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## Automation and Robotics in Supply Chain Operations

### Abstract

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The goal of this research is to use robots and autonomous systems in warehouses to ensure safe and timely delivery of goods to customers and avoid delays. Upscaling to meet growth targets is a major challenge for companies today. With new technologies, systems can be implemented at existing locations, minimizing the need to invest in commercial real estate, which would then lead to increased energy consumption. Those that have manual warehouses tend to look for more space. It is believed that 90% of the world's warehouses still rely primarily on manual picking, which increases the amount of electricity needed to light and operate each facility. This hinders employee growth and is also expensive for companies. The food and apparel industries are among the biggest consumers of warehouse automation as they strive to meet increased customer demand and stricter throughput standards. With each area acting as a dark warehouse, the use of robots and warehouse automation significantly reduces the company's electricity needs. This, combined with picking products with energy-efficient robotics, results in energy savings and, on average, 75% lower bills. For example, AutoStore is one of the few systems that can run solely on solar power because the robots use regenerative technology, meaning the energy is fed back into the battery. Ten robots consume no more watts than a household vacuum cleaner.

*Keywords:*

*Robot, Warehouse, AutoStore.*

