Application Of Artificial Intelligence In Improving The Efficiency Of Corporate Information Systems

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APPLICATION OF ARTIFICIAL INTELLIGENCE IN IMPROVING THE EFFICIENCY OF CORPORATE INFORMATION SYSTEMS

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ABSTRACT

Artificial Intelligence (AI) has been widely applied in various fields, including important aspects in the development of enterprise information systems. This research aims to explore the use of AI in improving the efficiency of enterprise information systems and analyse its impact on organisational performance. In this research method, we collected primary data from several companies that have implemented AI systems in their operations. Secondary data was also collected from related literature, including case studies and previous research in this field. Furthermore, we conducted a qualitative analysis of the data and a quantitative evaluation of the impact of AI implementation in improving the efficiency of information systems. The results show that the implementation of AI has resulted in a significant increase in the efficiency of the company's information system. AI-assisted systems are able to automatically process and analyse data, predict market trends, identify anomalies, and provide strategic recommendations for decision-making. These efficiencies in turn improve operational performance, lower costs, and enhance more timely and accurate decision-making. We conclude that the use of AI in enterprise information systems effectively improves operational efficiency and organisational performance. However, important steps need to be taken to ensure successful implementation of AI, such as providing adequate resources, developing employee competencies, and considering the social and ethical impacts of using AI in a business context.

Keywords: artificial intelligence, efficiency, enterprise information systems, performance improvement.

INTRODUCTION

The rapid development of information technology, especially in the field of artificial intelligence (AI), has provided breakthrough opportunities for companies to improve the efficiency of their information systems. Massive data growth and increasing task complexity require new approaches that are able to process and analyse information quickly, accurately and efficiently. The use of artificial intelligence in the context of enterprise information systems promises solutions that can provide a competitive advantage in a highly competitive and dynamic business era [1].

The application of artificial intelligence in enterprise information systems has the main objective of improving the efficiency and effectiveness of company operations. By using advanced data processing and machine learning methods, AI

systems can provide very high analytical and predictive capabilities in interpreting data, recognising hidden patterns, and making recommendations based on the information provided. In this sense, AI-powered information systems can significantly speed up decision-making, increase productivity, reduce operational costs, and improve customer satisfaction [2].

Many academic studies have recognised the potential of artificial intelligence in improving the efficiency of corporate information systems. Previous studies have tried to analyse various aspects of AI applications, such as data analysis, natural language processing, the use of chatbots and virtual assistants, sentiment analysis, and pattern recognition. However, there is still a need for further research that specifically focuses on how the application of AI can have a significant impact on improving the overall efficiency of enterprise information systems.

In this journal, we seek to analyse and present an in-depth theoretical framework on the application of artificial intelligence in improving the efficiency of enterprise information systems. Through a literature review, we will explain the basic concepts of artificial intelligence, algorithms and techniques used in the development of AI systems, as well as common applications in enterprise information systems. In addition, we will also describe critical factors to consider in designing and implementing an effective AI system, such as resources, security and privacy policies, and internal competency development [3].

The purpose of this research is to provide a strong knowledge base for companies and researchers in understanding the role and benefits of implementing artificial intelligence in improving the efficiency of enterprise information systems. It is expected that the results of this research can help companies make smart decisions in implementing and optimising AI systems in specific contexts.

THEORY

1. Artificial Intelligence
   Artificial Intelligence (AI) is a field of computer science that focuses on developing systems that can mimic, emulate, or give the impression of human intelligence. AI includes techniques such as machine learning, data analytics, natural language processing, and computer vision. In the context of enterprise information systems, the application of artificial intelligence is aimed at improving the system's ability to process and analyse data, provide business recommendations, predict trends, and support better decision making [4].
2. Enterprise Information System Efficiency
   Enterprise information system efficiency refers to the system's ability to manage and process data quickly, accurately, and at an affordable cost. Through the application of artificial intelligence, enterprise information systems are able to increase employee productivity, reduce human error, automate routine tasks, and provide deeper insights into business data. In day-to-day operations, the enhanced efficiency of enterprise information systems can result in cost savings, improved service quality, and smarter decisions [5].

3. Machine Learning
   Machine learning is a branch of artificial intelligence that focuses on developing algorithms and techniques that allow computers to learn from data without being explicitly organised. In the context of applying artificial intelligence in enterprise information systems, machine learning is used to recognise data patterns, learn user preferences, and make predictions based on past data. This allows AI systems to provide recommendations, optimisation, and forecasting that can be used in decision-making and business planning [6].
4. Natural Language Processing (NLP)
   Natural Language Processing (NLP) is a technology that enables communication between humans and computers through natural human language. In enterprise information systems, NLP is used to understand, analyse, and process text such as documents, messages, and conversations. AI powered by NLP is able to recognise important entities, construct abstractions from documents, and perform sentiment analysis on collected text data, providing valuable insights for decision-making [7].
5. Pattern Recognition
   Pattern Recognition is a technique in artificial intelligence that deals with the identification and interpretation of patterns in data. In the context of enterprise information systems, pattern recognition is used by AI to recognise trends, anomalies, inferences from complex data. By using pattern recognition algorithms, AI systems are able to find correlations between different factors in data, aiding better understanding and more accurate decision-making.

In the research on the application of artificial intelligence in improving the efficiency of enterprise information systems, this theoretical foundation will provide an in-depth understanding of the basic concepts and key techniques in artificial intelligence and provide a solid knowledge base for the development of efficient and intelligent information systems.

RESEARCH METHOD

1. Research Approach

This research will use both qualitative and quantitative approaches. The qualitative approach will be used to gain an in-depth understanding of users' experiences and perceptions of the implementation of artificial intelligence in enterprise information systems. The quantitative approach will be used to objectively measure the impact of artificial intelligence implementation on the efficiency of the company's information system through the collection and analysis of relevant numerical data.

2. Development Method

In this research, the development method that will be used is the System Development Approach. The steps in this method include needs analysis, system design, implementation, and evaluation. The needs analysis will determine the features and functions that can be improved or added to the company's information system by considering the application of artificial intelligence. System design will include creating an architecture design, modelling AI

algorithms, and integration with existing systems. Implementation involves software development, system installation, and user training. Evaluation will involve collecting data over a period of time to measure the effectiveness and efficiency of the improved system.

3. Types of Variables

The variables to be observed in this research include operational efficiency of the company's information system, response time, accuracy of analysis results, implementation costs, user satisfaction, and organisational productivity.

4. Data Collection

Data will be collected using a comprehensive method involving primary and secondary data. Primary data will be obtained through interviews with IT managers and system users, field observations, and questionnaires. Enterprise information system users and technical staff will be the main subjects in the interviews and questionnaires. Secondary data will be collected through literature references such as journals, textbooks, research reports, and similar case studies.

5. Data Processing and Verification Techniques

The collected data will be processed using qualitative and quantitative analyses. For qualitative data, analysis techniques such as theming, data reduction, and verification by respondents will be used. Quantitative data will be analysed using statistical analysis, including hypothesis testing and regression analysis, to obtain objective conclusions and validate the findings obtained.

By using this research method, it is expected to obtain a comprehensive understanding of the application of artificial intelligence in improving the efficiency of enterprise information systems. The results of this research will provide an accurate vision of the impact and benefits of using artificial intelligence, as well as recommendations for further development and implementation.

RESULTS AND DISCUSSION

1. Results:

The research concluded that the application of artificial intelligence in enterprise information systems can significantly enhance efficiency in several aspects. Some key findings include:

a. Procedure Automation: The application of AI in enterprise information systems allows for the automation of previously time-consuming procedures that required human resources. By utilizing AI techniques such as machine learning and natural language processing, tasks such as data validation, order processing, or risk analysis can be performed automatically. This reduces human errors, enhances efficiency, and reduces the time required to complete these tasks.

b. Accurate Data Analysis: AI provides more precise data analysis capabilities through advanced machine learning and data processing algorithms. This enables enterprise information systems to identify hidden patterns, trends, or anomalies that may not easily be recognized by humans. Consequently, data-driven decision-making becomes smarter and more accurate.

c. Personalization and Recommendations: Through AI techniques like collaborative filtering and recommendation systems, enterprise information systems can deliver improved personalization to users. For instance, the system can recommend products or services based on client or user preferences identified through historical data. This not only enhances user satisfaction but also improves efficiency in achieving business goals.

2. Discussion:

The application of artificial intelligence in enterprise information systems holds significant potential for enhancing efficiency. By harnessing AI capabilities, companies can automate tedious and time-consuming procedures, improve accuracy in data analysis, and offer personalized experiences to users. All these contribute to increased operational efficiency and decision-making.

However, the discussion also acknowledges several challenges and considerations when implementing artificial intelligence in enterprise information systems. Some of these include:

a. Data Security: In adopting AI technology, ensuring the security of sensitive data is paramount. Companies need to implement appropriate security measures to safeguard customer data, internal data, and proprietary business information from misuse or breaches.
b. Integration with Existing Systems: Integrating AI with pre-existing enterprise information systems can pose technical challenges. It is important to ensure good compatibility and involve IT professionals well-versed in ensuring smooth system integration.
c. Training and Adaptation: AI systems require proper training and configuration to operate optimally. Companies need to allocate resources to train and develop AI models and make necessary adjustments as required over time.

Overall, the application of artificial intelligence in enterprise information systems offers significant benefits in improving efficiency. However, companies need to be mindful of the challenges and provide the necessary attention to maximize the potential of this technology. In the right environment, the use of artificial intelligence can deliver competitive advantages and positive transformations.

CONCLUSION

In this scientific journal, we have dissected and analyzed the application of artificial intelligence (AI) in improving the efficiency of enterprise information systems. Through this research, we have discovered that artificial intelligence can contribute significantly to enhancing operational efficiency and data-driven decision-making.

By utilizing AI techniques such as machine learning, natural language processing, collaborative filtering, and recommendation systems, companies can experience tangible improvements in procedure automation, accurate data analysis, and enhanced personalization for users. This positively impacts productivity, user satisfaction, and overall business strategy.

However, there are no perfect solutions, and the implementation of artificial intelligence in enterprise information systems also faces several challenges. Preventing potential data breaches or misuse becomes crucial when implementing sufficient security measures while integrating AI with existing systems. Additionally, ongoing training and adaptation for AI systems are essential, requiring adequate resources and involvement of competent teams.

Looking towards the future, we firmly believe that artificial intelligence will play an increasingly vital role in maintaining competitive advantages in today's global and competitive business landscape. Its ability to plan, automate, and enhance data processing efficiency will be an invaluable resource for companies, enabling them to be more innovative and adaptive in addressing continuous challenges.

In this journal, we have only scratched the surface of the use of artificial intelligence in improving the efficiency of enterprise information systems. Therefore, we encourage further research in this field to continue expanding our understanding of the untapped potential that artificial intelligence can offer to businesses. Thus, we can come closer to a reality where artificial intelligence becomes not just a necessary companion but also a strategic factor enabling the success and survival of companies in the future.

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