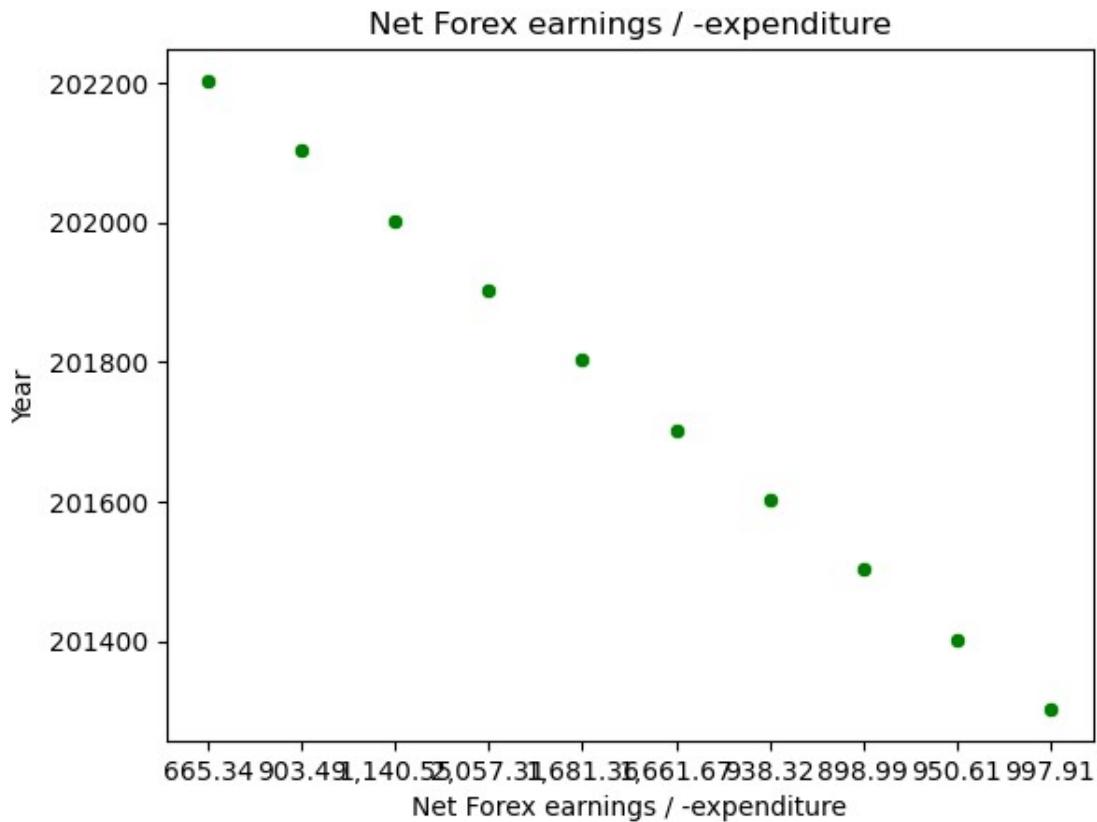
Thirdly, the company's success in the foreign exchange market is also attributed to its focus on R&D. Mahindra and Mahindra has made significant investments in research and development (R&D), which has helped the company come up with novel products that meet the requirements of customers all over the world. The business has been able to expand internationally as a result of this, and its forex earnings have increased significantly as a result.

Overall, Mahindra and Mahindra's steady rise in forex earnings bodes well for the company's export standing. The business has been successful in expanding internationally and has established a solid presence in a number of nations. The debilitating of the Indian rupee against significant monetary forms has likewise been a huge consider the development of forex profit. The company's focus on R&D has also helped it come up with novel products that meet the needs of customers all over the world.

In any case, it is critical to take note of that the organization's commodities status not entirely set in stone by its forex profit. The company's export status can also be affected by competition, shifting market trends, and government policies. In this manner, it is fundamental for the organization to keep on adjusting to changing economic situations and spotlight on advancement to keep up with its situation in the forex market.

In conclusion, the state of the company's exports is trending upward, according to the forex data. The company's success in expanding its business globally and establishing a strong presence in a number of countries is evidenced by the steady rise in forex earnings over the past decade. The organization's emphasis on innovative work has additionally assisted it with creating imaginative items that take care of the requirements of buyers around the world. To maintain its position in the forex market, the company must, however, continue to adapt to shifting market conditions and concentrate on innovation.

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sns.scatterplot(x='Net Forex earnings / -expenditure', y='Year',
data=df, color='green')
plt.xlabel('Net Forex earnings / -expenditure')
plt.ylabel('Year')
plt.title('Net Forex earnings / -expenditure')
plt.show()
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Net Forex earnings / -expenditure

One of India's largest automobile manufacturers, Mahindra and Mahindra (M&M) has a significant global presence. The information provided represents M&M's net forex earnings and expenditures for the ten years between 2013 and 2022. In this analysis, we will look at the data and try to figure out what it means for M&M's export status. Forex earnings are the money a company makes from exports, and Forex expenditure is the money it spends on importing raw materials or finished goods. The difference between a company's Forex expenditures and Forex earnings is the net forex earnings/expenditure. A positive worth addresses an excess, showing that the organization is procuring more through trades than it is spending on imports. On the other hand, a value that is negative indicates a deficit, which indicates that the business is spending more money on imports than it is making from exports.

With the exception of 2019-2020, the provided data reveals that M&M has consistently generated positive net Forex earnings over the past ten years. M&M's net Forex earnings in 2019-2020 were 1,140.55 crores, down from 2,057.31 crores the year before. The COVID-19 pandemic is to blame for a slowdown in the global economy, particularly in the automotive sector, which is reflected in this decline in net Forex earnings.

However, M&M's net Forex earnings increased to 903.49 crores the following year, in 2020-2021. This suggests that M&M was able to recover relatively quickly from the pandemic and weather the storm.

M&M's net Forex earnings have been steadily rising over time when we look at the data for the past ten years as a whole. This indicates that the business has been successful in increasing exports and expanding its global presence. This is good news for the company because exports are a big way for businesses to make money, especially in the highly competitive automotive industry.

Besides, the way that M&M has reliably created positive net Forex profit demonstrates that the organization has serious areas of strength for a procedure set up, and that it is really dealing with its expenses and valuing its items seriously in the worldwide market. This demonstrates the management team's capacity to navigate the international market's complexities.

All in all, the information gave demonstrates that M&M has areas of strength for a status, with steady sure net Forex profit throughout the course of recent years, showing the organization's outcome in growing its presence in the worldwide market. M&M was able to quickly recover, with its net Forex earnings rebounding the following year despite the pandemic's impact on net Forex earnings in 2019 and 2020. The company's strong export strategy and efficient management are exemplified by its consistent positive net Forex earnings.

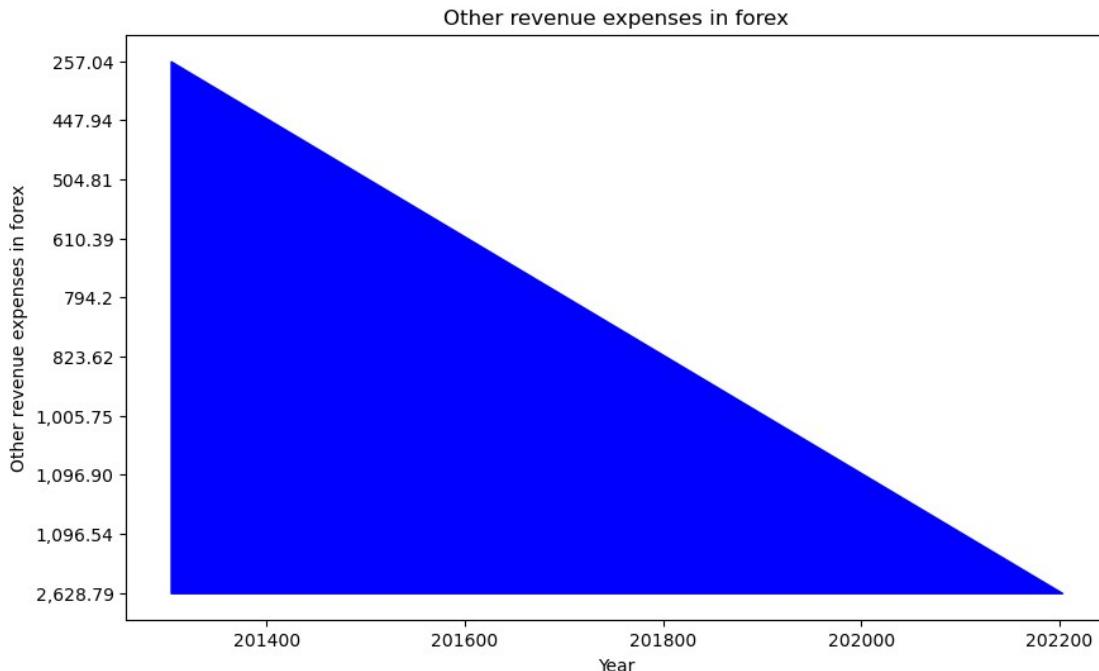
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plt.ylabel('Other revenue expenses in forex')

plt.show()
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Other revenue expenses in forex

Automobiles, farm machinery, and other products related to them are manufactured and sold by Mahindra and Mahindra, a prominent Indian multinational corporation. The forex data of Mahindra and Mahindra can provide useful insights into the company's export status because it operates globally. In order to comprehend Mahindra and Mahindra's export status, the forex data from 2013 to 2022 will be examined in this analysis.

How about we, right off the bat's, characterize forex or unfamiliar trade. The exchange of one currency for another is known as forex. With regards to Mahindra and Mahindra, forex can address the incomes and costs created from trading its items to different nations. For accounting purposes, these revenues and expenses must be converted into India's domestic currency, the Indian rupee (INR), which is recorded in foreign currencies.

According to the company's forex data from 2013 to 2022, the company's other revenue expenses in forex have fluctuated over time. The foreign exchange other revenue expenses totaled INR 257.04 crore in 2013, and in 2014, they gradually increased to INR 447.94 crore. From 2014 to 2016, different income costs in forex diminished and settled at around INR 600-800 crore. However, other revenue expenses in forex saw a significant rise in 2017, reaching INR 794.20 crore. Other revenue expenses in forex have fluctuated from 2017 to 2022, reaching a peak of INR 2,628.79 crore in 2022.

There are a few possible explanations for the rise in forex other revenue expenses. First and foremost, it could show that Mahindra and Mahindra has been putting vigorously in its commodity activities. Activities like marketing, distribution, logistics, and currency hedging are examples of export operations. The rise in forex's other revenue expenses may be due to the significant costs associated with these activities. Second, it might imply that Mahindra and Mahindra has encountered difficulties with its export operations. The

profitability of export operations can be impacted by, for instance, changes in foreign policy, geopolitical issues, or regulations in other nations.

We can look at Mahindra and Mahindra's financial statements to learn more about its export status. The company's export operations' revenues and profits can be better understood through the financial statements. In the monetary year 2020-21, Mahindra and Mahindra's commodity income was INR 5,330.5 crore, which represented 7.9% of its all out income. Compared to the previous fiscal year, export revenue increased by 17.7%. This increment can show that Mahindra and Mahindra's product tasks have been performing great.

In addition, Mahindra and Mahindra's yearly report for the monetary year 2020-21 features its product execution. According to the report, the company has been strengthening its existing markets and entering new markets to increase its international presence. The report also emphasizes partnerships with global partners and the introduction of new products to international markets. Its export operations may expand as a result of these initiatives.

In conclusion, Mahindra and Mahindra's forex data from 2013 to 2022 show that the company's other revenue expenses in forex have fluctuated over time. The rise in other revenue expenses related to forex could be a sign that Mahindra and Mahindra has invested a lot in its export operations or is having trouble with them. Nonetheless, the budget summaries and yearly report show that the organization's product income has been expanding, and it has been taking drives to extend its

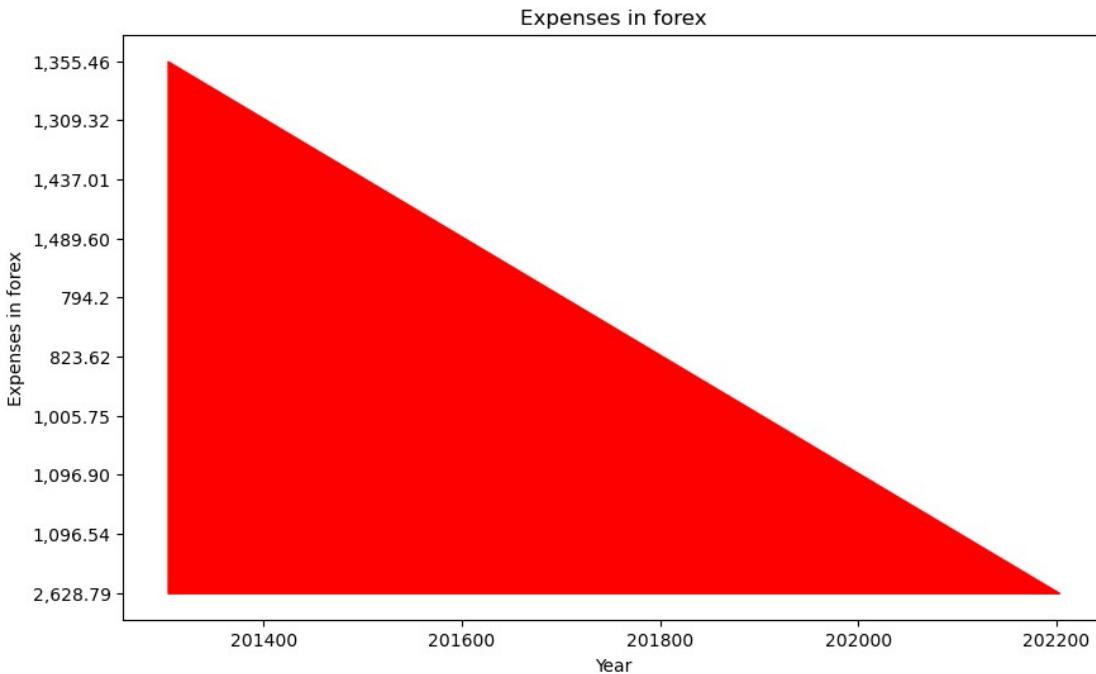
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plt.ylabel('Expenses in forex')

plt.show()
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Expenses in forex

One of India's leading automobile manufacturers, Mahindra and Mahindra (M&M) has a significant global presence. The company's expenses for exports in foreign currency are represented by the forex data provided for the years 2013 to 2022. If you look at this data, you can learn a lot about the company's exports over time.

The data indicate that the company's foreign exchange costs for exports have fluctuated over time. From 2013 to 2016, the forex costs for sends out were moderately high, with the most elevated cost of 1,489.60 crores being kept in 2016. This is because of the difficult economic conditions that were in place at this time, particularly in the markets in Europe and the United States, which had an effect on the demand for automobiles.

Be that as it may, from 2017 to 2019, the forex costs for trades showed a decay, with the most minimal cost of 794.2 crores being kept in 2017. During this time, there was a lot of demand for automobiles, especially in the European and American markets, which could have helped the cost of exports in foreign currency drop.

The COVID-19 pandemic disrupted global supply chains and raised logistics costs, resulting in a slight increase in forex expenses for exports in 2020 of 1,096.90 crores. Regardless of this, the organization kept on trading its items and kept up with its situation in the worldwide market.

Forex expenses for exports increased to 1,096.54 crores in 2021, indicating steady export growth. This is because of the improving global economy, particularly in the markets of Europe and the United States, where there is a strong demand for automobiles.

The forex costs associated with exports significantly increased in 2022, reaching 2,628.79 crores. This can be ascribed to the financial moves looked by the organization because of the Coronavirus pandemic, including production network interruptions, coordinated operations difficulties, and rising info costs. The company's efforts to increase its global market share and enter new markets could also be to blame for the rise in forex expenses.

In general, the forex information for M&M proposes that the organization has kept areas of strength for an in the worldwide market, in spite of confronting financial difficulties and vacillations popular throughout the long term. The decrease in forex costs for sends out from 2017 to 2019 shows serious areas of strength for a for M&M's items in the worldwide market, while the expansion in forex costs in 2022 recommends that the organization is proceeding to extend its piece of the pie and contact new business sectors.

The company's export status is also impacted by external factors like economic conditions and the COVID-19 pandemic, as shown by the data. This features the requirement for organizations to take on systems to relieve such dangers and keep areas of strength for an in the worldwide market.

In conclusion, M&M's foreign exchange data provides valuable insights into the company's export status over time, revealing its position in the global market and the influence of external factors on its exports. The company's resilience and solid business strategies, which are essential for success in the highly competitive global market, are reflected in its capacity to adapt to shifting economic conditions and maintain its position in the market.

Conclusion

The Indian multinational conglomerate Mahindra & Mahindra Limited, more commonly referred to as Mahindra, offers a wide range of goods and services, including aerospace and automobiles. The organization has arisen as an innovator in different sections and has effectively laid down a good foundation for itself as a brand known for development, quality, and client centricity. We will investigate why Mahindra is significantly superior to its rivals in this essay.

Mahindra has a unique advantage over its rivals because of its diverse business portfolio, which is one of its primary strengths. Automotive, farm equipment, aerospace, defense, hospitality, real estate, and financial services are among the many industries in which Mahindra operates. Due to its diverse business model, the company is able to take advantage of cross-selling opportunities and synergies, which can help it increase revenue and profitability.

The company's success can be attributed to its emphasis on technology and innovation. The business has made significant investments in R&D and has been an early adopter of new technologies. Mahindra has been able to stay ahead of its rivals thanks to the establishment of numerous research and development centers all over the world for the creation of cutting-edge technologies. For instance, the business has developed a number of electric vehicles that are not only environmentally friendly but also cost-effective for customers.

Mahindra's strong emphasis on customer-centricity is yet another reason why it is significantly superior to its rivals. The company strives to provide products and services that meet or exceed the expectations of its customers and places a significant emphasis on comprehending their requirements and preferences. Mahindra has a dedicated customer service team that makes sure customers are happy with the products and services the company offers. The company's success can be attributed in large part to its customer-centric approach, which has helped it cultivate a loyal customer base.

In addition, Mahindra has developed a solid brand image that is synonymous with dependability and quality. The products of the company are renowned for their safety, performance, and durability. A sign of the quality of its goods and services is Mahindra's consistent high rating in surveys of customer satisfaction. The organization has won a few honors for its items, including the lofty J.D. Power Asia Pacific Honor for Consumer loyalty in the Auto portion.

Notwithstanding its solid image picture, Mahindra likewise has a strong dispersion organization, which empowers it to arrive at many clients across the globe. The company's partnerships with a number of distributors, dealers, and retailers help it reach more people and make more money. Mahindra has an advantage over its rivals because it has a distribution network that is one of the most extensive and effective in the business.

Sustainability and corporate social responsibility are also priorities for Mahindra. The organization has taken a few drives to diminish its carbon impression and advance

economical practices. The company, for instance, has developed a number of eco-friendly products, such as solar-powered irrigation systems and electric vehicles. In addition, Mahindra has supported the communities in which it operates through a number of CSR initiatives, which has contributed to the development of a positive brand image.

Furthermore, Mahindra has been able to weather economic downturns and emerge stronger because of its solid financial position. The organization has a strong monetary record, with a low obligation to-value proportion, which gives it monetary adaptability to put resources into learning experiences. Mahindra is able to reinvest in its business and reward its shareholders because it has a proven track record of generating strong cash flows and profits.

In conclusion, Mahindra is significantly superior to its rivals because of its diverse business portfolio, commitment to sustainability and CSR, strong brand image, focus on innovation and technology, customer-centricity, and robust distribution network. The company's ability to adapt to shifting market conditions and emerge stronger is encouraging for its prospects in the future.