


Chapter 16

The Role of Artificial Intelligence (AI) in Improving Product Development Efficiency

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ABSTRACT

When examining domestic and foreign literature, surprisingly, very few studies examining the effects of AI on product efficiency have been observed in the domestic literature. Therefore, this study aims to contribute to domestic literature by focusing on the effects AI on product development efficiency. When the studies in foreign literature are examined, it is seen that AI increases the efficiency in product development, data analysis, management, control, and supply process. The overall result of this study shows that AI, which plays an important role in the design of high scalable algorithms that analyze complex and large-scale data, increases the efficiency of product development from the production process to supply chains.

INTRODUCTION

Within the fast-paced, competitive world of business, product advancement could be a critical aspect that decides the victory and development of companies. Companies got to persistently enhance, adjust, and refine their products to remain ahead of the bend. Artificial Intelligence (AI) has risen as a system to quicken this handle, advertising transformative capabilities in different businesses, from fabricating and healthcare to fund and retail.

Artificial intelligence has a large database, and it analyzes and processes this data. By making use of the statistics, it gives the closest result to accuracy. In this way, it provides a fast and easy business

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process for companies in decision making and forecasting. To completely saddle the potential of AI in product improvement, it is pivotal to distinguish the key variables that contribute to its efficient integration. These basic victory variables include a wide run of viewpoints, such as information quality and accessibility, well-defined issue explanations, intrigue collaboration, and vital venture in AI foundation and ability. By tending to these components, companies can successfully use AI to optimize their product improvement forms and accomplish prevalent results.

The execution of artificial insights in product advancement forms has the potential to altogether upgrade proficiency, drive advancement, and move companies to unused statures of victory. In this chapter, questions such as how companies may take advantage of AI in product development and integrate AI into processes of improving efficiency will be answered.

This study, which examines the role of AI in increasing product development efficiency, consist of five parts. The definition and basic functions of AI in the first part, the key technologies and components associated with AI in the second part, the efficiency of product development in the third part, the roles and effects of AI on product development efficiency in the fourth part, and the general findings of studies examining the effects of AI on product development efficiency in the fifth and final part were examined.

METHOD

In the context of examining “The Role of Artificial Intelligence in Enhancing Efficiency in Product Development,” the research approach encompassed an exploration of the multifaceted dimensions inherent in integrating AI into the product development landscape. Through a systematic analysis of various sources, including academic journals, industry reports, and technological databases, a comprehensive understanding of AI’s impact on improving product development efficiency was garnered. Key aspects such as AI-driven predictive modeling, automated quality control, and data-driven decision-making were scrutinized. By synergizing these insights, this chapter aims to shed light on how AI’s infusion into product development processes has led to accelerated iteration cycles, reduced resource wastage, and ultimately, heightened overall efficiency.

UNDERSTANDING ARTIFICIAL INTELLIGENCE (AI)

Definition and Scope of AI

The field of artificial intelligence (AI), which is used to perform tasks similar to human intelligence, can be defined as an area developed by computer systems. Computer systems aim to acquire abilities such as learning, problem-solving, reasoning, and making decisions by developing algorithms and models that mimic specific characteristics of human intelligence. There is a wide range of subfields and applications in artificial intelligence. A field called “machine learning” is one of them. Jordan and Mitchell explain that in artificial intelligence, machine learning has taken over as the preferred method for developing practical software for tasks like speech recognition, computer vision, robot control, natural language processing, and other uses. (Jordan & Mitchell, 2015) Machine learning aims to train computer systems to gradually raise their performance and make more out of information. The processing of “natural languages” is a major area that enables computers to recognize and reproduce human language. Applications

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