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Innovation and Competitiveness in Industry 4.0 Based on Intelligent Systems

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Distribution Route Optimization Using Floyd-Warshall Weighted Graph Analysis Algorithm with Google Maps Integration in Industry 4.0 Context

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1 Introduction

Industry 4.0 is an organizational model that maintains the value chain throughout the product and manufacturing life cycle employing existing data and physical technologies [1]. Furthermore, in the context of Industry 4.0, digitization has gained popularity, because digitization is defined as the massive adoption of purely digital technology through connected services and devices [2].

Particularly concerning Industry 4.0, the transition from the most recent industrial age to the technology age has resulted in an increased demand for vertical and horizontal and from beginning to end of digital integration. Previous research indicates that the adoption of Industry 4.0 has an important and significant impact on the sustainability aspects of a supply chain network [3]. Furthermore, supply chain organizations inside today's global environment work in the middle of an increasingly difficult, complex, strong, and dynamic marketplace. Therefore, a sustainable supply chain becomes unavoidable to fulfill the rapid change in client expectations.

It should be noted that, according to some reviews, manufacturing companies must accelerate the shift in focus toward sustainability and use technology such as the Internet of Things (IoT) to achieve the organization's objectives and goals [3].

In the environment of Industry 4.0, the supply chain is now principally focused on industries that use modern technology to process their data, standardize and/or start solving current problems, and provide limitless alternatives to optimize certain

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