

relevance in a timely manner and collecting new data promptly. Other challenges are related to ethical compliance and legal requirements, as well as cybersecurity and technology threats. The active integration of IoT devices and the use of big data increases the risk of cyberattacks. Finally, the implementation of geomarketing requires significant investment and skilled talent.

Successful examples of geomarketing use include:

1) Starbucks uses geomarketing to engage customers through a mobile app that offers discounts and special offers to users when they are near their cafe.

2) Walmart uses geolocation data to analyze shopping behavior and optimize product assortment based on regional customer preferences.

3) Dodo Pizza chain places information about its establishments on online maps using the Dodo IS platform, and uses route advertising in geoservices in the form of a banner with an image of a pizza.

4) ozon uses geomarketing to optimize logistics and improve delivery service.

5) IKEA uses geomarketing to create a unique experience for its customers through augmented reality, which allows customers to visualize how the goods will look at home.

Thus, it can be said that online geomarketing has a serious impact on targeted marketing, location selection and, the associated investment risks, as well as the effectiveness of advertising campaigns. New opportunities and tools are emerging to improve customer experience, optimize business decisions and grow the market. But some threats are also present, such as leakage of personal data and irrelevance of the information received after a short period of time.

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THE EVOLUTION AND IMPACT OF DEMAND FORECASTING IN MODERN BUSINESS

In the current market, accurately forecasting product demand is crucial for maintaining a competitive edge. As consumer preferences change and market dynamics

fluctuate, organizations must anticipate future demand to optimize inventory, streamline operations and enhance customer satisfaction. Effective demand forecast supports the right resource allocation and informs strategic decisions across various sectors [1]. The aim of this article is to consider the methodologies and tools available for predicting product demand, to explore the significance of data analysis, historical trends and market research in crafting reliable forecasts.

Prediction of product demand relies on business context, data and market complexity. Using qualitative insights, quantitative analysis and advanced technologies enhances forecasting accuracy, which leads to more effective decision-making, increased efficiency and competitiveness. As data analysis and machine learning evolve, businesses will better navigate future demand forecasting complexities.

Forecasting is essential in business, economics and environmental science. Methods and technologies have significantly evolved due to advancements in data collection, analytical techniques and computational power.

In ancient times, forecasting was primarily based on intuition and observational skills. Farmers would rely on seasonal patterns such as animal behavior or changes in weather to predict harvest yields. These early methods were mostly rudimentary and often subjective relying heavily on the experience of individuals rather than systematic analysis [2].

The late 19th and early 20th centuries marked a significant shift in forecasting with the introduction of statistical methods by pioneers like Francis Galton and Karl Pearson. Regression analysis enabled forecasters to model relationships between variables. Time series analysis became a good tool revealing patterns like trends and seasonal fluctuations. This is done using techniques such as moving averages and exponential smoothing.

In the mid-20th century, econometrics emerged combining economic theory with statistical methods to analyse economic data and predict macroeconomic trends like the GDP growth, inflation and unemployment. As computers became more accessible, forecasting models grew complex, incorporating multiple variables and sophisticated algorithms. The integration of computer technology allowed for real-time data analysis and dynamic modelling enhancing forecast accuracy.

The late 20th and early 21st centuries opened in an era of advanced analysis and big data. Businesses began to recognize the value of vast amounts of data generated from various sources including social media, e-commerce transactions and IoT devices. This shift prompted the creation of new forecasting techniques that could handle complex data.

Organizations turned to advanced algorithms and machine learning to manage big data's volume and variety, identifying patterns and trends. Data visualization tools and dashboards became vital for real-time monitoring and agile responses. AI revolutionized predictive analysis. It optimizes supply chains, personalizing marketing and enhancing customer experiences.

Ethical issues like privacy, security and algorithmic bias sparked discussions on transparency and accountability. Data scientists and analysts have bridged the gap between raw data and actionable insights. The demand for skilled analysis talent surged, leading to specialized educational programs and certifications.

In the late 20th and early 21st centuries, data became crucial for innovation, efficiency and growth. Businesses sought deeper insights and smarter decision-making. Machine learning has transformed forecasting using algorithms that independently identify patterns. Techniques like neural networks, decision trees and ensemble methods improved predictive models. Decision trees provided transparency and combining them into ensemble methods enhanced performance and accuracy.

Moreover, the integration of machine learning with big data technologies empowered organizations to harness vast datasets from diverse sources such as social media, IoT devices and transaction records. This wealth of information enriched the training process for predictive models, leading to insights that were not only timely but also highly relevant [4].

With great power comes the responsibility of ethical considerations in machine learning. Concerns about bias and fairness lead organizations to develop transparent models and robust validation processes for equitable predictions.

Collaborative forecasting involving multiple stakeholders improves accuracy through the exchange of information and different points of view, which creates a holistic view of market dynamics. Global unpredictability has led businesses to embrace uncertainty in forecasting, using scenario planning to explore potential futures and prepare for demand changes or supply chain disruptions.

Forecasting product demand combines art and science, since accurate predicting consumer needs has a significant impact on the success of a company. This role is enhanced in conditions of unstable markets and rapidly changing consumer preferences. Combining traditional methods and advanced technologies helps businesses understand market dynamics and make informed decisions that meet consumer expectations.

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