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**Title:** The Role of Artificial Intelligence in Enhancing Predictive Accuracy of Economic Trends

**Related Studies**

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| **Study** | **Authors** | **Key Focus** | **Model/Approach** | **Key Result** | **Limitations** |
| A Role of Artificial Intelligence in the Context of Economy: Bibliometric Analysis and Systematic Literature Review |  | The paper examines the impact of Artificial Intelligence (AI) on the economy through a bibliometric analysis and systematic literature review. It evaluates how AI drives innovation, productivity, and economic growth, with an emphasis on business, management, accounting, and computer science. |  | AI is shown to significantly enhance the economy by fostering innovation and reducing operational costs. "Sustainable Development," "Innovation," and "Economics" are identified as dominant research keywords. Geographical contributions highlight China, India, and the UK as leading countries in AI-related economic research. Collaboration trends reveal 31.45% international co-authorships, with impactful contributions from journals like *Sustainability* and *Journal of Cleaner Production*. | Limited focus on developing economies and specific challenges faced during AI adoption. Potential gaps in interdisciplinary collaboration between AI and economics research. Incomplete representation of emerging themes beyond the studied timeframe and datasets. |
| Artificial Intelligence and Digital Transformation: Analyzing Future Trends |  | The paper investigates future trends in artificial intelligence (AI) and digital transformation. It identifies 30 future events categorized into various industries (e.g., business process management, healthcare, construction, education) and proposes actionable insights for decision-makers to prepare for these trends. | The study employs **Future-Oriented Technology Analysis (FTA)** methodologies, combining five steps:   1. **Systematic Literature Review (SLR):** Reviews academic works to identify future AI-related events. 2. **Brainstorming:** Validates and adds new events beyond those in the SLR. 3. **Futures Wheel:** Maps cause-consequence relationships for identified events. 4. **Roadmap:** Chronologically organizes events into a timeline. 5. **Scenario Building:** Creates narratives about future impacts in the context of Industry 4.0. | Identified **29 future events** across sectors such as education, industry, healthcare, and tourism. Developed a **roadmap** highlighting when key AI-driven transformations are expected (e.g., AI-powered HR by 2024, AI designing personalized education plans by 2026). Highlighted significant benefits, including enhanced business process efficiency, personalized learning, and predictive analytics in healthcare and HR. | Limited participants: FTA was conducted solely by the authors, which could narrow perspectives. Narrow literature scope: SLR relied on the Scopus Library, potentially excluding relevant "gray literature." Proposed improvements: Future research could involve industry experts, policy-makers, and technology providers for broader insights. |
| Digital Economy Meets Artificial Intelligence: Forecasting Economic Conditions Based on Big Data Analytics |  | This paper explores the integration of artificial intelligence (AI) and big data analytics to improve economic modelling and forecasting in the context of the digital economy. It highlights the limitations of traditional economic models and demonstrates the advantages of AI-based methods in achieving accurate and comprehensive macroeconomic predictions. | A **Graph Neural Network (GNN)** is used to model the relationships and interactions between multiple economic factors. This network accounts for dynamic, weighted interconnections between variables.  An **LSTM (Long Short-Term Memory)** model is employed for economic forecasting. It leverages historical and current data to predict future economic trends, effectively integrating multimodal data inputs. | The proposed approach achieved significant improvement in economic forecasting accuracy. For instance, in stock prediction experiments, the Root Mean Squared Error (RMSE) reduced from 21.5% to 10.3% by incorporating relevant factors into the LSTM model.  The combined GNN and LSTM framework demonstrated its capability as a foundational tool for economic modelling, decision-making, and self-regulation in the digital economy. | The study relies on experimental validation with limited datasets, such as stock forecasting, which may not generalize to broader economic contexts.  The proposed model's performance is contingent on the quality and diversity of input data; limited or biased data could undermine its accuracy.  The authors did not compare their method extensively with other advanced neural network models or AI-based techniques.  Future enhancements are needed, including the development of real-world platforms and the integration of additional data analysis methods for improved accuracy. |
| Prediction Algorithm of Digital Economy Development Trend Based on Big Data |  | The study focuses on leveraging big data and artificial intelligence technologies to enhance economic trend prediction.  It specifically explores the use of interval data models to predict macroeconomic trends, which differs from traditional point data models. | **Interval Data Model:** The paper introduces an interval data model using the Hukuhara difference for stability in time-series data.  **Variable Selection Method:** Based on the mean square error (MSE) criterion, the model selects interval variables such as stock market indices, fund market data, futures transactions, and money market supply.  **Combined Model Structure:** Various combinations of financial indicators are evaluated to determine the optimal prediction models.  **Weighted Models:** Combines multiple models using equal weight, relative performance weight, and rank-based weight strategies. | The interval data model shows significant predictive capability for macroeconomic trends, outperforming traditional methods.  Predictions for China’s macroeconomic growth (2020-2023) suggest a stable and gradual development trajectory, with a GDP growth range of approximately 6.22–6.61%.  The combined model approach provided robust interval predictions, enhancing the accuracy and reliability of economic forecasts. | **Data Dependency:** The effectiveness of the prediction model heavily depends on the availability and reliability of interval financial data.  **Complexity of Unstructured Data:** Challenges remain in handling high-dimensional, unstructured data like text and images.  **Limited Talent Pool:** A shortage of professionals skilled in both economic and big data analytics impacts model development and maintenance.  **Model Instability:** The prediction model’s performance can be unstable, requiring manual adjustments and regular updates to adapt to new economic conditions. |
| Exploring The Future Of Global Financial Markets: How Technological Innovation, Artificial Intelligence, And Digital Currency Are Reshaping Economic Growth |  | The paper evaluates how technological innovation, artificial intelligence (AI), and digital currencies (DCs) influence global financial markets and economic growth. It emphasizes:   * The transformative role of AI and DCs in the financial sector. * Emerging trends in global financial systems, including blockchain and fintech innovations. * Challenges such as regulatory issues, cybersecurity, and economic disparity.   **2. Model/Approach**  The research combines **qualitative and quantitative methods**, including:  **1**. Statistical analysis to examine correlations between AI, DCs, and economic indicators like GDP growth and market stability.  **2**.Regression analysis to assess the impact of technological innovations, AI, and regulatory challenges on economic growth.  **3**.Thematic analysis of interviews with AI specialists and policymakers.  **4.**Comparative case studies from various economies to identify trends and disparities in adopting financial technologies. | The research combines **qualitative and quantitative methods**, including:   * Statistical analysis to examine correlations between AI, DCs, and economic indicators like GDP growth and market stability. * Regression analysis to assess the impact of technological innovations, AI, and regulatory challenges on economic growth. * Thematic analysis of interviews with AI specialists and policymakers. * Comparative case studies from various economies to identify trends and disparities in adopting financial technologies. | **Positive Impact:** Digital currencies significantly contribute to economic growth by enhancing financial inclusion, reducing transaction costs, and promoting cross-border trade.  **AI Efficiency:** AI enhances decision-making, fraud detection, and customer service in finance but poses risks like market instability.  **Regulatory Challenges:** Inconsistent regulations and cybersecurity concerns hinder the integration of these technologies into global markets.  **Market Trends:** Increased globalization, efficiency, and competition in financial systems are driven by technological advancements. |  Reliance on **secondary data** may introduce biases and limit the depth of analysis.   Findings are based on a specific set of economies, restricting the generalization of results across diverse global contexts.   The study lacks longitudinal data to assess the dynamic and long-term effects of these technologies. |
| Exploring The Future Of Global Financial Markets: How Technological Innovation, Artificial Intelligence, And Digital Currency Are Reshaping Economic Growth |  | The paper examines the impact of technological advancements, artificial intelligence (AI), and digital currencies (DCs) on global financial markets and economic growth. It highlights how AI and blockchain technologies are disrupting traditional financial systems, improving efficiency, and creating new challenges in regulatory frameworks and market stability. | The study employs both **qualitative and quantitative research methods** to analyze trends, correlations, and impacts of AI and digital currencies on financial markets. The approach includes case comparisons from different economies, statistical regression analysis, and correlation tests to measure the relationship between technological innovation and economic growth |  AI and digital currencies **enhance efficiency in financial markets**, improve investment decision-making, and increase market globalization.   **AI-driven automation** reduces operational costs, increases transaction speed, and aids in fraud detection.   Digital currencies facilitate **cross-border transactions** and financial inclusion but introduce market volatility.   The study finds that **digital currencies have a strong positive influence on economic growth**, while AI adoption presents both risks and opportunities, including regulatory challenges. |  **Regulatory and security concerns**: The lack of standardized regulations for AI and digital currencies leads to uncertainties in financial markets.   **Market volatility**: Digital currencies and AI-driven market automation can cause instability due to rapid technological changes.   **Data bias and inequality**: Developing economies face difficulties in adopting these technologies due to infrastructure limitations and regulatory inconsistencies.   **Limited primary data**: The study relies on secondary data sources, which may introduce biases or lack depth in real-world applications. |
| Enhancing Financial Forecasting Accuracy Through AI-Driven Predictive Analytics Models |  | The paper explores how AI-powered predictive analytics can improve financial forecasting accuracy. It examines the application of machine learning (ML), deep learning (DL), and big data analytics to enhance risk assessment, decision-making, and investment strategies. |  The study employs AI models such as neural networks, decision trees, support vector machines (SVM), and deep learning techniques like Long Short-Term Memory (LSTM) networks.   Traditional forecasting models (ARIMA, SARIMA, and econometric models) are compared with AI-driven models.   Experiments were conducted under different market conditions (stable, volatile, and mixed) to assess AI models' adaptability and performance. |  AI-driven predictive analytics significantly outperforms traditional models, especially in volatile and mixed market conditions.   AI models provide better adaptability, risk assessment, and predictive accuracy, making them valuable for financial institutions.   The study highlights AI's role in improving investment strategies, risk management, economic policy-making, and corporate financial planning. |  **Data Quality and Availability:** AI models depend on high-quality data, and inconsistencies can affect accuracy.   **Interpretability of AI Models:** Deep learning models often function as "black boxes," making it difficult for financial analysts to understand their decisions.   **Computational Resources:** AI models require significant computing power, which can be costly for some firms. |
| HOW CAN AI PREDICT ECONOMIC TRENDS IN THE MONEY CYCLE? |  | The paper explores the application of artificial intelligence (AI) in economic forecasting, particularly within the framework of the Cycle of Money theory. It examines how AI-driven models can enhance economic predictions by analyzing enforcement and escape savings dynamics​ | The study employs AI-driven neural networks to analyze historical and real-time economic data. These models integrate macroeconomic indicators, sentiment analysis, and enforcement/escape savings concepts to improve the accuracy of economic predictions. Techniques such as back-testing, cross-validation, and performance metrics (e.g., MAE, RMSE) are used to validate the models​ | The implementation of AI in economic forecasting has led to an improvement in prediction accuracy, ranging from 15% to 95% in Big Data analytics. AI has enhanced decision-making in monetary policy and optimized enforcement savings, leading to more efficient financial systems​ | AI models struggle with the unpredictable nature of economic events, such as geopolitical crises and shifts in consumer behavior. Additionally, data biases, overreliance on historical data, and the exclusion of qualitative human insights limit the effectiveness of AI-driven forecasts. Cultural resistance to AI adoption and infrastructure challenges further hinder implementation, especially in developing nations​ |
| THE ROLE OF AI IN PREDICTIVE ANALYTICS FOR MARKET TRENDS AND CONSUMER DEMAND |  | The paper discusses the role of Artificial Intelligence (AI) in predictive analytics for market trends and consumer demand. It highlights AI's ability to process vast datasets, recognize patterns, and forecast demand with greater accuracy, ultimately helping businesses optimize marketing strategies, inventory management, and risk mitigation. | The study examines various AI techniques, including machine learning models (supervised, unsupervised, and deep learning), natural language processing (NLP), real-time data analysis, and AI-powered recommendation systems. It also explores AI's integration in dynamic pricing, personalized marketing, and risk management. | AI-driven predictive analytics significantly improves market trend forecasting, enhances personalized marketing, optimizes inventory and supply chain management, and aids in risk assessment. Case studies from retail, healthcare, finance, manufacturing, energy, and transportation demonstrate AI's practical benefits, such as Walmart's demand forecasting and Uber's dynamic pricing. | Challenges include data privacy concerns, algorithmic biases, ethical transparency, and the need for high-quality data. Additionally, AI models may struggle with unpredictable economic and consumer behavior shifts, and their effectiveness depends on businesses’ ability to interpret and act on AI-generated insights. |
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