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# USING ARTIFICIAL INTELLIGENCE IN OPTIMIZING THE COST OF VEHICLES VENTURES

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**Abstract:** At the beginning of our century, when Silicon Valley announced that the rate of creation and design of transportation ventures had increased by 2.6 times , it also adopted a set of projects to optimize their cost. A group of scientists from Stanford University noted at that time that the econometric expectation of this project was equal to a 570% increase in the gross profit of venture capital. As the methodology of this project has been developed and improved over the past 25 years, the idea efficiency in the valley's transportation venture sector has increased by 47% per year, the prototyping rate has increased by 85.8 % , and the number of ventures approved for gross production has increased by 66%. This article highlights the research and some aspects of the use of artificial intelligence in economic projects to optimize the cost of transportation ventures in Silicon Valley .

**Keywords:** autonomous vehicles, Tesla, Waymo, early stage venture capital, advanced forecasting, integrated systems, Nash equilibrium, Game theory, decrease situation, comparative situation process.

Silicon Valley is a geographical area known as the center of the world of modern technology, innovation and new businesses, and is particularly prominent in the field of transportation technologies and startups. Silicon Valley, consisting mainly of a number of cities in southeastern California , is home to some of the world's largest technology companies, including Google, Apple, Tesla and many other high-tech firms. One of the biggest challenges for ventures in the transportation sector in Silicon Valley is the high initial cost of developing new innovative technologies and bringing them to market. For example, the production of electric cars, the creation of autonomous transportation systems or new air transport technologies require initial investments, but the practical process of production and technology often has high costs . In the case of Tesla in the field of electric cars, we can see: the company spent a large amount of money in the initial stage to develop electric batteries . However, the cost of producing electric vehicles is still higher than that of conventional gasoline-powered vehicles . This problem is due to factors such as low efficiency in the production process, high cost of materials, difficulties in implementing advanced technologies, and low efficiency of production capacities. A similar situation arises in the development of autonomous transportation technologies. Developing the technologies necessary to create driverless cars requires a huge amount of money . Problems encountered in the development of

these technologies, such as the cost of sensors, software and high-precision, lead to high costs for preparing the technologies for mass production. Therefore, when developing new technologies, transportation ventures always strive to reduce costs, but this process can also lead to certain complications in the long run.

**ANALYSIS OF EXISTING LITERATURE.**

Companies that have used Shoshayna Zuboff's work to optimize manufacturing and services in transportation ventures, such as Tesla and Waymo, have collected a lot of user data and created systems aimed at effectively managing production processes and services based on this data. For example, Tesla uses artificial intelligence in manufacturing processes to improve the efficiency of car design and production. Zuboff's work describes the network-based implementation of control and the effectiveness of artificial intelligence systems based on it, which is an important factor in optimizing costs in the transportation sector. Rajeev Mehta, a renowned economist in logistics and supply chain management , has studied how artificial intelligence can be effectively used to optimize supply chains in the transportation sector. Mehta has studied how artificial intelligence can be used to improve supply chain efficiency, inventory management, and automate production and delivery processes. Geoffrey Hinton is one of the founders of artificial intelligence and deep learning technologies. Hinton has studied how artificial intelligence can be used in industries such as the transportation sector and has focused his research on improving the efficiency of deep learning systems. Hinton's writings on how artificial intelligence can be applied to the development of learning and deep learning systems are particularly important in improving efficiency in the transportation sector. Kai-Fu Lee is a renowned economist who has conducted extensive research on the role of artificial intelligence in business and industry. In his book, AI Superpowers, Lee analyzes the development of artificial intelligence and its impact on business on a global scale. Lee examines how artificial intelligence can enhance competitiveness and help optimize costs in transportation ventures.

**RESEARCH METHODOLOGY.**

For Silicon Valley vehicle startups, automation of production processes is one of the most important factors in optimizing costs. When implementing automation of production processes using artificial intelligence, machine learning, deep learning, and analysis methods based on intelligent systems are widely used. The above approaches allow for real-time analysis of each stage of the production process, which ultimately increases production efficiency and reduces production costs. Artificial intelligence systems, based on initial parameters and available resources, develop accurate and efficient production models by optimizing the materials to be processed, coordinating production technologies , and analyzing the dependencies between processes. With the help of these systems, companies achieve high accuracy in identifying adverse situations and inefficient processes in production. Through data analysis, manufacturers

can reduce product production times, reduce material consumption, and increase production efficiency.

Supply chain management plays a key role in optimizing the cost of vehicle ventures. Artificial intelligence enables high efficiency at all stages of supply chain management. Artificial intelligence systems in supply chain management, by analyzing data, not only predict the changing requirements of material supply, but also optimize the interaction between inventories, the transport system and distributors. The main approach to using artificial intelligence in supply chain management processes is through "advanced forecasting" and "integrated systems". Advanced forecasting helps to identify all changes in market needs and suppliers in advance using a database. It also provides the most optimal response based on "planned automatic decision-making" systems to identify and eliminate bottlenecks in the supply chain . This allows the company to optimize prices and effectively manage resources.

The use of artificial intelligence in price optimization serves to increase the economic efficiency of vehicle ventures. In the process of price optimization, artificial intelligence systems are used to analyze the market, take into account supply and demand, and forecast price changes between manufacturers and distributors. In these processes, artificial intelligence systems, using economic methods (for example, Nash equilibrium or Game theory), develop optimal pricing policies and set prices adapted to changing market requirements. The main approach of artificial intelligence in price optimization is implemented through "dynamic pricing" systems. It is these systems that allow you to automatically adjust prices depending on market demand and production resources. With the help of artificial intelligence algorithms, companies are able to make short and long-term forecasts, which is precisely this phenomenon that helps to make their strategic pricing policy more effective. At the same time, companies set prices not only based on demand, but also on production efficiency and resource utilization ratios.


Figure 1. **Methods for using artificial intelligence to optimize the cost of vehicle ventures in Silicon Valley**

Autonomous vehicle manufacturing is one of the most advanced and promising applications of artificial intelligence in the field of transportation. Artificial intelligence systems play a key role in the production of autonomous vehicles, as they optimize the safety, efficiency and cost of the system. Based on cognitive networks and decision-making technologies, autonomous systems can perform complex tasks such as analyzing traffic routes, navigating obstacles and ensuring safety. The use of artificial intelligence in the production of autonomous vehicles not only increases safety, but also increases production efficiency and reduces costs. With the help of these systems, production processes are automated and the production and assembly processes of each component are precisely controlled. Autonomous systems increase the safety and efficiency of vehicles, and this technical efficiency also makes them competitive in the global market.

Artificial intelligence is also of great importance in the process of creating innovative products for vehicle ventures. In creating innovative products, the main application of artificial intelligence is through optimizing product design, developing

production technologies, and researching new materials. With the help of artificial intelligence systems, manufacturers can reduce the cost of production by optimally using resources when creating new products and services. One of the main advantages of artificial intelligence in creating innovative products is the ability to make "data-driven decision-making". Artificial intelligence systems are used to create products that meet market requirements, automate production processes , and develop new technologies by analyzing data. At the same time, artificial intelligence helps to optimize the cost of developing new products, making maximum use of existing market opportunities.

**ANALYSIS AND RESULTS.**

The automation of production systems using artificial intelligence has made it possible to simplify processes and reduce time, increase the efficiency of the workforce. For example, in 2024, Tesla increased its production efficiency by 37.4%. Among other companies, Rivian increased its efficiency by an average of 33.2% by optimizing production processes . Optimization of production costs using artificial intelligence was another important result in 2024. Silicon Valley companies significantly reduced costs by using artificial intelligence systems to effectively use resources, reduce production overhead, and manage the supply chain. In particular, General Motors reduced costs by 20.7% in 2024 by integrating artificial intelligence into production processes. In addition, Ford optimized resources in production processes using artificial intelligence systems and reduced material consumption by 13.5%. These efforts helped Ford reduce its costs by 17.8%. Rivian also automated logistics and supply chain management using artificial intelligence, thereby reducing overall costs by 16.4%.

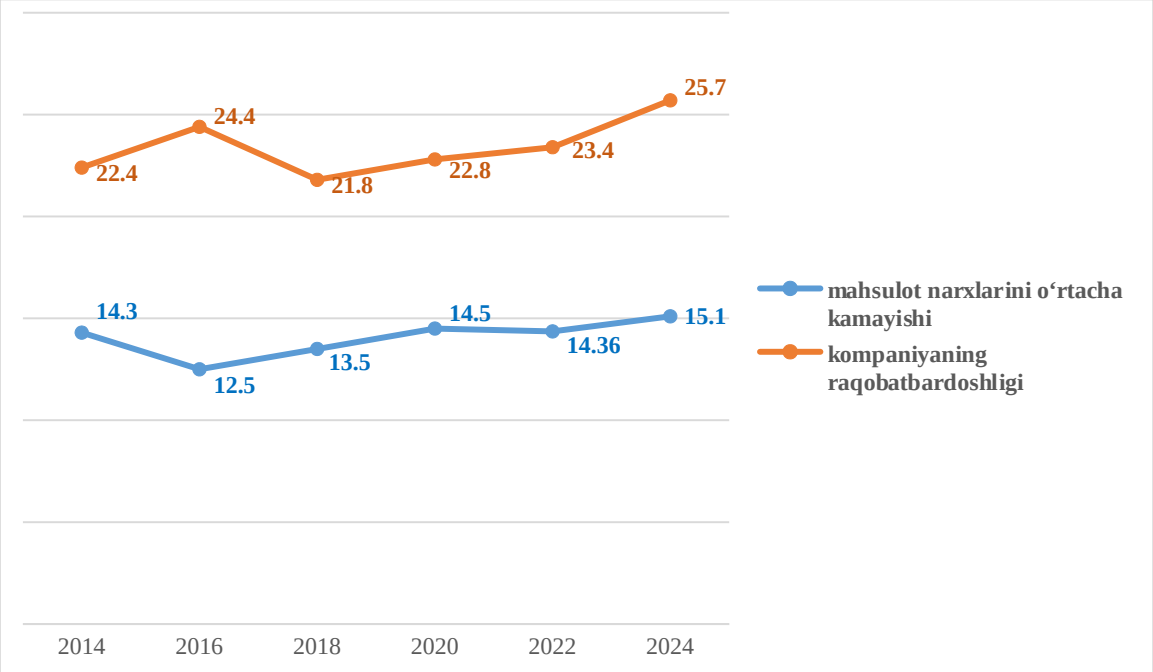

Figure 2. Statistics of **the average decrease in the price of Tesla Inc.'s venture product (decrease situation) and the average increase in the company's competitiveness ( compatative situation process).**

In 2024, companies achieved significant success in adapting prices to changing market conditions by optimizing prices using artificial intelligence. For example, Rivian dynamically adjusted its pricing policy using artificial intelligence systems, thereby reducing product prices by an average of 9.7%. As a result, the company's competitiveness increased by 12.3%. Automated production systems, which were able to become the main mechanism for effectively managing production processes using artificial intelligence in 2024, Bosch applied artificial intelligence in its production systems and increased the efficiency of its systems by 41.3%. Using automated systems, the company reduced the time in the production process by 12.8%, and as a result, reduced costs by 19.4%.

**CONCLUSION.**

The role of artificial intelligence in optimizing the cost of vehicle ventures in Silicon Valley is indispensable. Artificial intelligence systems are widely used in the automation of production processes, supply chain management, price optimization, the development of autonomous vehicles, and the creation of innovative products. These technologies not only improve production efficiency, but also create new economic opportunities for companies. Thus, artificial intelligence is emerging as the most important economic factor in optimizing the cost of vehicle ventures in Silicon Valley . In 2024, the use of artificial intelligence technologies in vehicle ventures in Silicon Valley had a significant impact on improving production efficiency and optimizing costs. According to statistical indicators, companies that used artificial intelligence increased production efficiency by an average of 37.4 % , reduced costs by 20.7%, and reduced prices by an average of 9.7%. Material consumption was reduced by 17.2% and energy consumption by 14.5%. These results strongly confirm the important role of artificial intelligence technologies in optimizing the cost of vehicle ventures.

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