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Artificial intelligence for business applications: Revolutionizing customer analysis

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Abstract

In the contemporary corporate landscape, success and competitiveness hinge on a deep understanding of customer behaviors, preferences, and needs. McKinsey's paper, "The Age of Analytics: Competing in a Data-Driven World," underscores the pivotal role of data in business operations. Leveraging data effectively confers significant advantages, with companies proficient in its utilization being 23 times more likely to attract and six times more likely to retain clients. Notably, data-driven decision-making correlates with a 19-fold increase in profitability. Concurrently, Artificial Intelligence (AI) emerges as a transformative force in consumer research, as evidenced by its ability to swiftly analyze vast datasets, discern nuanced trends, forecast behaviors, and furnish actionable insights. A PwC survey indicates that 61% of CEOs foresee AI significantly impacting business in the next five years, underscoring its potential. Consequently, the convergence of consumer data and AI underscores the paradigm shift in how organizations comprehend, engage with, and serve their clientele.

Keywords: Data-driven decision-making, customer analysis, artificial intelligence (AI), consumer behaviour, competitive edge, data insights, business profitability, client retention, personalization, corporate environment

Introduction

Achieving success and maintaining a competitive edge in the modern corporate environment requires a fundamental grasp of customer behaviours, preferences, and requirements. The paper from McKinsey, "The Age of Analytics: Competing in a Data-Driven World," emphasizes how important data is to how businesses operate. The study indicates that companies who use data effectively show notable advantages. These businesses are 23 times more likely to draw in clients by using consumer data insights to target potential consumers precisely. They also have a six-fold higher chance of keeping clients when they use methods based on data trends and behaviour. The study emphasizes the significant impact of data-driven decision-making on financial results by highlighting the 19-fold increase in profitability for data-focused firms.

Artificial Intelligence (AI) has become a revolutionary force in the data-dominated era, particularly in the area of consumer research. Artificial intelligence's capabilities are driving a revolution in how organizations view and engage with their clientele. According to a PwC survey, 61% of CEOs believe AI will significantly impact business over the next five years. AI has a great deal of promise in this regard for better understanding customers. The field of customer analysis has been completely transformed by its ability to handle and analyses massive data sets quickly and in real-time, identify subtle trends and anomalies, forecast customer behaviour and preferences, and deliver actionable insights. Businesses may tailor their services and plans by utilizing AI, which promotes a more effective and individualized method of communicating with their clientele.

The significance of consumer data and the enormous potential of AI come together to highlight the way AI has the ability to completely change how organizations understand, engage, and cater to their customers.

The Role of AI in Customer Analysis

AI has revolutionized consumer analysis by allowing companies to process massive amounts of data efficiently and quickly. As per an IDC analysis, the global data volume is projected to rise from 33 zettabytes in 2018 to 175 zettabytes by 2025.

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Businesses may gain a competitive edge by utilizing AI technologies, which have the capacity to analyse and extract insights from this huge rise of data.

- **Machine Learning Algorithms:** AI is essential to consumer analysis, particularly when it comes to machine learning algorithms. Customer segmentation, sentiment analysis, and predictive analysis are made possible by algorithms like as decision trees, random forests, and neural networks. For instance, machine learning algorithms have demonstrated notable accuracy in forecasting consumer behaviours and preferences based on historical data, according to a research published in the International Journal of Information Management. This helps firms make data-driven decisions.
- **Natural Language Processing (NLP):** Another important component of AI that helps with consumer analysis is natural language processing (NLP). It enables companies to comprehend and instantly address consumer inquiries. According to a study report published by Gartner, by 2022, new technologies including as chatbots, machine learning apps, and advanced analytics will be used in 70% of customer interactions. These technologies will largely use natural language processing (NLP) to improve customer service and engagement.

Businesses can process large amounts of data quickly and effectively by integrating AI, especially machine learning algorithms and natural language processing (NLP). This also helps businesses understand customer sentiment, extract valuable insights, and respond to customer queries in real time - all of which improve customer experience and spur business growth.

Advantages of AI in Customer Analysis

AI's influence on customer analysis has several benefits, chief among them being the improvement of customer experiences and the stimulation of business expansion.

- **Improved accuracy and efficiency:** Artificial intelligence (AI)-enabled systems can swiftly and correctly analyze massive amounts of data, spotting patterns and trends that would be hard or impossible for humans to notice. This may result in more precise and perceptive consumer insights.
- **Personalized recommendations:** AI may be used to tailor suggestions to each customer's unique requirements and preferences. Businesses may benefit from this by seeing an improvement in customer satisfaction and sales.
- **Real-time insights:** Businesses may gain real-time insights into consumer behaviour by utilizing artificial intelligence (AI) to analyse customer data. Campaigns for marketing and customer service can both benefit from this knowledge.
- **Fraud detection:** AI is capable of identifying dishonest behaviour and transactions. This can lessen losses and assist firms safeguard their clientele.

Challenges and Limitations

There are a number of issues around the incorporation of AI in customer analysis that are worth addressing, especially those related to data privacy, algorithmic biases, and how they affect decision-making.

- **Data Privacy and Security Concerns:** The issue of

data security and privacy is one of the main obstacles to using AI in consumer analysis. Nearly 80% of people are becoming more worried about how their data is being used, per an IBM survey. Events such as consumer data mismanagement and data breaches can seriously undermine confidence. The importance of guaranteeing data security and privacy in customer analysis has increased with the adoption of laws like the General Data Protection Regulation (GDPR) in the European Union.

- **Biases in AI Algorithms and Fairness Concerns:** One major problem with AI algorithms is the existence of biases. The historical data that AI systems are trained on might introduce biases into the system, leading to biased or discriminating results. For example, bias against women in the hiring process was evident in Amazon's recruiting tool, as reported by Reuters, raising questions about fairness and gender equality in AI systems. Researchers from a variety of universities, including Stanford University and MIT, have shown in their studies how common biases are in AI systems and how they may affect how decisions are made.

Strict regulations are required to guarantee equity, openness, and moral use of AI in customer analysis, as these issues with data privacy, security, and biases in AI algorithms highlight. Resolving these issues is essential to preserving confidence, reducing dangers, and guaranteeing the moral use of AI in commercial processes.

AI in Business Applications in Customer Analysis

Applications of AI in consumer analysis vary by industry and provide customized solutions to address certain demands.

- **E-commerce:** AI is used by e-commerce enterprises to target marketing efforts, identify fraud, and provide personalized product suggestions. For instance, Amazon makes product recommendations to users based on their browsing and purchase histories.
- **Financial services:** AI is used by financial services firms to evaluate risk, identify fraud, and customize financial advice. Banks, for instance, utilize AI to identify credit card fraud and fraudulent transactions.
- **Retail:** AI is being used by retailers to enhance supply chain management and personalize consumer experiences. AI is used by physical businesses, for instance, to track client movement throughout stores and target them with offers that are tailored specifically to them.
- **Telecommunications:** AI is used by telecom businesses to identify fraud, optimize pricing, and provide personalized customer support. Mobile phone carriers, for instance, utilize AI to identify bogus calls and customize customer support services.
- **Healthcare Industry:** Predictive analytics for patient care is the main way that artificial intelligence (AI) in consumer analysis assists the healthcare industry. Large-scale patient data is analyzed by AI applications to identify possible health hazards, tailor treatment regimens, and enhance diagnostic precision. According to a research that was published in the Journal of the American Medical Association (JAMA), the diagnostic accuracy of medical imaging analysis using AI algorithms was greatly increased.

These industry-specific uses of AI for customer analysis show how adaptable and powerful these technologies are at

meeting the particular needs of many industries, leading to improved customer satisfaction and operational efficiency.

Table 1: Data on the use of AI in business applications in customer analysis

Statistic	Data	Source
Percentage of businesses using AI for customer analytics	76%	McKinsey, 2023
Global market for AI-powered customer analytics software	\$8.3 billion in 2022, expected to grow to \$30.6 billion in 2027	Forrester, 2022
Revenue increase for businesses using AI for customer analytics	2.5 times more likely to exceed revenue goals	Accenture, 2021
Example of AI in customer analytics	Amazon uses AI to recommend products to customers based on their purchase history and browsing behavior.	Amazon
Example of AI in customer analytics	Netflix uses AI to recommend movies and TV shows to users based on their viewing history and ratings.	Netflix
Example of AI in customer analytics	Spotify uses AI to recommend songs and albums to users based on their listening history.	Spotify
Example of AI in customer analytics	Walmart uses AI to predict customer demand and optimize inventory levels.	Walmart
Example of AI in customer analytics	Bank of America uses AI to detect fraudulent transactions and prevent credit card fraud.	Bank of America

Source: Secondary Data

- According to a McKinsey poll from 2023, 76% of participants use AI for consumer analytics.
- According to Forrester research from 2022, the global market for consumer analytics software driven by artificial intelligence is predicted to increase from \$8.3 billion in 2022 to \$30.6 billion in 2027.
- According to a 2021 Accenture study, companies who employ AI for customer analytics have a 2.5 times higher chance of exceeding their sales targets than those that don't.
- Using artificial intelligence (AI), Amazon makes product recommendations to users based on their browsing and purchase histories.
- Using artificial intelligence, Netflix suggests films and TV series to viewers based on their past viewing choices and ratings.
- Using artificial intelligence, Spotify suggests albums and songs to users based on their past listening choices.
- Walmart optimizes inventory levels and predicts consumer demand with AI.
- AI is used by Bank of America to identify fraudulent transactions and stop credit card fraud.

Future Trends and Innovations

The application of artificial intelligence (AI) in consumer analysis is set to lead to revolutionary developments and trends in the future.

- **Hyper-Personalization:** Artificial Intelligence-powered hyper-personalization is the way of the future for consumer analysis. Businesses are using AI to customize goods and services to each customer's tastes, increasing client happiness and loyalty. 91% of consumers are more inclined to purchase from businesses that give recommendations and offers that are appropriate to their needs, per an Accenture survey. Furthermore, after a personalized shopping experience, 44% of shoppers are likely to become repeat customers, according to a Segment analysis.
- **Integration of AI with IoT:** The use of AI to Internet of Things (IoT) devices has the potential to completely transform consumer analysis. IoT devices provide vast amounts of data that, when paired with AI's analytical powers, may offer a thorough grasp of consumer behaviour and preferences. According to Gartner

research, there will be over 75 billion IoT devices in operation by 2025, which will greatly increase the amount of data available. Furthermore, according to McKinsey research, integrating IoT data with AI systems can save maintenance costs by 10% to 20%.

- **Analyze even larger volumes of data:** Text and picture data, among other unstructured data, are included. Businesses will be able to comprehend their consumers and their demands on a deeper level as a result.
- **Make more accurate and predictive predictions about customer behavior:** This will make it possible for companies to predict the demands of their clients and give them the goods and services they require at the appropriate time.

These new developments portend a day when artificial intelligence (AI) will play a major role in customer analysis, allowing companies to provide highly customized experiences and make use of the massive amount of data produced by Internet of Things (IoT) devices. This will lead to a better knowledge of consumer behaviour and preferences.

Ethical Considerations

There are important ethical issues surrounding the use of artificial intelligence (AI) in consumer analysis that need to be taken into account.

- **Privacy Concerns:** The application of AI to consumer analysis presents serious privacy issues. According to Pew Research Centre research, 64% of Americans think more should be done by the government to control how personal data is used by advertisements. Similarly, according to a Deloitte report, 87% of customers are worried about the privacy of their personal information. Events such as data breaches or improper client data management can seriously damage a brand's reputation and confidence.
- **Fairness and Bias in AI Algorithms:** Concerns around biases in artificial intelligence (AI) algorithms used for consumer analysis are becoming more and more prevalent. Research from several sources, such as the Harvard Business Review, has shown that AI systems may inherit biases from training data, which might

result in unfair decisions. The impartiality and fairness of AI algorithms having a big impact on how decisions are made and how customers are treated fairly.

- **Transparency and Accountability:** It is imperative to uphold openness and accountability in customer analysis powered by AI. A KPMG survey states that 56% of customers think businesses should disclose more information about the operation of their AI-based systems. Assuring responsibility and fostering trust both depend on giving explanations for how AI makes certain judgements.

The creation and application of laws, policies, and best practices that support ethical AI usage are necessary to address these ethical issues. To ensure the moral and responsible application of AI in consumer analysis, strict data protection regulations, bias mitigation strategies, and algorithm openness are required.

Conclusion

The need to appropriately handle ethical problems and fully utilize AI's capabilities is crucial for the future of customer analysis. The future of customer-centric corporate strategies and services will be shaped by this balance, which is both a strategic need and an ethical duty. In order to fully utilize AI's potential to increase customer happiness, boost revenues, and forecast consumer behaviour, important ethical issues must be resolved. In the rapidly changing field of AI-powered consumer analysis, striking a balance between innovation and strong ethical norms is essential to ensuring openness, fairness, privacy, and trust. This mutually beneficial interaction between ethical stewardship and technology innovation is essential for ethical and sustainable AI-driven business operations.

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