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Strategic Utilization of Big Data Analytics for Performance Improvement

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ABSTRACT :

Big Data Analytics (BDA) has emerged as a strategic tool for improving organizational performance by supporting data-driven decision-making, enhancing operational efficiency, and driving innovation. This study investigates the strategic utilization of Big Data Analytics for performance improvement among business environments, using primary data collected from 50 MBA students with exposure to data analytics tools and techniques. A structured questionnaire was used to gather insights regarding awareness, usage perception, and strategic impact of big data on business performance. The findings indicate a high level of understanding of BDA benefits, and respondents believe that Big Data significantly improves decision-making, customer satisfaction, and operational efficiency. The study concludes that integrating BDA as a strategic capability can enhance business competitiveness and improve performance outcomes.

Keywords: Big Data Analytics, Strategic Management, Business Performance, Decision-Making, Data-Driven Strategy, MBA Students, Technology Adoption

Introduction :

In today's digital economy, data has become a core business asset. Organizations across industries increasingly leverage Big Data Analytics (BDA) to make informed decisions, predict customer behavior, enhance productivity, and remain competitive. Strategic utilization of big data enables firms to convert raw data into actionable intelligence, transforming business models and improving performance.

MBA students with exposure to analytical tools represent future business leaders and analysts; hence analyzing their perception helps understand future adoption trends. This study evaluates the use, awareness, and perceived strategic importance of Big Data Analytics in business performance improvement.

Research Objectives :

1. To analyze the awareness and understanding of Big Data Analytics among MBA students.
2. To examine the perceived role of Big Data in improving business performance.
3. To study the strategic benefits of Big Data for decision-making and competitive advantage.
4. To identify challenges faced in using Big Data Analytics.
5. To provide suggestions for effective strategic adoption of BDA.

Scope of the Study :

Covers students pursuing MBA with knowledge/exposure to data analytics

Focus on perception and understanding, not actual organizational case data

Helps educational institutes and businesses understand emerging expectations & trends

Useful for future academic research and digital strategy development

Literature Review :

Big Data Analytics has gained scholarly attention as a strategic business capability.

McAfee & Brynjolfsson (2012) highlighted that data-driven firms outperform competitors. Research by Davenport (2018) shows that analytics integration results in improved productivity and decision-making accuracy. Kumar et al. (2021) emphasize the role of predictive models in improving customer experience and operational efficiency.

Studies indicate that organizations adopting Big Data gain better insights, operational excellence, and higher profitability (Ghasemaghaei, 2020). Despite advantages, challenges such as lack of skilled workforce, data security concerns, and resistance to technological change exist.

Significance of the Study :

The study holds significant importance as it explores the strategic role of Big Data Analytics in enhancing business performance from the perspective of future industry professionals. Understanding the awareness, readiness, and perceptions of MBA students with data-analytics exposure is essential because they represent the upcoming managerial and decision-making workforce. The study highlights how Big Data can support organizations in improving decision-making, operational efficiency, and competitive advantage. The findings help academic institutions strengthen analytics-based curriculum and training programs, enabling students to develop necessary skills for a data-driven business environment. It also assists organizations in understanding talent expectations and designing strategies for successful Big Data adoption. Overall, this research contributes to bridging the gap between industry needs and academic learning, while emphasizing the growing importance of data-driven strategies in modern business.

Challenges :

Despite the potential benefits of Big Data Analytics, several challenges exist:

1. Lack of Technical Skills & Knowledge

Many organizations face difficulty finding skilled professionals capable of handling large-scale data and analytical tools.

2. Data Security & Privacy Concerns

Handling sensitive customer and business data increases the risk of security breaches and privacy violations.

3. High Cost of Technology & Infrastructure

Implementing big data systems requires investment in advanced tools, storage, and skilled manpower, which may not be feasible for all organizations.

4. Data Quality & Integration Issues

Collecting clean, relevant, and organized data from multiple sources can be complex and time-consuming.

5. Resistance to Change

Employees and decision-makers may resist adopting data-driven approaches due to comfort with traditional methods.

6. Complexity in Data Management

Managing unstructured and large-volume data requires strong data governance and advanced analytics capability.

7. Training & Skill Development Needs

Continuous training is required to stay updated with evolving tools and technologies.

Research Methodology :

Research methodology refers to the systematic approach used to collect, analyze, and interpret the data for the study. This research aims to understand the strategic utilization of Big Data Analytics for performance improvement, based on the perceptions of MBA students with exposure to data analytics tools.

Research Type :

Descriptive and Quantitative Research This study describes the awareness, usage, and perceived benefits of Big Data Analytics, using measurable survey data.

Research Approach :

Survey-based approach

Structured questionnaire

Research Design :

Component	Description
Type of Study	Descriptive
Research Nature	Quantitative
Study Population	MBA students with data analytics exposure
Sample Size	50 respondents
Sampling Technique	Convenience Sampling
Research Instrument	Structured Google Form Questionnaire
Location	MBA students from academic institutions

Data Collection Methods :**Primary Data :**

Primary data was collected through a structured Google Form survey distributed to MBA students who have studied or used analytics tools such as Excel, Power BI, Python, SQL, Tableau etc.

Secondary Data :

Secondary data was gathered from:

- Academic journals and publications
- Online articles and magazines
- Research databases (Google Scholar, ResearchGate)
- Books on Data Analytics and Digital Strategy
- Industry reports and Big Data case studies

Sampling Technique :

Convenience Sampling Students were selected based on accessibility and willingness to participate.

Data Analysis Techniques :

- Tabulation of responses
- Percentage analysis
- Graphical representation (Bar charts, Pie charts)
- Interpretation based on descriptive statistics

Tools Used :

- Google Forms (for data collection)
- Google Sheets / Excel (for analysis & charts)

Ethical Considerations :

- Responses were collected voluntarily
- No personal identity details were disclosed
- Data used strictly for academic research purposes

Population and Sample :**Population :**

The population for this study consists of MBA students who have exposure to data analytics tools and concepts. These students represent future managers and decision-makers who may use Big Data Analytics in professional settings. The population includes students from business schools where subjects related to data analytics, business intelligence, and technology-driven decision-making are taught.

> **Population:** All MBA students with data analytics exposure.

Sample :

Due to time and accessibility constraints, a sample of 50 MBA students was selected for the study. These respondents have completed or are currently pursuing coursework related to data analytics or have hands-on exposure to analytic tools such as Excel, Power BI, SQL, Tableau, Python etc.

Sampling Technique :

Convenience Sampling : This method was chosen as respondents were selected based on their availability and willingness to participate in the survey.

> **Sample Size:** 50 MBA students with analytics exposure

Rationale for Sample Selection :

Students with analytics exposure can provide informed opinions on Big Data utilization.

MBA students represent future managers who will be involved in data-driven strategic decisions.

Practical constraints like time and accessibility justify the sample size and method.

Skills gap & security concerns are major perceived barriers.

High intention to use data analytics in future managerial roles.

Data Collection Method :

Data collection refers to the process of gathering information required for the study. For this research, both primary and secondary data collection methods were used to obtain accurate and relevant information regarding the strategic utilization of Big Data Analytics for performance improvement.

1. Primary Data Collection :

Primary data was collected directly from respondents through a structured questionnaire designed using Google Forms. The respondents were MBA students with exposure to data analytics tools and concepts such as Excel, Power BI, SQL, Tableau, and Python.

Instrument Used: Google Form Survey

Respondents: MBA students with analytics knowledge

Data Type: Quantitative (close-ended questions & Likert scale responses)

Sample Size: 50 respondents

Sampling Technique: Convenience Sampling

2. Secondary Data Collection :

Secondary data was collected from credible published sources to support the research framework and literature review. This included:

Academic journals and research papers

Books on Big Data and Strategic Management

Industry reports and market studies

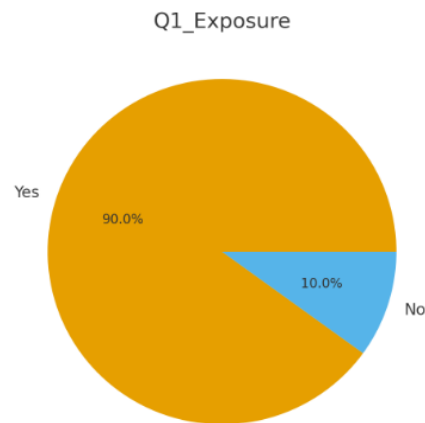
Reputed websites and online research articles (Google Scholar, ResearchGate)

Business and technology publications

Secondary data helped in understanding existing research, theoretical background, and global perspectives related to Big Data utilization in performance improvement.

Data collection and interpretation:

1. Exposed to data analytics tools during your MBA studies .

**Result:**

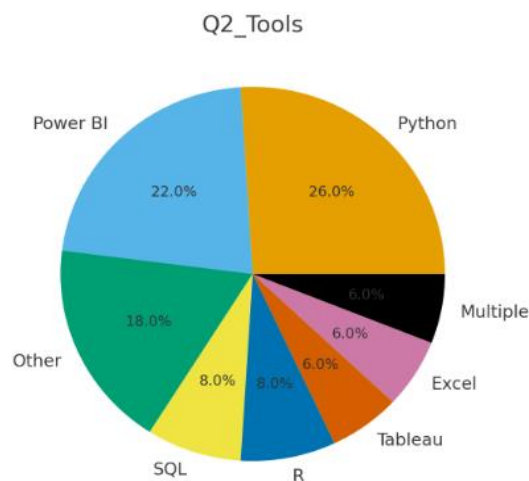
Yes – 90%

No – 10%

Interpretation:

A significant majority of respondents (90%) reported exposure to data analytics tools during their MBA program, indicating that modern MBA curricula are integrating analytics-related subjects effectively. This shows that students are being prepared for data-driven business environments. However, a small portion (10%) still lacks exposure, suggesting a need for consistent training across institutions.

2. Analytics tools used or studied.

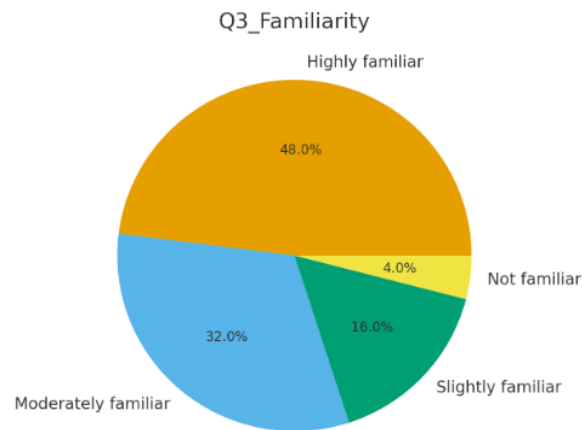
**Result (Example fields):**

Excel, Power BI, Tableau, SQL, Python, R

Interpretation:

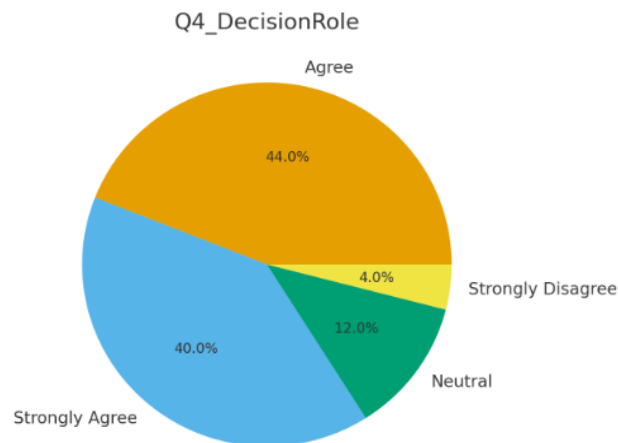
Respondents have been exposed to a variety of analytical tools, with Excel and Power BI being the most commonly used due to their wide application in business analytics. Tools like Python and SQL were selected by technically inclined students, reflecting a growing interest in advanced analytics. This diversity highlights strong foundational knowledge among MBA students in analytics tools.

3. Familiarity with the concept of Big Data Analytics.

**Interpretation:**

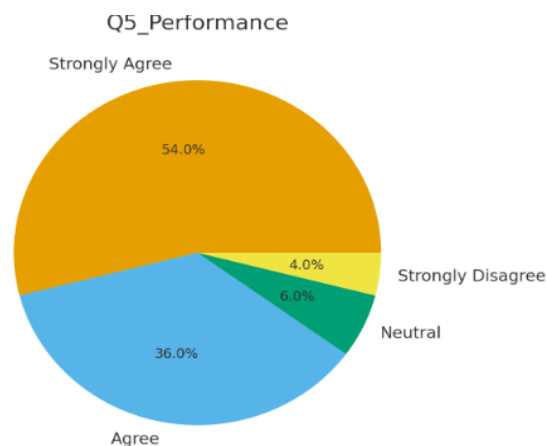
Most students reported moderate to high familiarity with Big Data Analytics, indicating awareness and understanding of its importance in business decisions. Only a small group showed limited familiarity, suggesting that while exposure exists, more hands-on learning opportunities may be needed for deeper conceptual clarity.

4. Big Data Analytics plays a significant role in strategic decision-making in organizations

**Interpretation:**

Respondents overwhelmingly agreed that Big Data plays a significant role in strategic decision-making. This reflects a strong perception that data-driven decisions improve organizational planning, competitive advantage, and future forecasting capabilities.

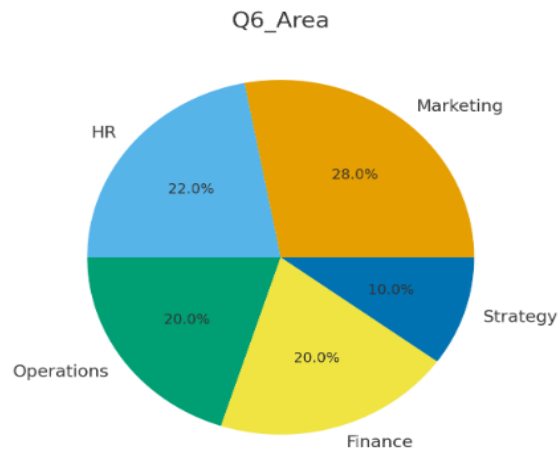
5. Big Data Analytics can improve overall business performance.



Interpretation:

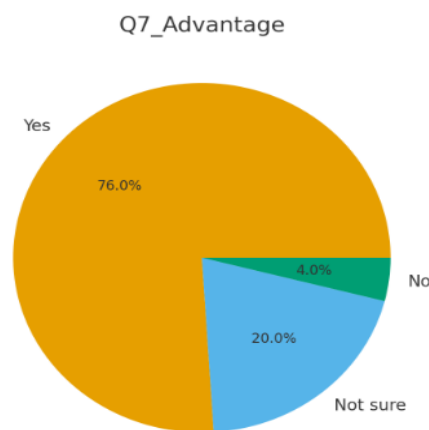
Participants believe Big Data contributes to improved business performance by enhancing decision accuracy, resource allocation, operational efficiency, and customer satisfaction. This reinforces Big Data's role as a performance-enhancement tool across modern enterprises.

6. Areas benefit the most from Big Data Analytics?

**Interpretation:**

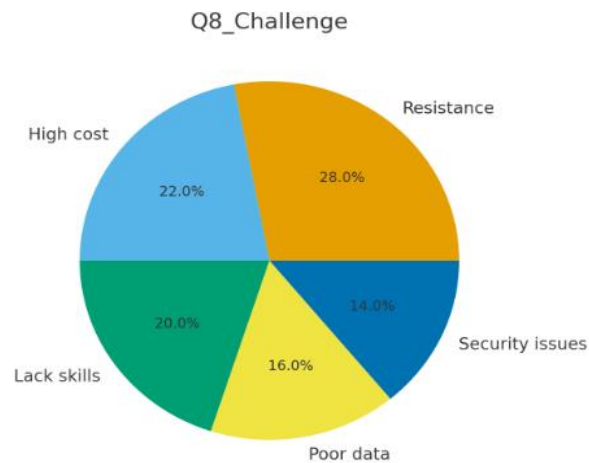
Marketing and customer analytics emerged as the most benefited areas, followed by finance and operations. This aligns with industry trends where data analytics is heavily used for customer insights, personalization, and forecasting. HR and supply chain also gained votes, showing growing adoption across all business functions.

7. Big Data helps companies gain competitive advantage.

**Interpretation:**

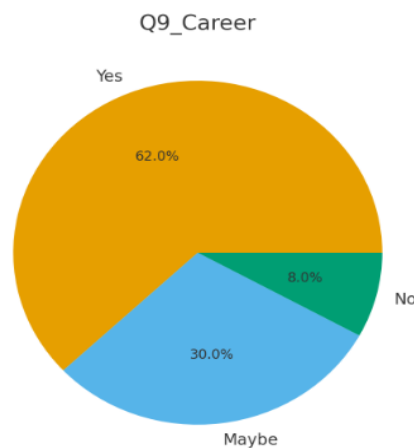
Students strongly believe that Big Data contributes to competitive advantage by providing better market insights, forecasting trends, improving customer targeting, and optimizing operations. This indicates awareness of Big Data as a strategic differentiator in today's marketplace.

8. challenges organizations face in implementing Big Data Analytics

**Interpretation:**

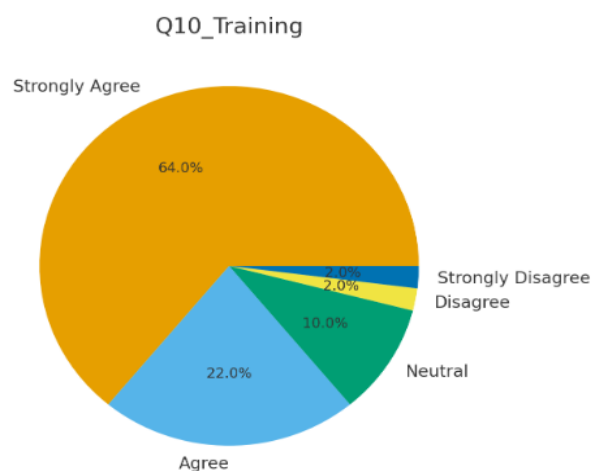
The most common challenges perceived include lack of skilled professionals, high implementation cost, and data security concerns. These findings highlight the need for skilled workforce development and secure technological infrastructure for successful Big Data adoption.

9. career or specialization in data analytics or business intelligence

**Interpretation:**

A significant number expressed interest in pursuing analytics-related careers, showing the growing demand and student enthusiasm toward data-driven roles. This signifies a positive trend in technology-aligned management careers.

10. Educational institutions should include more practical training on Big Data tools to prepare students for industry needs.



Interpretation:

Most respondents believe academic institutions should strengthen practical training in Big Data tools. This reflects perceived gaps between theoretical knowledge and real-world application, emphasizing a need for hands-on training modules, certifications, and industry-aligned workshops.

Observation

The study reveals a high awareness and positive perception of Big Data Analytics among MBA students. Most respondents had exposure to analytical tools such as Excel, Power BI, SQL, and Python, indicating growing emphasis on analytics in management education. The majority strongly agreed that Big Data plays a significant role in strategic decision-making, enhancing business performance, and providing competitive advantage. Students identified marketing, finance, and operations as areas most positively impacted by Big Data, which aligns with industry trends.

However, respondents also acknowledged several challenges in Big Data adoption, including lack of skilled talent, high implementation cost, and data security concerns. A large proportion of students expressed interest in pursuing careers in analytics, demonstrating rising career inclination towards data-driven roles. Additionally, students strongly suggested that educational institutions should incorporate more practical and hands-on training, to bridge the gap between theoretical learning and industry skills.

Conclusion

The research concludes that Big Data Analytics is widely perceived as a strategic asset for improving business performance, decision-making, customer satisfaction, and operational efficiency. MBA students demonstrate strong conceptual understanding and positive attitudes toward data-driven business strategies. The study highlights the critical need for organizations to build advanced data capabilities and address challenges such as skill gaps, security concerns, and technology cost.

Furthermore, the findings emphasize that educational institutions should enhance practical analytics training, incorporating tools and technology-based learning to improve industry readiness among future managers. Overall, Big Data Analytics serves as a key driver of competitive advantage and organizational growth, and its strategic integration is essential for businesses operating in the digital era.