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Digitalization of Business Processes of Enterprises of The Ecosystem of Industry 4.0: Virtual-Real Aspect of Economic Growth Reserves

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Abstract: *The purpose of this research is to present the features of digitalization of business processes in enterprises as a foundation on which the gradual formation of Industry 4.0 and the search for economic growth in new virtual reality. This abstract explores the virtual-real aspect of economic growth reserves that arise from this digitalization. As industries increasingly adopt advanced technologies such as IoT, AI, and block chain, the boundaries between the virtual and real worlds blur, creating new opportunities for efficiency, innovation, and growth. It deals with the strategies, challenges, and potential economic benefits associated with harnessing these reserves, emphasizing the vital role of adaptability and agility in navigating this dynamic landscape. By analysing real-world case studies and emerging trends, this abstract shed light on the evolving nature of business in the industry 4.0 era, offering insights for enterprises seeking to unlock the full potential of digitalization in their pursuit of economic growth. The possibilities of using Azure cloud platform during the digitization of business processes of enterprises of the ecosystem of Industry 4.0 in the conditions of virtual reality are determined.*

Keywords: *Virtual reality, block chain, dynamic landscape, Industry 4.0, Azure, adaptability and agility*

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Introduction

Industry 4.0 can be defined as the integration of intelligent digital technologies into manufacturing and industrial processes. It encompasses a set of technologies that include industrial IoT networks, AI, Big Data, robotics, and automation. Industry 4.0 allows for smart manufacturing and the creation of intelligent factories. It aims to enhance productivity, efficiency, and flexibility while enabling more intelligent decision-making and customization in manufacturing and supply chain operations.

The Virtual Real Spectrum

The concept of a "virtual-real spectrum" in the context of digitalization of business processes within the Industry 4.0 ecosystem refers to the continuum between purely virtual (digital) processes and physical (real-world) processes within enterprises. In Industry 4.0, businesses aim to leverage advanced technologies like IoT (Internet of Things), AI (Artificial Intelligence), and automation to optimize their operations. The "economic growth reserves" aspect comes from the idea that by moving further along this spectrum towards more digitalization and automation, businesses can unlock hidden efficiencies, reduce costs, improve quality, and innovate faster. The digitalization of business processes can reveal untapped potential for growth within the Industry 4.0 ecosystem.

Uses of virtual real aspect in industry 4.0

Efficiency and Productivity

By automating manual tasks and processes, digitalization improves efficiency and productivity. This translates to cost savings and increased output.

Data Driven Decision Making

Industry 4.0 technologies enable the collection and analysis of vast amounts of data. Enterprises can use this data to make informed decisions, optimize operations, and identify new opportunities for growth.

Virtual Prototyping and Simulation

Before physical production, businesses can create virtual prototypes and simulations to test and refine products. This reduces the need for physical prototypes, saving time and resources.

Economic Growth Reserves

Industry 4.0 technologies create new revenue streams and business opportunities that contribute to economic growth, both locally and globally.

Benefits of Virtual Reality in Industry 4.0

Virtual Reality (VR) has several benefits in the context of Industry 4.0, which focuses on the integration of digital technologies into manufacturing and industrial processes.

Enhanced Training and Simulation

VR allows workers to undergo realistic training and simulation exercises in a safe virtual environment. This can help reduce the learning curve, improve skill development, and enhance safety awareness.

Remote Collaboration

VR enables experts from around the world to collaborate on projects without physical presence. This is particularly useful for troubleshooting, design reviews, and knowledge sharing in a globalized manufacturing landscape.

Efficient Prototyping and Design

Engineers and designers can create and test prototypes in a virtual space, reducing the time and cost associated with physical prototypes. This iterative design process can lead to more efficient and innovative product development.

Maintenance and Repair

VR can assist technicians in diagnosing and repairing equipment by providing virtual guides, 3D models, and real-time data overlays. This can increase maintenance efficiency and reduce downtime.

Data Visualization

VR can be used to visualize complex data and analytics in a three-dimensional space. This can help operators and managers make data-driven decisions more effectively.

Conclusion

The digitalization of business processes within the ecosystem of Industry 4.0 has ushered in a transformative era of economic growth reserves. The virtual-real aspect, where the digital and physical worlds converge, has unlocked unprecedented opportunities for enterprises. By harnessing advanced technologies such as IoT, AI, and automation, businesses have streamlined operations, increased efficiency, and gained real-time insights. This digital transformation has not only improved productivity but has also opened doors to new revenue streams and business models. Furthermore, it has enhanced the agility and resilience of enterprises, enabling them to adapt quickly to changing marketing dynamics.

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