

## Predictive Analytics in Business

Matthew N. O. Sadiku<sup>1</sup>, Paul A. Adekunle<sup>2</sup>, Janet O. Sadiku<sup>3</sup>

<sup>1</sup>Roy G. Perry College of Engineering, Prairie View A&M University, Prairie View, TX, USA

<sup>2</sup>International Institute of Professional Security, Lagos, Nigeria

<sup>3</sup>Juliana King University, Houston, TX, USA

### ABSTRACT

Predictive analytics is the use of statistics and modeling techniques to forecast future outcomes. It uses historical statistics and modeling techniques in forecasting. The goal of predictive analytics is to make predictions about future events, then use those predictions to improve decision-making. By embracing this technology, organizations can tap into its diverse capabilities to drive efficiency and growth in an increasingly data-driven world. Predictive analysis can be used in a number of different applications. Industries from insurance to marketing use predictive techniques to make important decisions. Businesses use predictive analytics to fine-tune their operations and decide whether new products are worth the investment. Investors use predictive analytics to decide where to put their money. Predictive analytics has become a pivotal tool for gaining competitive advantage. This paper explores how predictive analytics is reshaping business strategy across industries.

**KEYWORDS:** *data, data analytics, predictive analytics, business, business intelligence.*

### INTRODUCTION

In the modern business landscape, data is not just numbers; it is the very essence of innovation. We are in a data-driven world, where information is one of the most valuable assets a business can have. This has given rise to big data analytics, which helps businesses extract meaningful patterns from vast volumes of data. The rise of big data has been a game-changer for predictive analytics, providing the vast amounts of data necessary for accurate predictions. Business predictive analytics enables businesses to anticipate trends, behaviors, and outcomes by analyzing historical and current data. Predictive analytics provides a critical edge in navigating the uncertainties of the business world, allowing companies to anticipate changes, optimize operations, and capitalize on emerging opportunities [1].

Predictive analytics looks for past patterns to measure the likelihood that those patterns will reoccur. It uses data, statistical algorithms, and machine learning techniques to identify the likelihood of future outcomes based on historical data. Unlike traditional analytics, which relies on human-defined algorithms,

predictive analytics uses artificial intelligence to identify patterns and anomalies independently. Executives and business owners can take advantage of this kind of statistical analysis to determine customer behavior. Predictive analytics is used in a variety of industries including finance, healthcare, manufacturing, telecommunications, marketing, and retail [2]. Predictive analytics helps in credit scoring, fraud detection, and investment strategies in finance.

### WHAT IS PREDICTIVE ANALYTICS?

As its name implies, predictive analytics is about predicting future trends such as sales demand, exchange rates, and other important metrics. The technique relies on the application of statistical modeling and regression analysis to historical data to determine and understand trends and formulate future trends. Strictly speaking, predictive analytics does not predict the future, but rather use probability theories to determine what is likely to happen based on patterns and trends revealed by analyzing historical data [3]. Predictive analytics accurately anticipates customer demand, preventing overstocking and stockouts while adapting to market changes. Figure 1

**How to cite this paper:** Matthew N. O. Sadiku | Paul A. Adekunle | Janet O. Sadiku "Predictive Analytics in Business" Published in International Journal of Trend in Scientific Research and Development (ijtsrd), ISSN: 2456-6470, Volume-10 | Issue-2, April 2026, pp.1083-1093, URL: [www.ijtsrd.com/papers/ijtsrd101487.pdf](http://www.ijtsrd.com/papers/ijtsrd101487.pdf)



Copyright © 2026 by author (s) and International Journal of Trend in Scientific Research and Development Journal. This is an Open Access article distributed under the terms of the Creative Commons Attribution License (CC BY 4.0) (<http://creativecommons.org/licenses/by/4.0>)



illustrates predictive analytics [4], while Figure 2 show different components of predictive analytics [5].

In general, analytics provides an efficient way to improve planning because it gives you better forecasts. There are different types of data analytics. They are briefly explained as follows [6]:

- *Descriptive Analytics:* Descriptive analytics examines what has happened over the years. They are capable of detecting trends in historical data. Analytics can uncover trends and postulate probable reasons for change by comparing the same data from various periods. It can be seen as the baseline of the industry, which basically assesses past and current data for more meaningful insights and delivers it to the people to use their own intelligence and knowledge to make decisions.
- *Predictive Analytics:* This assists businesses in predicting what might happen and the impact of various situations, such as possible supply chain bottlenecks. Managers can be proactive rather than responsive by pushing them to evaluate these prospective circumstances before they occur. Predictive analytics may be used to identify patterns and trends as well as anticipate breakdowns that may impact suppliers and, consequently, production processes. Predictive analytics for the supply chain leverages data, statistical algorithms, and machine learning techniques to identify the likelihood of future outcomes.
- *Prescriptive Analytics:* Prescriptive analytics builds on predictive analytics and dives deeper into predicting future insights on what next can be done. Prescriptive analytics uses the findings of descriptive and predictive analytics to recommend what measures a business should take to achieve its objectives. Because prescriptive analytics is increasingly complicated, they need more powerful software capable of rapidly processing and interpreting large amounts of data.
- *Cognitive Analytics:* Cognitive analytics attempts to mimic human thought and behavior, and they can assist companies in answering challenging, complex problems. Cognitive analytics does this by utilizing artificial intelligence (AI), which allows it to be better over time. With the use of AI in the industry, answering complex questions and drawing out contextual conclusions on how humans would have interacted with the situation. It helps with more meaningful data and scale experience and knowledge with better decisions.

- *Diagnostics Analytics:* This gives the ability to identify the root-cause. It is characterized by techniques such as drill-down, data discovery, data mining, and correlations. It involves analyzing overall performance and figuring out why errors, mistakes, and delays occur. It lets the manager know the delays, breakdowns, and disruptions in the demand and supply processes and the reasons behind them.

Figure 3 shows these major types of data analytics [7]. Unlike diagnostic and descriptive analytics, which were designed to analyze situations after they happened, predictive analytics utilizes advanced data analytics techniques to forecast future outcomes. In the supply chain, the time has come to shift from mere descriptive and diagnostic analytics to predictive and prescriptive analytics. Predictive analytics is a branch of data analytics that makes predictions about future outcomes using historical data combined with statistical modeling, data mining techniques, and machine learning. Figure 4 shows predictive analytics process [8].

### PREDICTIVE ANALYTICS IN BUSINESS

The business environment in which we live today is dynamic. It faces fierce competition and has to handle massive data sets. Data can only be meaningful if coupled with predictive analytics. Predictive analytics is the process of analyzing historical data, statistical algorithms, and machine learning techniques to predict future results or outcomes. It only focuses on forecasting the future. It calculates the probability of future results based on past records by using data, statistical algorithms, and methods of machine learning. Predictive analytics has made businesses smarter and equipped them with better decision-making capabilities by turning vast data into accurate, future-oriented insights. Businesses could transform their insights into stronger choices that will assist them to maintain their competitive edge by utilizing predictive analytics [9]. Competitors embracing predictive analytics gain an advantage by forecasting trends, leaving others vulnerable to falling behind.

We are living in a modern world that is full of technologies; technologies are advancing day by day. Artificial intelligence (AI) and machine learning (ML) are some of the most advanced and modern technologies. Integrating AI and ML in predictive analytics has significantly enhanced the capabilities of the technology. In predictive analytics, AI and ML are used to analyze large amounts of data and identify patterns that humans may not be able to detect. Businesses can use AI and ML to make more accurate predictions and better-informed decisions. One of the main benefits of using AI and ML in predictive

analytics is the ability to process large amounts of data quickly and accurately. Traditional predictive analytics techniques are often limited by the amount of data they can process, but AI and ML algorithms can handle much larger datasets. Artificial intelligence in predictive analytics is no longer an emerging trend; it is now a building block of how intelligent businesses operate. Many industries are using predictive analytics to gain a competitive edge. Predictive analytics can help businesses identify new opportunities, mitigate risks, and improve overall performance. For example, retailers can use predictive analytics to optimize pricing strategies, while manufacturers can use it to predict equipment failure and prevent downtime [10]. Figure 5 shows predictive analytics for business [11].

### APPLICATIONS OF PREDICTIVE ANALYTICS IN BUSINESS

Predictive analytics can be applied to any industry that deals with data and is willing to embrace it. Predictive models are used for many applications, including weather forecasts, creating video games, translating voice to text, customer service, and investment portfolio strategies. Some uses of predictive analytics in business are shown in Figure 6 [12]. Common applications of predictive analytics in business include the following [2,10,13,14]:

- **Retail:** Retail is a huge industry with a lot of moving parts. That is why it can be difficult to figure out how to make the most of your business. Predictive analytics is revolutionizing the retail industry by offering businesses the tools to anticipate customer needs, optimize inventory, and refine marketing strategies. It can optimize pricing strategies, predict consumer behavior, and personalize marketing campaigns. A retail chain can predict which products will be in high demand during a holiday season and adjust inventory and marketing campaigns accordingly. For example, Walmart, the world's largest retailer, has been leveraging the power of AI and machine learning in various areas of its operations, including its online grocery service. The online grocery service allows customers to place orders for groceries online and pick them up at their local Walmart store or have them delivered to their homes.
- **Banking and Finance:** Predictive analytics can identify fraudulent transactions, predict loan defaults, and optimize investment portfolios. Predicting loan defaults is another way for banking and finance companies to save money. In finance, predictive analytics is extensively used for risk management and fraud detection. By

identifying high-risk borrowers early on, you can ensure that those loans do not go through—and if they do, you know how much risk is involved in them. The bank's implementation of AI and machine learning in its fraud detection system is just one example of how businesses can use these technologies to improve their operations and protect against fraud. For example, JPMorgan Chase, one of the largest banks in the world, has been using AI and machine learning to prevent card testing attacks. Card testing attacks are a type of fraud in which criminals use small transactions to test the validity of stolen credit card information before using it for larger transactions.

- **Marketing and Sales:** As we step into a data-driven future, AI is ushering in a new era of marketing. Predictive analytics plays a key role in advertising and marketing. It can improve lead sales generation by determining which customers will likely buy your products or services. It can also optimize marketing campaigns based on customer behavior patterns and preferences. Sales forecasting is often a guessing game without data. Predictive analytics brings accuracy and clarity by combining historical sales, market trends, seasonal patterns, and customer behavior. Accurate sales forecasts also help businesses set realistic targets, plan budgets, and allocate resources more efficiently, giving sales teams a clear roadmap to meet company goals.
- **Accounting:** Predictive accounting shifts the focus from what has happened to what could happen in the future, necessitating marginal expense analysis. It integrates historical data to forecast future resource demands and associated costs, helping managers make informed decisions about adjustments and resource management. A shift from historical to predictive accounting allows organizations to assess and respond to future demands, employing various costing methods for different purposes.
- **Supply Chain:** Supply chain analytics is used to manage inventory levels and set pricing strategies. Supply chain predictive analytics use historical data and statistical models to forecast future supply chain performance, demand, and potential disruptions. This helps businesses proactively identify and address risks, optimize resources and processes, and improve decision-making. Inventory management and supply chain planning are often full of guesswork. Overstocking ties up capital and increases storage

costs while stockouts lead to lost sales and unhappy customers.

- *Forecasting:* Human-guided forecasting is bounded by time and mental bandwidth. Even conventional statistical models have limits to the number of variables that can be processed without becoming irrelevant or noisy. Business forecasting focuses on using historical data and patterns so a business can predict future trends, such as seasonal periods of sales increases and decreases. Predicting future demand for products or services can help businesses optimize inventory levels and improve sales. Predictive models help make weather forecasts, develop video games, translate voice-to-text messages, make customer service decisions, and develop investment portfolios.
- *Fraud Detection:* Identifying fraudulent activities can help businesses reduce losses and improve security. Financial services use predictive analytics to examine transactions for irregular trends and patterns. The irregularities pinpointed can then be examined as potential signs of fraudulent activity.
- *Risk Assessment:* Every business faces risks, including financial, operational, and fraudulent activities. Risk assessment enables users to scrutinize and figure out the possible hurdles linked to any given business. Predictive analytics can also ensure early detection of problems so businesses can improve their risk mitigation strategy. Investors, financial professionals, and business leaders use predictive models to help reduce risk. Assessing a particular event's risk can help businesses make informed decisions and minimize losses. For example, an investor or an advisor can use predictive models to help craft an investment portfolio with an appropriate level of risk, considering factors such as age, family responsibilities, and goals.
- *Predictive Maintenance:* Predictive maintenance is a perfect example of operational efficiency made possible through machine learning models. It is a technique that uses data and analytics to predict when equipment will need repairs or maintenance before a failure occurs. Predicting when equipment will need repairs can help businesses reduce downtime and increase efficiency. For example, General Electric (GE), a multinational conglomerate company, has been investing in the field of AI and machine learning, to improve the performance of its products and services. One of the areas where GE has been using AI and machine learning is predictive maintenance.
- *Business Intelligence:* Business intelligence (BI) differs from predictive business analytics (PBA). BI involves querying and reporting on data, while analytics seeks to understand the reasons behind past occurrences and project future outcomes. In the ever-evolving landscape of business intelligence, a groundbreaking transformation is underway, powered by AI-driven predictive analytics. This remarkable shift is reshaping how organizations glean insights, make decisions, and seize opportunities. Successful PBA implementation requires committed teams and structured practices to analyze critical drivers of business decisions. Figure 7 shows predictive analytics in business intelligence [15].
- *Insurance:* Companies are under pressure to produce effective and marketable drugs that insurers will cover. Data and predictive analytics play an important role in underwriting. Insurance companies examine applications for new policies to determine the likelihood of having to pay out for a future claim. The analysis is based on the current risk pool of similar policyholders as well as past events that have resulted in payouts.
- *Credit Scoring:* Credit scoring makes extensive use of predictive analytics. When a consumer or business applies for credit, data on the applicant's credit history and the credit record of borrowers with similar characteristics are used to predict the risk that the applicant might fail to repay any new credit that is approved.
- *Stock Trading:* Active traders look at a variety of historical metrics when deciding whether to buy a particular stock or other asset. Moving averages, bands, and breakpoints all are based on historical data and are used to forecast future price movements.
- *Customer Relationship Management (CRM):* Predictive analytics enables groups to expect purchaser behaviors, preferences, and desires. By reading historical client facts, businesses can create personalized advertising and marketing techniques, optimize pricing, and enhance average purchaser pride.

## BENEFITS

The advantages of predictive analytics are multifaceted. It elevates decision-making by offering unparalleled accuracy and insights derived from vast data pools. When the data is available in real time, predictive analytics empowers businesses to respond instantly. The insights generated by predictive

analytics can help businesses and organizations make more informed decisions, improve their operations, and, ultimately, drive growth and success. Knowing what your customers are likely to do next is one of the biggest advantages of predictive analytics. Other benefits include the following [10,16,17]:

- *Automation:* An advantage of using AI and ML in predictive analytics is automation. Predictive models can be trained and run automatically without human intervention. Predictions can be generated quickly and without errors, resulting in more efficient decision-making. Tasks such as data pre-processing, feature selection, and model selection can be automated using AI and ML, saving time and resources.
- *Cost-effectiveness:* Using AI and ML in predictive analytics can also be cost-effective. Predictive models can be trained and run on cloud-based platforms, eliminating the need for expensive hardware and software. AI and ML can help businesses identify cost savings opportunities and optimize their operations, ultimately reducing overall costs.
- *Proactive Decision-making:* Effective strategic decision-making has a profound impact on business performance. Traditional decision-making processes rely on intuition, past experiences, or incomplete data, leading to suboptimal outcomes. The ability to predict future outcomes can help companies make better decisions about where they should invest their resources and which customers could be profitable down the road. Predictive analytics assists companies in making proactive decisions as opposed to reactive decisions. Formulating proactive plans assists retailers in predicting demand to prevent situations of stockout, whereas marketers may employ predictive analytics to forecast the leads with the highest possibility of conversion. The failures of once-successful companies like Wang Labs, Digital Equipment, Borders, and Blockbuster raise critical questions about decision-making processes within organizations. Irrational decision-making has impact on corporate success or failure.
- *Enhanced Operational Efficiency:* Predictive analytics optimizes efficiency by foreseeing production issues or supply chain delays. When you begin to successfully predict things with predictive analytics, you will be able to optimize your business processes. For example, predictive analytics is utilized by airlines to determine the best flight schedules. In contrast, the manufacturers can utilize it to schedule maintenance and minimize downtime.
- *Improved Accuracy:* One of the main advantages of using AI and ML in predictive analytics is the improvement in accuracy. These technologies enable predictive models to learn from vast amounts of data and make more accurate predictions. They can also identify patterns and trends that humans may not be able to see, resulting in more accurate predictions. By harnessing the predictive power of analytics, businesses can tailor their strategies with unparalleled precision. Integrating AI with predictive analytics enhances its accuracy and power, allowing businesses to make more informed decisions.
- *Competitive Advantage:* Predictive analytics has become essential for businesses looking ahead of their competition. There is no doubt that predictive analytics helps you anticipate market shifts or customer behavior before your competitors. It gives your business a strategic edge as it helps you keep your business ahead of competitors and also uncovers risks at early stages.
- *Personalization:* One of the strongest applications of predictive analytics now is customer experience. AI can model a customer's past behavior and use it to predict what they will want next. This personalization is powered by AI-driven predictive analytics that continuously refine customer understanding over time. With personalization at the forefront, predictive analytics allows companies to anticipate customer needs. By analyzing purchase and browsing behaviors, businesses deliver targeted recommendations, boosting satisfaction and loyalty.
- *Customer Churn:* Nobody likes losing a customer. But sometimes, it seems impossible to identify when and why different customers might slow down or stop interacting with your business. Fortunately, predictive analytics can help you identify which customers may be nearing the end of their relationships with your company. This method can also reveal why they may be likely to churn.
- *Scalability:* AI and ML also enable predictive analytics to be scaled to large datasets. Predictive models can be trained on massive amounts of data, and predictions can be generated for large numbers of customers or clients. This makes it possible to gain insights and make predictions at a

large scale, which is helpful for businesses and organizations with large customer bases.

## CHALLENGES

There are some challenges that you might face while working with predictive analytics. There are concerns about data privacy and security, as AI requires vast amounts of sensitive data. The initial investments for implementing AI Analytics can be substantial, potentially posing financial challenges for smaller businesses. The human element remains essential, as AI cannot entirely replace human judgment and expertise. Other challenges include the following [16,18,19]:

- *Privacy Concerns:* AI algorithms can, unintentionally, absorb biases found in past data, and predicting based on personal data raises privacy issues. You must test for fairness (i.e., models should not discriminate) and be compliant with data privacy regulations when working with customer or patient data. Establishing strict ethical frameworks and having checks and balances reduces these risks.
- *Ethical Concerns:* Ethical considerations and data governance will become more important as the usage of predictive analytics expands. The use of predictive analytics has been criticized and, in some cases, legally restricted due to perceived inequities in its outcomes. The technology may encounter issues with bias, as AI algorithms can perpetuate existing prejudices in the data they are trained on. It perpetuates bias and discrimination if the training data is not diverse or the algorithm is not adequately tested and validated. Predictive models may result in statistical discrimination against racial or ethnic groups in areas such as credit scoring, home lending, employment, or risk of criminal behavior.
- *Data Quality:* The effectiveness of predictive analytics depends on the quality of the data collected. Quality data means the presence of organized data, which is required to answer the questions expected for the analysis. To make accurate predictions, the data used to train the algorithms needs to be clean, accurate, and relevant. More data is not always better, better data is better. Ensure your data is clean, current and relevant. Invest in data governance and encourage a culture of responsible data stewardship throughout your organization. Effective data governance frameworks ensure data is managed securely and responsibly, adhering to privacy regulations and organizational policies.
- *Complexity:* Predictive analytics is complex and requires specialized skills to implement and maintain. It is a sophisticated analytics subject that involves extracting treasured insights from historic and modern-day information to predict destiny traits and effects. As businesses face increased competition and market complexity, predictive analytics has emerged as a strategic tool for anticipating customer behavior, optimizing operations, and guiding high-level decision-making. As complexity in business environments increases, adopting systematic thinking is essential.
- *Over-reliance:* Over-reliance on algorithmic outputs without contextual understanding can lead to flawed strategic decisions. Reliance on a loyalty card program may result in ineffective customer targeting.
- *Integration:* It can be challenging to integrate predictive models with your existing systems and processes. It may take some custom development of software or process modifications to incorporate the solution into regular business processes. Integration of predictive analytics into business strategy is still in its evolutionary phase, offering vast potential for future exploration and innovation. The integration of predictive analytics with ESG (Environmental, Social, and Governance) metrics opens new strategic possibilities. Data integration is another crucial aspect, as it involves consolidating data from diverse sources such as databases, spreadsheets, and external data streams into a unified dataset. This integration enables a holistic view of the data, providing a comprehensive foundation for analysis. Transforming raw data into actionable insights involves a structured process integrating these analytical techniques with robust data visualization and reporting tools.
- *Transparency:* To mitigate risks, businesses must adopt robust data governance practices and ensure transparency in their analytics processes. As executives demand greater transparency in decision support systems, future research can explore how machine learning models can not only predict outcomes but also explain underlying factors in human-understandable terms. This is crucial for increasing trust and adoption among decision-makers.
- *Global Reach:* As the business landscape becomes more global and interconnected, cross-border predictive systems and multi-lingual machine learning models will play an essential role in supporting international business strategy.

A company deciding to enter a new international market must consider local consumer behavior, regulatory environment, and competitive landscape factors.

- *Skills Gap:* There is a high demand for data science and AI talent, and not all organizations have specialized expert teams available. You should train current analysts or hire specialists. Most companies opt to collaborate with seasoned AI developers to initiate their AI in predictive analytics initiatives and impart knowledge to their team.
- *Collaboration:* Collaboration across departments is crucial. Your marketing, operations, and finance teams must all align on the goals and usage of AI tools. Once implemented, your predictive analytics solution should become a part of everyday decision-making, not just a one-time project.

## FUTURE OF PREDICTIVE ANALYTICS IN BUSINESSES

Predictive analytics is the use of data and algorithms to forecast potential future outcomes. It has evolved from a niche discipline into a mainstream necessity. It is not about fortune-telling. It is about leveraging the vast oceans of data we generate daily to identify patterns, trends, and probabilities of future outcomes. The evolution of predictive analytics has been driven by advancements in technology and an increasing recognition of the value of data in decision-making. This technology's growing importance is underscored by its ability to provide insights that drive strategic decisions, optimize operations, and improve overall business performance. In the future, predictive analytics will rapidly integrate within AI ecosystems, promoting automated and intelligent decision-making. It is expected that predictive analytics will be driving success for businesses. As generation continues to strengthen, predictive analytics will possibly play an excellent greater role in shaping the destiny of enterprise methods and choice-making.

## CONCLUSION

In the business world, predictive analytics' ability to identify patterns and make data-based predictions can lead to drastically improved decision-making. Predictive analytics can prove to be the game changer for all sorts of businesses. It enhances the decision-making capabilities that also take your business to new elevations. Businesses can become proactive in improving efficiency, increasing customer satisfaction and reducing costs. Adopting predictive analytics is necessary for sustainable growth and competitive advantage in today's data-driven business environment. This modern approach to data analysis

has revolutionized the manner businesses operate with the aid of forecasting destiny trends, figuring out capacity dangers, and optimizing numerous components of operations. As businesses face fierce competition in today's data-driven landscape, predictive analytics is proving essential for strategic growth.

In recent years, the use of artificial intelligence (AI) and machine learning (ML) in predictive analytics has grown rapidly. When predictive analytics meets AI, it becomes a proactive decision engine that drives value, efficiency, and resilience. AI brings speed, scale and sophistication to predictive analytics that simply was not possible before. Traditional predictive models often required human-led feature selection, slow training times and periodic manual tuning. Today's AI-driven platforms automate much of that process, learning from new data in real-time and improving continuously. Without leveraging predictive analytics, businesses risk missing out on opportunities, failing to anticipate market trends, and being unprepared for potential disruptions. Embracing predictive analytics is not simply a necessary option; it is a strategic imperative for corporations aiming to thrive in the dynamic and aggressive business environment. More information on the use predictive analytics in business is available from the books in [20-27].

## REFERENCES

- [1] A. A. Adesina, T. V. Iyelolu, and P. O. Paul, "Leveraging predictive analytics for strategic decision-making: Enhancing business performance through data-driven insights," *World Journal of Advanced Research and Reviews*, vol. 22, no. 3, 2024, pp. 1927–1934.
- [2] C. Halton, "Predictive analytics: Definition, model types, and uses," April 2025, <https://www.investopedia.com/terms/p/predictive-analytics.asp>
- [3] "Supply chain predictive analytics: What is it and who's doing it?" <https://riverlogic.com/?blog=supply-chain-predictive-analytics-what-is-it-and-whos-doing-it>
- [4] N. Babin, "AI and predictive analytics: Revolutionizing demand forecasting in supply chain management," <https://www.linkedin.com/pulse/ai-predictive-analytics-revolutionizing-demand-supply-nicolas-babin-xrj2e/>
- [5] "From insight to innovation: Why data analysis will define industry leaders in 2025," <https://www.inkl.com/news/from-insight-to->

- innovation-why-data-analysis-will-define-industry-leaders-in-2025
- [6] “An overview of supply chain analytics,” February 2023, Unknown Source.
- [7] I. Tymchuk, “Big data and predictive analytics in supply chain: Success stories and tips,” November 2020, <https://www.n-ix.com/big-data-predictive-analytics-supply-chain-case-study/>
- [8] “Examples of predictive analytics in the travel industry at Jordan Judah,” <https://asktheman.xyz/>
- [9] “Transforming business insights with predictive analytics and AI,” [https://www.techprofree.com/transforming-business-insights-with-predictive-analytics-and-ai/#google\\_vignette](https://www.techprofree.com/transforming-business-insights-with-predictive-analytics-and-ai/#google_vignette)
- [10] “AI and machine learning for predictive analytics in business,” <https://malogica.software/blog/ai-and-machine-learning-for-predictive-analytics-in-business>
- [11] “Predictive analytics for businesses: Why is it important?” <https://visiochart.com/blog/predictive-analytics-business/>
- [12] S. C. Sivek, “3-Minute nutshell: Business uses of predictive analytics,” <https://www.pecan.ai/blog/business-uses-predictive-analytics/>
- [13] “Chapter 5 summary: Deploying the predictive business analytics function,” <https://cdn.bookey.app/files/pdf/book/en/predictive-business-analytics.pdf>
- [14] L. Gamerz, “Unveiling the power of predictive analytics in business,” February, 2024, <https://ustudywith.blogspot.com/2024/02/unveiling-power-of-predictive-analytics.html>
- [15] P. Sinha, “5 Applications of predictive analytics in business intelligence,” <https://www.oodlestechnologies.com/blogs/5-Applications-of-Predictive-Analytics-in-Business-Intelligence/>
- [16] M. Mistry, “How does AI in predictive analytics transform business decisions and drive growth?” January 2026, <https://kodytechnolab.com/blog/ai-in-predictive-analytics/>
- [17] S. Beumont, “Predictive analytics: Leveraging data for business insights,” <https://codingcops.com/predictive-analytics/>
- [18] D. Henkin, “Predictive analytics—Why it matters and how ai supercharges it,” <https://www.forbes.com/sites/davidhenkin/2025/05/20/predictive-analytics-why-it-matters-and-how-ai-supercharges-it/>
- [19] A. Adwani, “Predictive analytics for business strategy: Leveraging machine learning for competitive advantage,” *International Journal of Social Impact*, vol. 10, no. 3, July-September 2025, pp. 295-306.
- [20] R. R. Barton, *Predictive Analytics for Business using R*. World Scientific Publishing Company, 2024.
- [21] E. Siegel, *Predictive Analytics: The Power to Predict Who Will Click, Buy, Lie, or Die*. Wiley, 2016.
- [22] N. A. Ali, *Predictive Analytics for the Modern Enterprise: A Practitioner's Guide to Designing and Implementing Solutions*. O'Reilly Media, 2024.
- [23] A. Bari, M. Chaouchi, and T. Jung, *Predictive Analytics For Dummies*. For Dummies, 2nd edition, 2016.
- [24] L. Maisel and G. Cokins, *Predictive Business Analytics: Forward Looking Capabilities to Improve Business Performance*. Wiley, 2013.
- [25] D. Covington, *Analytics: Data Science, Data Analysis and Predictive Analytics for Business*. Lulu Press, 2019.
- [26] A. Khang et al. (eds.), *Data-Driven Modelling and Predictive Analytics in Business and Finance: Concepts, Designs, Technologies, and Applications*. Boca Raton, FL: CRC Press, 2024.
- [27] T. Miller, *Modeling Techniques in Predictive Analytics: Business Problems and Solutions with R, Revised and Expanded Edition*. Pearson Education, 2014.



Figure 1 Predictive analytics [4].



Figure 2 Different components of predictive analytics [5].

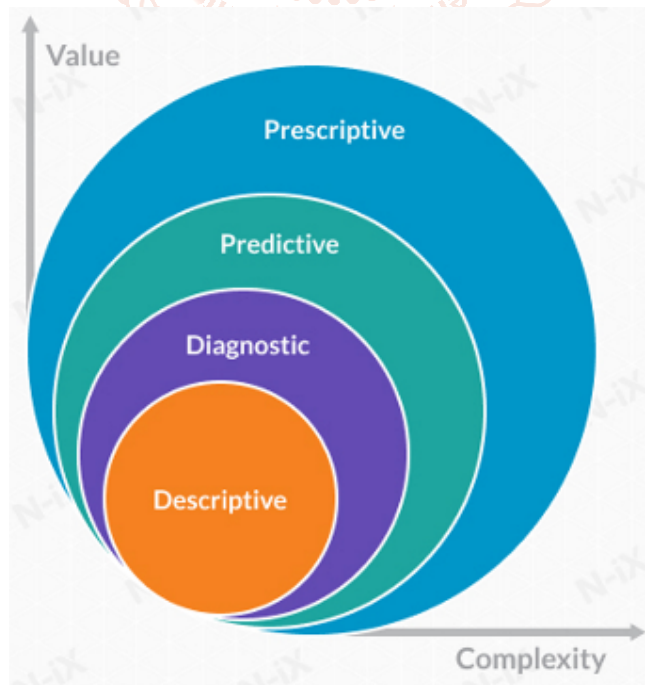


Figure 3 Types of data analytics [7].

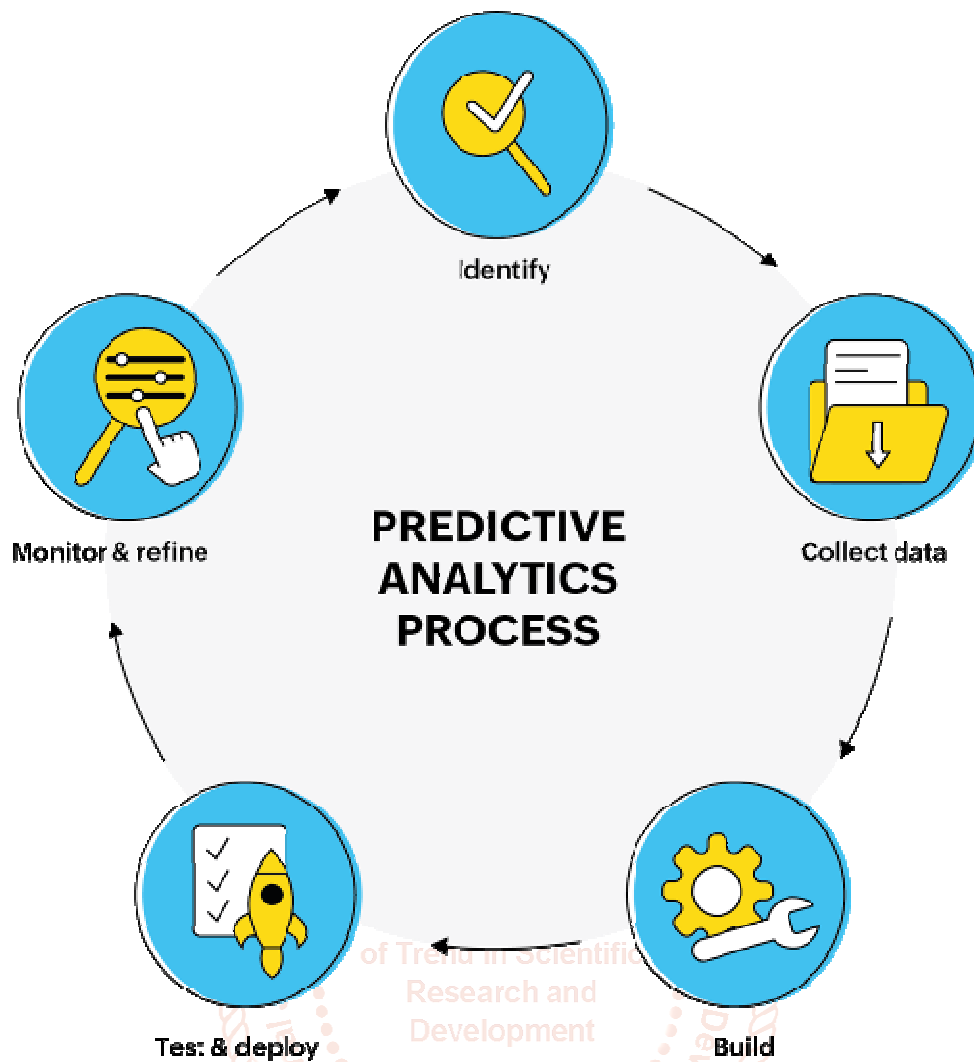


Figure 4 Predictive analytics process [8].



Figure 5 Predictive analytics for business [11].



**Figure 6** Some uses of predictive analytics in business [12].



**Figure 7** Predictive analytics in business intelligence [15].