ROLE OF DATA ANALYTICS IN IMPROVING ACADEMIC PERFORMANCE: AN EMPIRICAL STUDY OF MBA PROJECTS

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Abstract
The increasing integration of data analytics in management education has transformed how MBA students approach academic and research projects. Analytical tools such as MS Excel, SPSS, Power BI, and Python have become essential for conducting effective desk and field research. The use of analytics in business education supports data-driven thinking and improves students' analytical abilities (Thomas H. Davenport & Jeanne G. Harris, 2007). This study investigates the impact of data analytics on academic performance through an empirical analysis of MBA projects. Primary data were collected via structured questionnaires and by comparing project performance using analytical tools with that of projects relying on traditional methods. Previous research indicates that integrating analytics into academic tasks significantly enhances students' ability to interpret complex datasets and make evidence-based decisions (Foster Provost & Tom Fawcett, 2013). The results show that students who applied data analytics demonstrated improved research quality, accurate data interpretation, better visualisation, and stronger evidence-based conclusions, leading to higher academic performance. Similar studies in analytics-driven education confirm that visualisation and statistical analysis tools enhance understanding and retention of knowledge (Viktor Mayer-Schönberger & Kenneth Cukier, 2013). The study also highlights that exposure to analytics enhances analytical skills, decision-making, and industry readiness. However, challenges such as limited data literacy and inadequate training may hinder effective utilisation. The paper concludes that structured analytics training within MBA curricula significantly improves academic outcomes and prepares students for data-driven organisational environments.

***Keywords**: MBA Projects, Analytical Tools, Data Analytics, Academic Performance, Decision Making.*

Introduction:

In today's business centric world, data is one of the most important resources for organisations. As a result, data analytics has become an indispensable tool for decision-making, performance evaluation, and strategic planning. Organizations are increasingly using analytical tools to analyze large volumes of data and help evidence-based decisions, resulting in a rising need for experts with excellent analytical and data interpretation abilities.

Management education, particularly Master of Business Administration (MBA) programs, plays an important role in helping students develop these skills. MBA programs emphasise research-based learning, practical projects, and analytical thinking to equip students for data-driven corporate situations. MBA programs include academic research projects in which students do surveys, gather data, and evaluate commercial challenges. Artificial intelligence is increasingly used in higher education to boost learning efficiency and institutional decision-making (Sontakke, 2025). Many projects previously relied on manual analysis techniques, which restricted the accuracy and depth of study findings. With technological breakthroughs, analytical tools such as Microsoft Excel, SPSS, Power BI, and Python have become widely used for evaluating and interpreting study data. These tools enable students to interpret massive datasets, use statistical methods, and display findings in the form of graphs and visualizations. This increases the clarity, trustworthiness, and efficacy of study results while also improving the overall quality of project presentations.

Data analytics used in academic assignments also aids students in gaining important skills like as critical thinking, analytical reasoning, and problem-

solving. These abilities are highly prized in today's enterprises, where managers are required to interpret data and generate useful insights for decision-making. Analytics solutions help to enhance research results and promote academic progress by converting raw data into actionable insights.

However, successful deployment of data analytics in MBA education may encounter problems, including limited data literacy, a lack of appropriate training, and inadequate access to sophisticated analytical tools. As a result, including structured analytics training and practical learning opportunities in the MBA curriculum is critical. In this context, the current study investigates the usage of data analysis tools in MBA projects and assesses their influence on students' academic success and research quality.

Literature Review:

Because data analytics and learning analytics foster better academic achievement, research quality, and successful decision-making, they have become increasingly important in the area of education. Because of the growing usage of academic databases and digital learning platforms, a lot of educational data has been produced that may be analysed to better understand student behaviour and learning patterns.

Data mining and other analytical methods help institutions identify trends in these datasets and make predictions about student performance. They also help them develop strategies to enhance academic results (Suhaimi, 2023). To identify students who might be at risk of academic failure and facilitate early academic interventions, predictive analytics models like classification and regression are widely used (Jalil, 2023).

The use of machine learning approaches in educational data analysis has also grown considerably in colleges and universities. Universities can monitor student performance and enhance academic support systems by using sophisticated analytical techniques to assess student learning behavior and academic achievement (Ishak, 2023). Albreiki (2021) has demonstrated how learning analytics has grown into a crucial tool for evaluating student data and enhancing academic management choices.

Educational data mining approaches are crucial for forecasting academic results and determining the critical elements that contribute to student success in higher education institutions (Zaki, 2021). Institutions can use analytical models to assess learning patterns and apply strategies to improve the efficiency of teaching and learning processes (Alashwal, 2021). In universities and colleges, predictive analytics is often used to analyse student data and predict academic achievement (Alyahyan, 2020). Academic achievement is greatly impacted by a number of variables, including past academic performance, attendance, participation in learning activities, and demographic factors (Düştegör, 2020). Educational institutions are able to handle and analyse massive amounts of academic data effectively thanks to the use of big data analytics tools. By enabling institutions to tailor learning strategies based on student performance data, these technologies aid in the discovery of learning trends (Raj, 2024). In digital learning settings, machine learning algorithms are being used more and more frequently to assess student involvement and forecast academic performance (Priya, 2024).

In management education, analytics tools are becoming more and more crucial since they assist students in acquiring the analytical thinking and data interpretation abilities necessary in today's business world (Leelavati, 2023). Using analytics in academic programs enables students to evaluate complicated datasets and make data-driven decisions, which are crucial skills for businesspeople.

In general, the integration of data analytics tools into education results in higher-quality research, improved learning results, and better academic decision-making. However, many educational institutions still face issues like a lack of technical knowledge, few training options, and a lack of understanding of sophisticated analytical tools. As a result, more study is needed to identify strategies for successfully integrating analytics tools into academic programs, especially MBA programs, in order to improve student achievement and research results.

Research Gap:

Although data analytics is becoming increasingly important in business decision-making, there has been little research into how it affects the academic achievement and research caliber of MBA students. The majority of research emphasize industry applications over the usage of analytical tools like Excel, SPSS, Power BI, and Python in academic endeavours.

Additionally, there is little empirical data on the difficulties students have in using analytics tools, such as restricted training and exposure. As a result, the goal of this research is to investigate how data analytics can help enhance the quality of research, project presentations, and academic achievement in MBA programs.

Objectives:

1. To study the use of data analytics tools in MBA projects.

2. To evaluate their impact on academic performance.

3. To examine the improvement in research quality and presentation through analytics tools.

4. To recommend measures for effective integration of analytics in MBA education.

Research Methodology:

Particulars	Details
1. Title of the Study	Role of Data Analytics in Improving Academic Performance: An Empirical Study of MBA Projects
2. Type of Research	Descriptive and Analytical
3. Research Approach	Survey Method
4. Geographical Area	Nashik City
5. Target Population	MBA students in Nashik City
6. Sampling Technique	Convenience Sampling
7. Sample Size	100
8. Sampling Unit	Individual MBA students
9. Source of Data	Primary and Secondary Data
10. Data Collection Method	Online questionnaire

Data Analysis:

As data analysis aids in deciphering the gathered data and making insightful judgments, data analysis is a crucial step in any research investigation. Both primary and secondary data are used in the current study, which is titled "**Role of Data Analytics in Improving Academic Performance: An Empirical Study of MBA Projects**. " Using Google Forms, primary data were gathered from a structured questionnaire administered to 100 MBA students in Nashik city. The survey covered topics such as knowledge of data analytics software, how it was used in MBA projects, and how it affected research quality, academic achievement, and presentation. In addition to prior studies pertaining to data analytics and learning analytics in education, secondary data were acquired from websites, books, research journals, and academic papers. To gain a clear understanding of the responses, the collected data were analysed using percentage analysis, tables, and graphical representations such as pie charts and bar graphs.

Q. Name of College

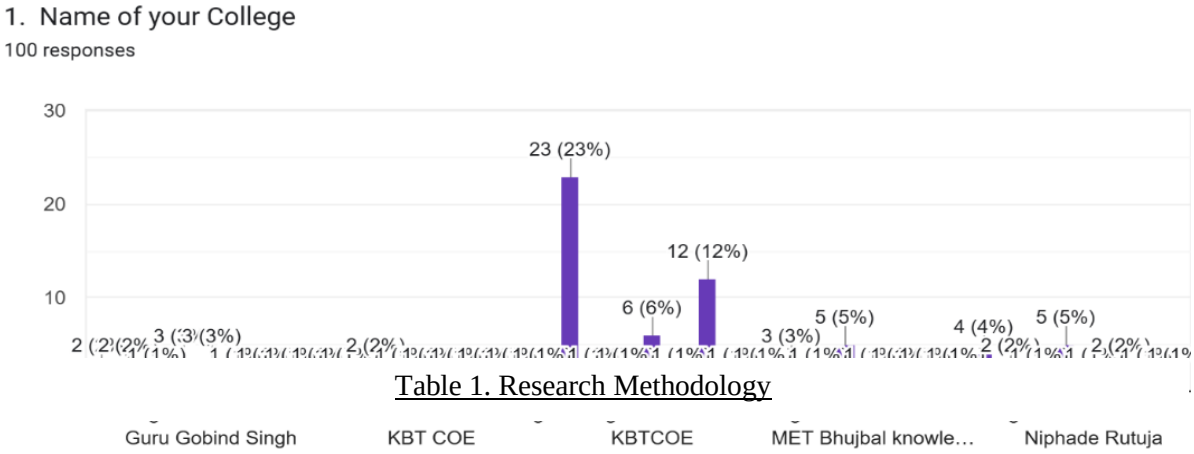

Table 1. Research Methodology

Fig 1. Name of colleges

Interpretation: The above chart represents the distribution of respondents according to their college. The data shows that students from multiple management institutes in Nashik participated in the survey. A significant proportion of respondents, 41%, belong to KBT College of Engineering (KBTCOE), making it the largest group of participants in the study. Apart from this, 5% of respondents are from MET Bhujbal Knowledge City, and 4% are from Matoshri College. A small number of responses (around 1–3% each) were received from other colleges such as Ashoka College, Guru Gobind Singh College, and other institutions in Nashik.

Q. Awareness of Analytical Tools among MBA Students

Analytical Tool	Number of Respondents	Percentage
MS Excel	90	90%
Python / R	24	24%
Power BI	24	24%
Tableau	17	17%
SPSS	13	13%
Others	2	2%
SQL	1	1%
Total	**100**	-

Table 2. Awareness of Analytical Tools among MBA Students

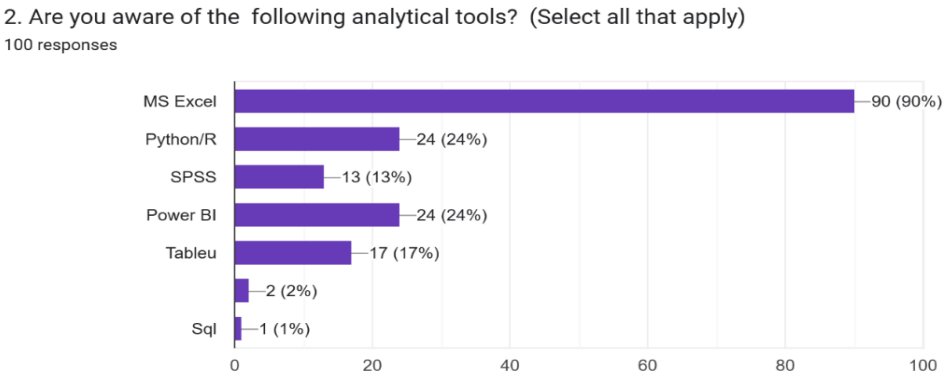

Fig 2. Awareness of Analytical Tools among MBA Students

Interpretation: The chart shows the awareness of different data analytics tools among MBA students based on 100 responses. MS Excel is the most widely known tool, with 90% of respondents being aware of it, indicating its common use in academic work and data analysis. Awareness of Python/R and Power BI is reported by 24% of students each, while 17% are aware of Tableau. Only 13% of respondents are familiar with SPSS, and very few students are aware of SQL (1%) and other tools (2%). Overall, the data indicates that students are highly familiar with basic tools like MS Excel, while awareness of advanced analytics tools is comparatively lower, suggesting the need for more analytics training in MBA programs.

Q. Data Analytics Tools Used in MBA Projects

Analytical Tool	Number of Respondents	Percentage
MS Excel	90	90%
Power BI	12	12%
Python / R	9	9%
Tableau	8	8%
SPSS	6	6%
Others	1	1%
Total	**100**	-

Table 3. Data Analytics Tools Used in MBA Projects

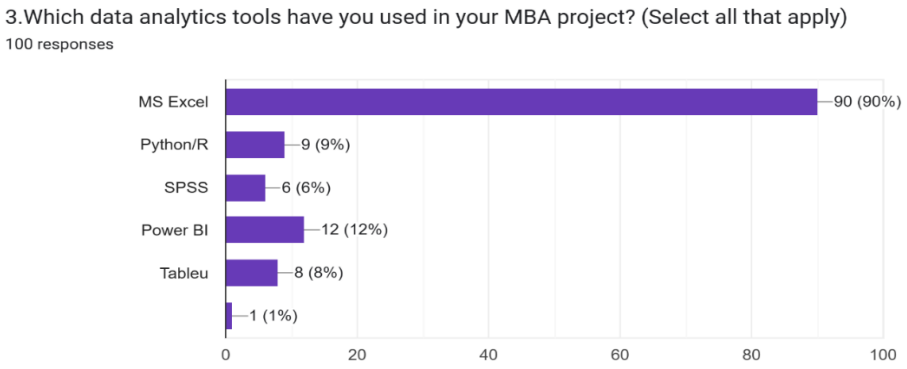

Fig 3. Data Analytics Tools Used in MBA Projects

Interpretation: The chart shows the data analytics tools used by MBA students in their projects. The majority of respondents, 90%, reported using MS Excel, making it the most commonly used tool for data analysis. A smaller number of students use advanced tools such as Power BI (12%), Python/R (9%), and Tableau (8%). Only 6% of respondents use SPSS, while 1% reported using other tools. Overall, the results indicate that MS Excel is the most preferred tool for MBA project analysis, while the usage of advanced analytics tools is relatively low among students.

Q. Responses on the Impact of Data Analytics Tools on Academic Performance

Response Category	Frequency (No. of Respondents)	Percentage (%)
Strongly Agree	42	42%
Agree	42	42%
Neutral	14	14%
Disagree	1	1%
Strongly Disagree	1	1%
Total	**100**	**100%**

Table 4. Impact of Data Analytics Tools on Academic

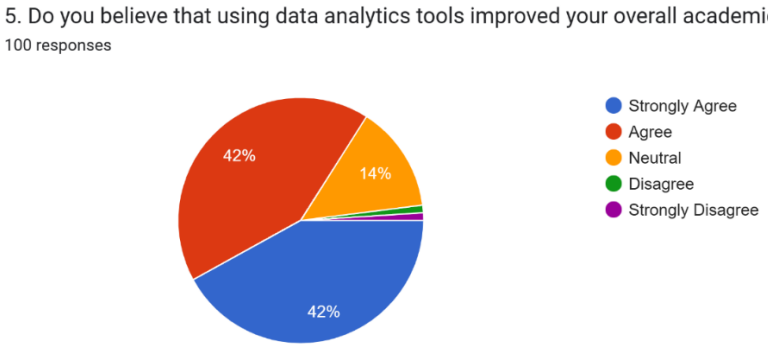

Fig 4. Impact of Data Analytics Tools on Academic Performance

Interpretation: The results show that most respondents believe data analytics tools improve academic performance. Out of 100 respondents, 42% strongly agree and 42% agree, meaning 84% have a positive perception of the impact of these tools. Meanwhile, 14% remain neutral, possibly due to limited experience with the tools. Only 2% disagree or strongly disagree, indicating very few negative opinions. Overall, the findings suggest that data analytics tools are widely perceived as beneficial for improving students' academic performance.

Q. Extent to which Analytical Tools Helped in Decision Making, Analytical Skills, and Industry Readiness

Rating Scale	Number of Respondents	Percentage (%)
1	31	31%
2	27	27%
3	22	22%
4	10	10%
5	10	10%
Total	**100**	**100%**

Table 5. Analytical Tools in Decision Making, Analytical Skills, and Industry

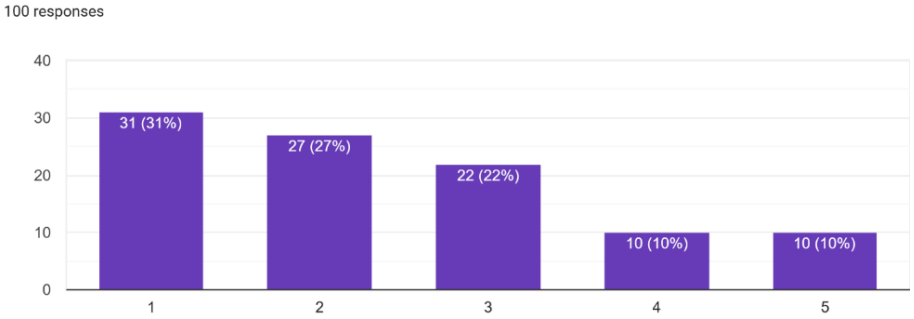

Fig 5. Analytical Tools in Decision Making, Analytical Skills, and Industry Readiness

Interpretation: The results show varied opinions regarding the extent to which analytical tools helped improve decision-making, analytical skills, and industry readiness. The highest number of respondents (31%) selected rating 1, followed by 27% rating 2 and 22% rating 3, indicating that many respondents perceive a low to moderate level of impact. Only 20% of respondents selected ratings 4 and 5, suggesting that fewer participants believe analytical tools have a very high impact. Overall, the findings indicate that while analytical tools contribute to skill development, their perceived effectiveness varies among respondents.

Q. Improvement in the Quality of Data Interpretation in the Project

Response Category	Frequency (No. of Respondents)	Percentage (%)
Yes	80	80%
No	7	7%
Maybe	13	13%
Total	**100**	**100%**

Table 6. Improvement in the Quality of Data Interpretation in the Project

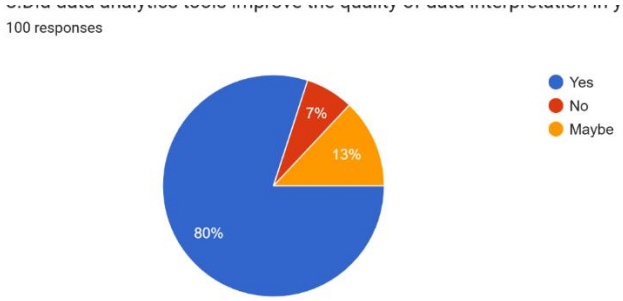

Fig 6. Improvement in the Quality of Data Interpretation in the Project

Interpretation: The results show that the majority of respondents believe that data analytics tools improved the quality of data interpretation in their project. 80% of the respondents answered "Yes," indicating a strong positive impact. Meanwhile, 13% selected "Maybe," suggesting some uncertainty about the improvement. Only 7% responded "No," showing that very few respondents felt that analytics tools did not enhance their data interpretation. Overall, the findings indicate that data analytics tools significantly contribute to better data interpretation in academic projects.

Q. Opinion on Making Data Analytics Training Compulsory in MBA Curriculum

Response Category	Frequency (No. of Respondents)	Percentage (%)
Yes	81	81%
No	9	9%
Maybe	10	10%
Total	**100**	**100%**

Table 7. Opinion on Making Data Analytics Training Compulsory in MBA Curriculum

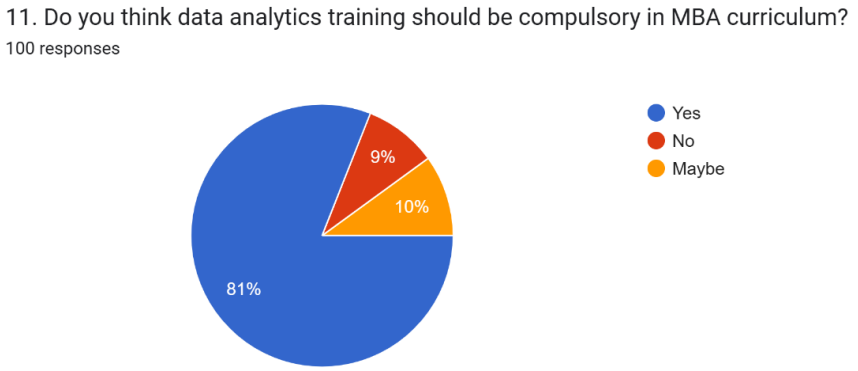

Fig 7. Opinion on Making Data Analytics Training Compulsory in MBA Curriculum

Interpretation: The results indicate that the majority of respondents support making data analytics training compulsory in the MBA curriculum. 81% of respondents answered "Yes," showing strong support for including analytics training in management education. Meanwhile, 10% selected "Maybe," suggesting some uncertainty, and 9% responded "No." Overall, the findings suggest that most students believe data analytics training is essential for MBA programs and future career readiness.

Q. Measures to Improve Effective Integration of Analytics in MBA Education

Measure	Frequency (No. of Respondents)	Percentage (%)
More practical workshops	70	70%
Industry-based projects	48	48%
Certification courses	69	69%
Advanced analytics software training	57	57%
Faculty training	25	25%
Total Responses	**100**	—

Table. 8 Measures to Improve Effective Integration of Analytics in MBA

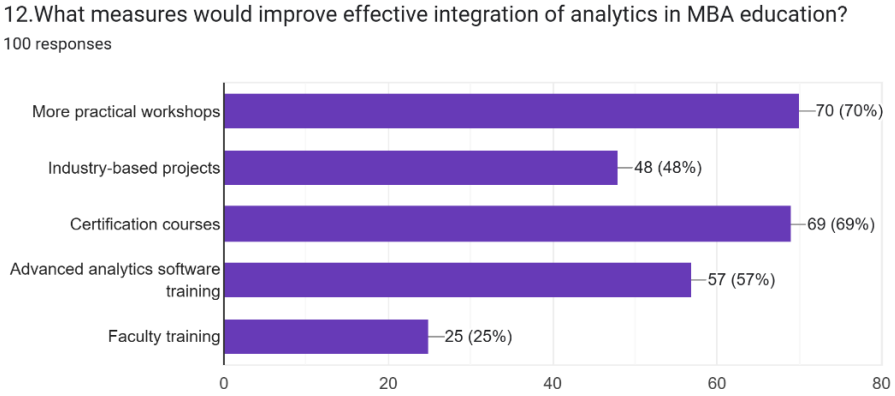

Fig 8. Measures to Improve Effective Integration of Analytics in MBA

Interpretation: The results show that practical workshops (70%) and certification courses (69%) are the most preferred measures for improving the integration of analytics in MBA education. Additionally, 57% of respondents recommended advanced analytics software training, while 48% suggested industry-based projects to increase practical exposure. Only 25% emphasized faculty training as a necessary measure. Overall, the findings indicate that students prefer hands-on learning and industry-relevant training to effectively integrate analytics into MBA programs.

Q. Availability of Free Access to Analytical Tools in College

Response Category	Frequency (No. of Respondents)	Percentage (%)
Yes	58	58%
No	42	42%
Total	**100**	**100%**

Table 9. Availability of Free Access to Analytical Tools in

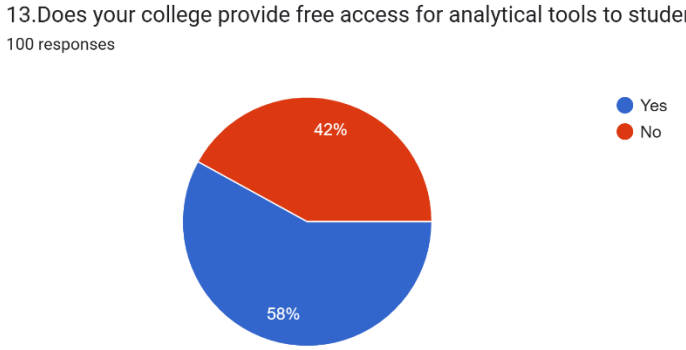

Fig 9. Availability of Free Access to Analytical Tools in College

Interpretation: The results show that 58% of respondents reported that their college provides free access to analytical tools, while 42% indicated that such access is not available. This suggests that although a majority of institutions support students by providing analytical tools, a significant portion of colleges still do not offer free access. Overall, the findings highlight the need for wider availability of analytical tools to support students' learning and practical experience in data analytics.

Q. Purpose of Using Data Analytics Tools in MBA Project

Purpose	Frequency (No. of Respondents)	Percentage (%)
To organise data	7	7%
To create charts and graphs	20	20%
To make reports	10	10%
For multiple purposes	63	63%
Total	**100**	**100%**

Table 10. Purpose of Using Data Analytics Tools in MBA Project

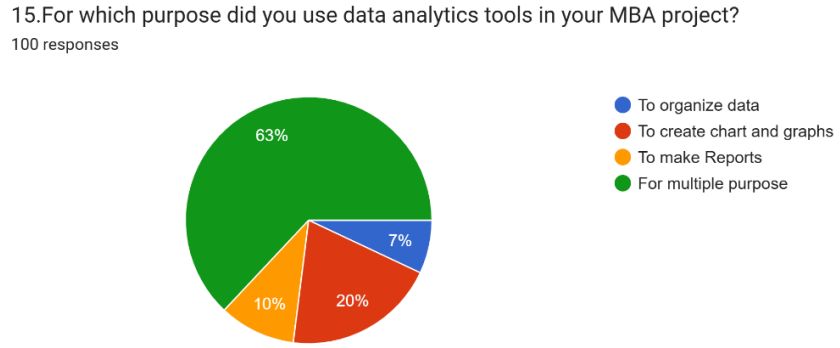

Fig 10. Purpose of Using Data Analytics Tools in MBA Project

Interpretation: The results indicate that the majority of respondents (63%) used data analytics tools for multiple purposes in their MBA project, such as organising data, creating visualisations, and preparing reports. Meanwhile, 20% used the tools mainly to create charts and graphs, 10% for report preparation, and 7% for organising data. Overall, the findings suggest that data analytics tools are widely used for a combination of tasks to support different aspects of project work.

Conclusion:

The present study examined the role of data analytics in improving the academic performance of MBA students, particularly in the context of academic research projects. The findings clearly indicate that the integration of data analytics tools significantly enhances research quality, data interpretation, and project presentation.

The results show that MS Excel is the most widely used analytical tool among MBA students due to its accessibility and ease of use. However, the awareness and utilisation of more advanced analytical tools such as Python, Power BI, Tableau, and SPSS remain relatively limited. This suggests that MBA programs need to provide more structured training and exposure to advanced analytics platforms.

The study also highlights that students strongly believe that analytics tools improve academic performance and help achieve better project marks. These tools enable students to organise large datasets, apply statistical analysis, create meaningful visualisations, and present research findings more effectively.

Furthermore, visualisation tools play a crucial role in improving project presentation by making data easier to understand and interpret. As a result, analytics-based projects are widely perceived as more professional, systematic, and research-oriented compared to traditional projects.

Another significant finding of the study is the strong demand for data analytics training in MBA education. The majority of respondents support making analytics training compulsory in the curriculum and recommend practical workshops, certification programs, and industry-based projects to strengthen analytical skills.

In conclusion, the integration of data analytics tools in MBA education plays an important role in

enhancing research quality, academic performance, and industry readiness of students. Educational institutions should therefore focus on providing practical analytics training, access to advanced analytical software, and industry-oriented learning opportunities to prepare students for the modern data-driven business environment.

Findings of the Study

The analysis of the collected data provides important insights into the role of data analytics in improving the academic performance of MBA students. The study reveals that awareness of analytical tools is highest for basic tools such as MS Excel, while awareness of advanced tools like Python, Power BI, Tableau, and SPSS is comparatively lower. This indicates that although students are familiar with basic data analysis tools, exposure to advanced analytics software remains limited.

The results also show that MS Excel is the most commonly used tool in MBA projects, as most students rely on it for data organisation, analysis, and visualisation. The usage of advanced analytics tools is relatively low, suggesting that students prefer tools that are easy to use and readily available.

The findings further indicate that most students frequently use analytics tools during the preparation of their MBA projects. A large majority of respondents believe that these tools improve academic performance and help them achieve better project marks. Students also reported that analytics tools enhance the quality of data interpretation by enabling better analysis and clearer understanding of research data.

The study also highlights a strong demand for integrating data analytics training into the MBA curriculum. Students suggested measures such as practical workshops, certification courses, and advanced software training to improve analytics learning. However, the findings indicate that access to advanced analytical tools in many colleges is still limited, which may restrict students' opportunities to develop stronger analytical skills.

Future Scope of the Study

The present study opens several opportunities for further research. Future studies can expand the research by including a larger sample size and collecting data from MBA students across different cities, universities, and educational institutions. This would provide a broader understanding of the role of data analytics in management education.

Further research can also focus on comparing academic performance before and after the use of analytical tools to measure their actual impact more accurately. Researchers may also examine the effectiveness of advanced analytics tools, machine learning platforms, and business intelligence software in academic projects.

In addition, future studies could include faculty perspectives and industry experts' opinions to better understand the skills required for industry readiness. Longitudinal studies could also be conducted to analyse how continuous exposure to analytics training influences students' analytical capabilities and career opportunities.

Overall, expanding research in this area can help educational institutions design stronger data analytics curricula and practical training programs for MBA students.

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