



The effect of using artificial intelligence in financial management on the growth and development of businesses

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Abstract

With the advancement of artificial intelligence (AI) technology, there is a growing trend towards utilizing AI for financial management to enhance the growth and development of businesses. Businesses are leveraging the benefits of AI and placing trust in the outcomes generated by AI algorithms. The results of AI processes are derived from vast and crucial datasets sourced from global developments and research, serving as reliable inputs. Consequently, business professionals are willing to invest in such services. The objective of this article is to demonstrate and elucidate the positive impact of employing AI in financial management on the expansion and progress of businesses. This study aims to provide a clearer insight into the type of article, its purpose, advantages, and the project's methodology.

Keywords: Artificial Intelligence, financial management, businesses, Financial Data Analysis, High-Frequency Trading.

Introduction

In the realm of modern business dynamics, the integration of artificial intelligence (AI) in financial management practices has emerged as a pivotal driver influencing the growth and evolution of enterprises. The strategic adoption of AI technologies in financial decision-making processes has revolutionized conventional methodologies, offering unparalleled insights and operational efficiencies. This study delves into the profound impact of leveraging artificial intelligence within financial management frameworks and its consequential effects on fostering the growth and development of businesses, [1-3].

By exploring the multifaceted implications of AI implementation in financial contexts, encompassing company financial statements, credit data, investment data, transaction data, derivative data, market trends, risk analysis, regulatory compliance, credit card transactions, cryptocurrency data, high-frequency trading, the role of AI in financial data analysis, as well as the role of AI in trading and investment strategies, this research endeavors to illuminate the transformative role of AI in shaping the future landscape of business expansion and strategic advancement, [4-7].

About AI

With Google search, we understand that artificial intelligence is the simulation of human processes by machines, especially computer systems. Specific applications of AI include expert systems, natural language processing, speech recognition and machine vision. Artificial intelligence (AI) is one of the advanced technologies that provide the most powerful tools for data analysis and accurate predictions. By combining different technologies, including machine learning and neural networks, artificial intelligence allows us to identify complex patterns in data and extract valuable information, [5-6].

One of the basic concepts in this field is data analysis. Data analysis means examining, interpreting and extracting information from data. Various methods are used for data analysis, including statistical techniques, modeling and machine learning algorithms. Data analysis plays a fundamental role in artificial intelligence. Using advanced statistical techniques and algorithms, we can analyze big data and identify different patterns. This information can help us make better decisions and make more accurate predictions, [7-8].

Machine learning is also one of the important branches of artificial intelligence that allows machines and systems to learn from data and identify hidden patterns in data. Using machine learning algorithms, we can create more powerful predictive models and help improve processes and increase efficiency.

Machine learning allows machines and systems to learn from data and make intelligent decisions without the need for explicit programming. Machine learning algorithms such as decision trees, neural networks and support machines are used to train the models. Due to the significant developments in the field of artificial intelligence and related tools, it is expected that these technologies will be used more widely in various industries and help improve processes, make more accurate predictions, and make smarter decisions, [9-10].

In short, artificial intelligence, data analytics and machine learning together give us a powerful combination to improve processes, increase productivity and provide more accurate predictions. These technologies are used as essential tools in industries ranging from health to commerce and transportation, and contribute to major transformations in societies and the world.

About Financial Management

Financial management is an important and vital operation in any organization or business, which includes planning, controlling and monitoring all financial activities of the company. The main goal of financial management is to optimize the use of financial resources and create value for shareholders. This process includes the management of revenues, expenses, investments, budgeting and financial risk management. Financial management, with the help of various financial tools and techniques, ensures that optimal financial resources are used and the company's financial goals are correctly determined and followed. This includes budget planning, financial forecasting and analysis, cash flow management, investment evaluation, and financial risk management, [1-2].

Financial management includes planning, controlling and monitoring all financial activities of the company. This includes managing revenues, expenses, investments, budgeting and financial risk management. By doing financial management correctly, the company can use its financial resources optimally and achieve more profitability and sustainable growth. In short, financial management is a strategic process that helps a business to use financial resources optimally, reduce financial risks, achieve greater profitability, and achieve sustainable growth and sustainable development, [3-4].

Financial management is one of the critical factors for the success of any business. The importance of financial management in business can be explained for the following reasons:

- Optimizing the use of financial resources: Financial management helps the business to use its financial resources optimally. This includes managing revenues, controlling costs and optimizing investments.
- Financial forecasting and planning: By using financial management tools and techniques, businesses can provide accurate forecasts and have financial planning consistent with their goals.

- Reducing financial risks: Financial management helps the business to identify and reduce financial risks. These measures include cash flow management, debt management and financial risk management.
- Increasing the trust of investors and shareholders: By doing financial management correctly, the business can gain the trust of its investors and shareholders and enjoy continuous financial support.
- Sustainable growth and progress: By using financial management tools and techniques, businesses can achieve sustainable growth and continuous progress and improve their financial goals.
- Therefore, financial management plays a very important role in ensuring the success and sustainability of business and should be considered as a strategic and vital tool in every organization.
- In addition, financial management helps the business to identify suitable investment opportunities and grow rapidly. By using financial management tools and techniques, the company can achieve more productivity and get closer to its financial goals.
- Therefore, financial management plays a very important role in business development and should be considered as a strategic tool to increase the performance and sustainability of companies.

Types of Financial Data

Financial data encompasses a wide range of information related to economic activities, investments, and financial transactions, [5-8]. The various types of financial data can be categorized based on their nature and the insights they provide. Here are some key types of financial data:

- **Market Data:**

Stock Prices: Real-time and historical data on the prices of stocks traded on financial markets.

Trading Volumes: Information about the number of shares or contracts traded during a specific period.

- **Economic Indicators:**

Gross Domestic Product (GDP): The total value of all goods and services produced by a country over a specific time period.

Inflation Rates: Measures the percentage change in the general price level of goods and services over time.

Unemployment Rates: The percentage of the labor force that is unemployed and actively seeking employment.

- **Company Financial Statements:**

Balance Sheets: Provides a snapshot of a company's financial position, showing assets, liabilities, and equity at a specific point in time.

Income Statements: Summarizes a company's revenues, expenses, and profits over a specific period.

Cash Flow Statements: Details the cash inflows and outflows from operating, investing, and financing activities.

- **Credit Data:**

Credit Scores: Numerical representations of an individual's creditworthiness, often used by lenders to assess the risk of extending credit.

Credit Reports: Comprehensive reports that include an individual's credit history, outstanding debts, and payment patterns.

- **Investment Data:**

Portfolio Holdings: Information about the assets held within an investment portfolio. Returns on Investments: The percentage change in the value of an investment over a specific time period.

- **Transaction Data:**

Payment Transactions: Details about financial transactions, including purchases, transfers, and withdrawals.

Trade Confirmations: Documentation confirming the execution of a financial trade, providing details such as security traded, price, and date.

- **Derivative Data:**

Options and Futures Data: Information related to financial derivatives, including contract specifications, prices, and expiration dates.

Swaps Data: Details on financial agreements between two parties to exchange cash flows or other financial instruments.

- **Real Estate Data:**

Property Valuations: Assessments of the value of real estate properties.

Rental Rates: Information about the cost of renting or leasing real estate.

- **Credit Card Transactions:**

Transaction Amounts: Details about purchases made using credit cards, including amounts, merchants, and dates.

Credit Card Statements: Summarizes charges, payments, and outstanding balances on a credit card account.

- **Cryptocurrency Data:**

Cryptocurrency Prices: Real-time and historical prices of digital currencies like Bitcoin and Ethereum.

Blockchain Data: Information recorded on the blockchain, including transaction details and addresses.

These types of financial data are essential for various stakeholders, including investors, financial analysts, regulators, and policymakers, to make informed decisions, assess risks, and understand the overall financial health of individuals, companies, and economies.

High-Frequency Trading

High-frequency trading (HFT) is an investment approach that leverages advanced computers and intricate algorithms to initiate rapid and automated buy and sell orders. It capitalizes on minute shifts in market prices, often occurring within milliseconds. As per a 2016 report by the Bank for International Settlements, HFT currently makes up about 70 percent of the overall trade volume in US equity markets. Despite these benefits, critics of HFT suggest that it may provide traders who use this strategy an unfair advantage due to their trade's accelerated pace. Furthermore, Chung and Lee (2016) noted that HFT can lead to market fragmentation, diminished transparency, and heightened price volatility [1].

Research in the field has looked into AI's impact on high-frequency trading (HFT). Arifovic et al. (2022) explored the potential of machine learning to boost HFT performance. They crafted a machine learning algorithm that leveraged deep learning techniques to analyze historical market data, taking into account factors like trading volume, bid-ask spreads, and volatility. The algorithm processed these data to recognize patterns, and, using these patterns, it forecasted short-term stock price trends. One of the innovative features of their model was the adaptive learning component, which allowed the algorithm to adjust its predictions based on new data continually. This ensured that the predictions remained relevant and accurate, even as market conditions changed [2].

In summary, high-frequency trading represents a well-favored trading tactic that leverages AI to enhance the speed, efficiency, and precision of trading operations. Research has provided evidence that AI utilization can bolster HFT performance and enable more accurate price forecasting. The inherent flexibility and adaptability of AI and ML ensure that they are well-suited for the rapid and unpredictable world of high-frequency trading.

The use of artificial intelligence in business development investments and High-Frequency Trading (HFT) transactions is very important. Below I mention some of the importance of using artificial intelligence in these fields:

Accurate prediction: Artificial intelligence, especially using machine learning algorithms, is capable of analyzing large and complex data. This possibility helps investors to make more accurate predictions about market behavior and price changes.

Risk reduction: Artificial intelligence can help identify different patterns in the market and protect investors from financial risks. This can help reduce the risks associated with investing.

Increased productivity: By using artificial intelligence, investors can increase their productivity. Data-driven decisions and accurate forecasts can help them make better decisions and earn more profit.

Competitiveness: In a competitive and dynamic environment, the use of artificial intelligence can help companies to be more competitive and have higher efficiency. This can help them perform better in complex and dynamic markets.

Overall, the use of AI in business development investments and HFT trading can help companies improve performance, reduce risk, and increase profitability.

Role of Artificial Intelligence in Financial Data Analysis

The role of Artificial Intelligence (AI) in financial data analysis is increasingly significant, as AI technologies offer advanced capabilities to process, analyze, and derive valuable insights from large and complex financial datasets, [1-7]. Here are key aspects of the role of AI in financial data analysis:

- **Data Processing and Management:**

Data Cleansing and Preprocessing: AI algorithms can automatically clean and preprocess financial data, addressing issues such as missing values, outliers, and inconsistencies. **Handling Big Data:** AI enables the efficient processing of large volumes of financial data, allowing for more comprehensive analysis and insights.

- **Pattern Recognition and Predictive Analytics:**

Identifying Patterns: AI algorithms excel at recognizing patterns and trends within financial data that may be challenging for traditional methods.

Predictive Modeling: AI facilitates the development of predictive models that forecast future market trends, stock prices, and economic indicators based on historical data.

- **Risk Management:**

Risk Assessment: AI is crucial in evaluating and managing risks associated with financial activities, such as investment decisions, loan approvals, and credit risk analysis.

Fraud Detection: AI-powered systems can detect unusual patterns or anomalies in financial transactions, helping to identify potential fraudulent activities.

- **Algorithmic Trading:**

Automated Trading Strategies: AI algorithms are employed in developing and executing complex trading strategies, optimizing buy and sell decisions based on real-time market data.

High-Frequency Trading: AI enables rapid decision-making and execution in high-frequency trading environments.

- **Customer Service and Personalization:**

Chatbots and Virtual Assistants: AI-driven chatbots provide customer support, answering queries, and facilitating transactions in real-time.

Personalized Financial Advice: AI analyzes customer data to offer personalized financial recommendations, investment strategies, and product suggestions.

- Credit Scoring and Underwriting:

Credit Risk Assessment: AI algorithms analyze a multitude of variables to assess the creditworthiness of individuals and businesses, improving the accuracy of credit scoring models.

Automated Underwriting: AI streamlines the underwriting process by automating the assessment of loan applications, reducing processing time.

- Portfolio Management:

Optimizing Investment Portfolios: AI is used to analyze and optimize investment portfolios by considering various factors such as risk tolerance, investment goals, and market conditions.

Dynamic Asset Allocation: AI dynamically adjusts asset allocations based on changing market conditions and investment objectives.

- Natural Language Processing (NLP):

Sentiment Analysis: NLP techniques are applied to analyze news articles, social media, and financial reports to gauge market sentiment and assess its impact on financial markets.

Information Extraction: NLP enables the extraction of relevant information from unstructured text, aiding in decision-making processes.

- Regulatory Compliance:

Monitoring and Reporting: AI systems assist financial institutions in monitoring transactions and ensuring compliance with regulatory requirements by automating reporting processes.

Anti-Money Laundering (AML) and Know Your Customer (KYC): AI helps in identifying and flagging potentially suspicious transactions, enhancing AML and KYC efforts.

- Continuous Learning and Adaptation:

Machine Learning (ML): ML algorithms enable AI systems to learn from new data, improving their accuracy and effectiveness over time.

Adaptive Models: AI models can adapt to changing market conditions, ensuring that analyses and predictions remain relevant.

The role of AI in financial data analysis extends across various domains, offering unprecedented efficiency, accuracy, and the ability to uncover insights that can drive strategic decision-making in the dynamic and complex financial landscape.

The Role of AI in Trading and Investment Strategies

The influence of artificial intelligence (AI) and machine learning has revolutionized the approaches adopted by traders and investors in their work. The intricacies of financial markets often lie in patterns and nuances that traditional statistical models might overlook. AI, especially deep learning models, can capture non-linear relationships in data, which can be pivotal for strategies like HFT, [3].

Specifically, machine learning methods like neural networks and deep learning have surfaced as powerful tools, fundamentally altering the framework of trading and investment tactics, [4].

Comparative research underlines the superior efficacy of investment strategies based on AI in comparison to conventional methods, particularly in algorithmic trading where rapidity and precision are paramount, [5].

Implementing AI in aspects like sentiment analysis and market prediction has contributed to devising more intricate and lucrative trading strategies, [6].

Furthermore, AI has advanced socially responsible investing (SRI) by incorporating environmental, social, and governance (ESG) considerations into investment decisions, leading to enhanced portfolio management and risk reduction, [7].

One of AI's most notable advancements is in the field of risk management. Sophisticated algorithms can assess vast datasets and detect patterns that might escape human notice, thereby enhancing risk assessment and mitigation, [8].

Furthermore, AI-powered investment strategies have outperformed those managed by humans, exemplifying the potential for augmented investment returns, [9].

AI applications have significantly broadened investment possibilities, with robo-advisors providing a cost-effective and readily accessible alternative to traditional financial advisors, thereby enabling more individuals to benefit from personalized investment advice. Moreover, AI tools have proven invaluable for compliance and regulatory tasks, automating procedures and reducing human error in tasks such as reporting and record-keeping, [10].

Nevertheless, an increased dependency on AI for trading and investment strategies brings up issues surrounding algorithmic bias and the lack of transparency in AI decision-making processes, potentially resulting in unanticipated outcomes and heightened systemic risk, [11].

Conclusion

Based on the insights gathered from the exploration of artificial intelligence, financial management, and business development, it is evident that artificial intelligence harnesses algorithms and deep learning of vast datasets to enhance financial management practices. By leveraging AI capabilities in investment analysis, transaction scrutiny, and data processing, businesses can access reliable outputs of superior quality. This empowers business managers to make informed decisions, thereby fostering the growth and development of their enterprises. However, it is crucial to acknowledge the research limitations, propose practical and applicable recommendations, and contemplate the future implications of these advancements. By delving into the discussion of research constraints, offering actionable suggestions, and contemplating the future impact of AI in financial management, this study aims to provide a comprehensive understanding of the transformative potential of artificial intelligence in shaping the landscape of business operations and strategic decision-making processes.

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