



## STUDY THE ROLE OF BIG DATA ANALYTICS IN THE BUSINESS DECISIONS OF AN ENTERPRISE

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### **Abstract**

*Big data analytics is the processing of vast data available from the different departments in an enterprise with the aid of advanced analytical tools. Big Data analytics provides important business insights and vision to companies, thereby assisting companies in providing direction to every department and functions towards achieving the business goals and objectives.*

*Marketing is the most important function that defines the success of any enterprise. Marketing involves designing strategies towards creating the desire in prospects mind to buy the products or services there by maximizing the sales ensuring sales growth and profitability. The paper explains Big Data analytics and its role in designing an effective marketing and business plan.*

**Keywords:** Big Data Analytics, Marketing analytics, Profitability

### **1. Introduction:**

In today's fast-paced and interconnected world, businesses are continuously searching for innovative ways to gain a competitive edge. The digital revolution has brought about transformative changes in the way companies operate, and one of the most significant developments in this era is the utilization of big data analytics. This powerful tool has not only reshaped the landscape of commerce but has also become an indispensable asset for informed and strategic decision-making.

Big data analytics is not just a buzzword; it represents a seismic shift in how organizations approach their operations. By harnessing vast amounts of data, organizations can unlock hidden insights, streamline their processes, and ultimately make more informed decisions. This article explores the pivotal role of big data analytics in business decision-making and how it's revolutionizing the way companies operate.

### **Literature Review**

**Omid Salari et al (2022)** Big data has been increasingly considered by experts and company owners due to its direct impact on the development of businesses and companies, so that big data management increases the efficiency of important business decisions. With the increasing use of the Internet and the advancement of information storage technology, there is a vast amount of information that can be used and properly examined. This amount of information is called big data and can be used to make important decisions for the development of a company. All the while, many start-ups and even large corporations are unsure how to use big data.

**Fola Michael Ayokanmbi (2021)** The application of the technologies of industry 4.0 plays a critical role in developing a fact-based and data-driven culture to achieve performance excellence. A vast amount of data is generated through digital devices, such as mobile phones, social networks, desktop and laptop computers, and wearable devices. The management, effective use, analysis, and improvement of these data to support strategic

processes are critical for performance improvement. Data constitute raw facts that are processed to produce insights and knowledge that are used to guide decision-making. A data-driven decision support system for organizational performance improvement requires a large amount of data and a technique to extract knowledge from data. Digital transformation is necessary to improve processes and operations and harness the benefits of integrating data science into organizational workflows. Big Data Analytics (BDA) provides the mechanism for extracting value from big data to improve decision-making quality.

**Ifeyinwa Angela Ajah and Henry Friday Nweke (2019)** Big data and business analytics are trends that are positively impacting the business world. Past researches show that data generated in the modern world is huge and growing exponentially. These include structured and unstructured data that flood organizations daily. Unstructured data constitute the majority of the world's digital data and these include text files, web, and social media posts, emails, images, audio, movies, etc. The unstructured data cannot be managed in the traditional relational database management system (RDBMS). Therefore, data proliferation requires a rethinking of techniques for capturing, storing, and processing the data. This is the role big data has come to play. This paper, therefore, is aimed at increasing the attention of organizations and researchers to various applications and benefits of big data technology. The paper reviews and discusses, the recent trends, opportunities and pitfalls of big data and how it has enabled organizations to create successful business strategies and remain competitive, based on available literature.

**Hiba Alsgaier et al (2017)** Companies all over the world try to get the benefits from accessing to information that is available in social media to improve their performance and increase their revenue, processing heterogeneous type of data to extract the valuable data is a problem that many organizations try to solve. One of the most important trends is in general known as "Big Data", technology for Storing, Processing and analyzing data, companies are Managing data in order to use it in new levels and direct decision makers to make agile decisions in real time, Big Data trend have the capability to guide a revolutionary transformation in research, invention, and business marketing.

### **Marketing Analytics:**

The practice of measuring and analyzing all the available information on the prospective market as well as the company's existing marketing strategies and plans to present an effective marketing direction to achieve the marketing goal.

### **Objective of Marketing data analytics: -**

- 1) To identify the gaps in the existing marketing strategies and plans.
- 2) To ensure a healthy E/S (expense to sales) ratio and return on investments
- 3) In gaining new erinsights, as a tool for newer and effective strategies.

Analytics involve analysis of both intrinsic and extrinsic factors. Thorough analysis ensures accurate future predictions laying a strong foundation for business plans. Business plans made on thorough analysis ensures profitability and healthy E/S(Expense to sales) ratio.

## **2. BIG DATA CHALLENGES:**

Cloud security alliance big data working group identify top security and privacy problems that need to capture for making the big data computing and infrastructure more secure. Most

of these issues are related to the big data storage and computation. Some of the challenges are secure data storage Various security challenges related to data security and privacy are discussed in which include data breaches, data integrity, data availability and data backup.

**Dynamic Provisioning:** A service of the cloud computing is infrastructure as service in which it provides computation resources on demand, many cloud related companies are implementing this concept and to making it easy for customers to access these services. Current frameworks do not have the property of the dynamic provisioning. Here is an issue that Compute resources can be insufficient for the submitted job, some process may requires more resources. Another issue is scheduling and protection algorithm, current algorithms does not consider these aspects

**Algorithms:** Organizations were granting the papers by capturing key words from the abstract and titles. Analyzing the science with hand was difficult task. After that work was done by program analyst. They use algorithms to do this work. These algorithms can be varying from each other. This difference can reduce the effectiveness and reliability of the final result. Improvement in the data management will result in better technology but it will face many issues.

**Misuse of Big Data:** Challenges including potential misuse of big data are here, because information is power. Types of the data which people will produce in the future are unknown. To overcome these challenges we have to strengthen and increase our intent and capacity

**Data Management:** Data management is also a critical issue for corporation and industries. Data warehouse has efficient data management techniques. In two data warehouse management strategies are discussed; which are Immediate Incremental Management (IIM), Deferred Incremental Management (DIM) but the favor is given to IIM because of its algorithmic implementation.

### **3. Vital Assessments in Marketing Analytics:**

#### **Intrinsic Factor:**

Organization:-This involves analyzing companies Strength, Weakness, Opportunities and Threats. Opportunities and threats arise from economic and political instability, social situations and competitors coming up with advanced and competitively priced products.

Organization assessment assists in deriving the long/short term strategies for the company and in providing the right vision to the company.

#### **Extrinsic Factor:**

- Market Assessment
- Important Parameters in Market assessments
- Market Size
- Growth rate of the market
- Market trends
- Market profitability
- Key success elements
- Distribution channels
- Industry cost structure

**Market Size** The size of the prospective market is an important key factor in market analysis. Bigger markets pose severe competition in terms of many competitors with competitive pricing. In such a market a product to be launched must have an edge over the competitor products within tell gent pricing. The pricing should not be too less it's a new product or has unique features as compared to the competitors', likewise the pricing should not be too low to give a cheap quality perception. If the market size is small and you are entering the market fort the value and not the volume of sales, than pricing high will assist in ensuring the returns and profit margins.

**Growth rate of the market** -This assist in determining the potential of the said market for your products/services. The study on the market growth rate over the years and present will provide the idea on the length of marketing focus and investment that should be made. **Market Trends** -Study on market trend (customer purchasing behaviour) assists in deciding on the products/services to be launched in the market or changes or improvements to be made in the existing products in the markets to make it more desirable to the prospective clients.

**Market Profitability:** Almost every company's sole objective in getting in to any business is to make profits and ensure healthy returns on investment. This requires analyzing the profitability of the market. Only if the profitability of the market is good it is advisable to make good investments in the market, otherwise it will be a waste of time and capital. Few important things needs to be considered while analyzing market profit ability, they are buyer power, Supplier power and barrier to entry.

#### **Success elements:**

Success elements add to the profit margins and provide an edge over the competitors.

- ❖ Technological edge over the competitors
- ❖ Production/services capacities providing profitable scale of economies
- ❖ Efficient planning and Utilization of resources

#### **Distribution Channels:**

Distribution channels are very important for a business. Without those, you won't be able to get your products to your customers. So, it becomes a big factor in a marketing analysis. This is because you need to assess how well the channels are. If the existing on easer good enough or you need to develop newer ones. Sometimes you come up with brand new channels like internet marketing.

#### **Product/Services costing:**

The industry cost structure is a significant factor while running a business. It basically shows how much cost is required to get your products for sale. Sometimes firms can come up with ways to decrease that cost and thereby make a bigger profit without increasing the market price. Doing a marketing analysis will help you to come up with newer ways to reduce costs. At the same time, it helps to create strategies for developing competitive advantage over your rivals.

### **4. Types of Big Data Analytics and its role in Business decisions:**

#### **Descriptive Analytics:**

As the name itself suggest Descriptive analytics is the traditional form of business intelligence; it provides the historical view of organizations sales, Operations, Financial,



customer and stakeholders in a simple format to prepare data for further analysis. It provides data for the benefit of a wide business audience involving collection and interpretation of huge amounts of data.

**It uses two primary techniques:**

Data Aggregation and Data mining to report past events:

Common methods used in descriptive analytics are observation, surveys and case studies. Information provided by descriptive analytics becomes a valuable basis for advanced prescriptive or predictive analysis that deliver real time insights for business decision making. As these analytics doesn't analyze beyond surface analysis the validity of results are easily implemented. Descriptive analytics combined with the extensive capabilities of Perceptive and Predictive analytics provides insight into gaps and issues and makes accurate future forecast based on past data patterns. One of the best examples of Descriptive Analytics would be profit and loss statement, year on year sales statements.

**Predictive Analytics: Understanding the future (Planning ahead)** Predictive analytics as the name suggests predicts the probable outcomes, this analytics is all about understanding the Future (what might happen), it is based on probabilities (possible outcomes). Companies use to forecast what might happen in the future and accordingly plan their business strategies. These statistics use the data that you have and fill in the missing data with guesses.

They combine historical data found in ERP, CRM, HR and POS systems to identify patterns in the data and apply statistical models and algorithms to capture relationships between various data sets. Predictive statistics and analytics are used by the company anytime they want to look into the future. Predictive analytics can be used throughout the organization, from forecasting customer behaviour and purchasing patterns to identifying trends in sales activities. They also help forecast demand of input from supply chain operations and inventory.

Credit score is the most common application of Predictive analytics that gives the idea to the financial services on the probability of customers making future credit payments on time. Among others common uses are sales forecasting (how the sales will close at the end of the year), sales forecast per product (inventory level forecasting) Predictive analytics is used any time the enterprise when it needs to know something about the future or to fill in them is sing in formation.

**Prescriptive Analytics:** Prescription on all possible outcomes

Prescriptive analytics is all about providing advice. Prescriptive analytics measures the effect of probable decisions in order to suggest possible outcomes before the decisions are actually made. Prescriptive analytics not merely predicts what will happen but also why it will happen, providing suggestions that will take advantage of predictions. Prescriptive analytics encompasses descriptive and prescriptive analytics in that they suggest one or more possible outcomes.

Prescriptive analytics uses a combination of techniques and tools such as business rules, algorithms, machine learning and computational modelling procedures. These techniques are applied for inputs from Data sets including historical and transactional data, real time data feeds and big data. Companies are not usually using prescriptive analytics because of its

complexity in administering. However, if implemented properly can have a huge impact in satisfying customer experience there by maximizing ROIs and profit margins. Prescriptive analytics are successfully used by bigger companies in scheduling production, inventory and supply chain planning to ensure that height product is delivered at the right time optimizing customer experience.

### Conclusion

In today's business landscape, big data analytics is a game-changer. It empowers organizations to make more informed, agile, and customer-centric decisions. By tapping into the wealth of data available, businesses can enhance customer experiences, optimize operations, mitigate risks, and stay ahead of the competition. As technology continues to evolve, the role of big data analytics in reshaping the commerce landscape is only set to expand. Big Data Analytics is the most important function in any organization aiming to succeed. Big Data Analytics provides vision and direction to the company by providing detailed insights laying a strong foundation on which business decisions are made.

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