

Accelerating Business Growth with Big Data and Artificial Intelligence

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The paper discusses some AI and big data technologies that are currently being used to accelerate business growth. All types of businesses have been affected and many start using Artificial Intelligence (AI), Data Science, Big Data and Internet Of Things (IoT) to accelerate growth and boost profits significantly. For instance, the company Cognizant develops AI systems to improve business processes and revenue. Now they save \$30 million in capital through improved equipment utilization and higher availability. This underscores how AI and data analysis are actively used in modern industries to cut costs, optimize profits, and drive business growth.

Therefore, AI and big data solutions play a crucial role in various areas of finance and business. Here are some major applications from the past five years:

1. **Fraud Detection:** Machine learning is being used for credit card fraud detection with high accuracy. A study by Randhawa and al. shown high accuracy (99.941%) for fraud detection combining Neural Network and Naive Bayes classifier. The latter is a probabilistic machine learning algorithm that is based on Bayes' theorem, which considers that the presence of one feature does not affect the presence of another.
2. **Algorithmic Trading:** AI automates the trading process, from pre-trade analysis to post-trade analysis, transforming the way trading is conducted. Roodiwal et al. propose a learning algorithm that can be used to predict stock prices using a dataset of New York stock exchange.
3. **Customer Service:** AI-powered chatbots are implemented in customer service, reducing the need for dedicated personnel and saving millions in terms of costs. Cui et al. developed a chatbot called "superagent" that acts as a customer service provider for e-commerce websites like amazon.
4. **Marketing and Product Recommendation:** Deep artificial neural networks, enhance product recommendations with real-time responsiveness. Sundsoy et al. experimented on an MNO (mobile network operator) in Asia comparing big data-driven marketing strategies to traditional human-based marketing strategies.
5. **Cyber Security:** AI and machine learning are crucial for addressing cybersecurity challenges, including intrusion detection, malware analysis, and phishing detection. Gupta et al. proposes an artificial neural network to detect phishing URLs. It has proved to give an accuracy of 93.93%.

AI extends beyond finance and business, impacting areas such as automatic retail transactions in supermarkets, exemplified by Amazon Go stores. Portfolio management benefits also from AI solutions, for cryptocurrency investments and or dynamic portfolio optimizations.

Harvard Business Review categorizes AI applications into three types dominating the business industry: process automation (47%), cognitive insights (38%), and cognitive engagement (16%). Process automation involves tasks like reading legal documents and extracting relevant information. Cognitive

insights address issues like predicting customer preferences and analyzing warranty data. Cognitive engagement includes recommendation systems for personalized health treatment plans. These findings showcase the broad and transformative impact of AI on diverse business sectors.

Conclusion: In the paper, several applications of AI and big data in the context of business and their growth have been reviewed. AI has utterly transformed the business world and in the future, it will undoubtedly continue to change the business but it might also replace job.