Factors Driving the Adoption of Automation in the 21st Century Warehouse

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Have you ever thought about how those shoes you bought online last night arrived on your doorstep today? What's taking place while you sleep to make that happen? Is there someone standing around just waiting for your order at a warehouse somewhere? How is it possible for those shoes to be found in a huge distribution center, packaged, addressed and placed on a truck so quickly? Is there a truck driver sitting there waiting for your special order with directions to your house? How is it possible for a company to sell you those shoes, delivered to your doorstep the very next day, at a competitive price and still make money?

To meet this challenge and ever growing consumer demands, logistics professionals are adopting the use of automation technology at an increasingly rapid pace. Today's retail customers are demanding higher levels of responsiveness and greater product availability than ever before. Mobile devices are driving this trend forward in a world of instant gratification where goods can be purchased anywhere at any time and delivered to you at no cost. In many cities, goods can even be delivered to your front door on the very same day.

According to the Motorola 2013 Warehouse Visions Report, by 2018 *"66% of surveyed firms plan to equip warehouse staff with additional technology and 70% plan to have more automated processes in their warehouse operations."* Some of these technology systems include encoders, photoelectric sensors, programmable logic controllers, tilt tray sorters, high speed conveyors, automatic guided vehicles, automatic storage and retrieval systems and autonomous robots. The list of 21st century warehouse technologies goes on and on.

Factors contributing to the adoption of automation include:

E-Commerce Growth: According the U.S. Department of Commerce, 2013 retail e-commerce sales are forecast to be $262B and are growing at a double-digit annual rate. According to a logistics executive for a major retailer, "the entire industry is retooling for anticipated changes in the supply chain of the future, leveraging large capital cash pools they've been sitting on while they wait for the economy to jump start." In the next three years, e-commerce sales will grow an additional $75B and are forecast to make up 30% of total U.S. retail sales by 2030.

E-Commerce Order Size: Goods in warehouses are received and handled in full case and full pallet quantities; e-commerce orders are typically for individual items or "eaches." The challenge for the logistics industry: How do I accurately ship online orders one each at a time, instantaneously. The answer: automation.

Mass Customization: There has been a wholesale change in the manufacturing world from "Mass Production" to "Mass Customization." Next time you're in the toothpaste aisle take a look at the number of types and flavors of toothpaste available today. One major retailer has 172 options for you to choose from. Now step over and select a toothbrush. In the past your choices were soft, medium and firm. Now your toothbrush options make up their own mini department. At times, it can actually be daunting!

Online shopping has allowed retailers to offer many more items than they could ever stock in a traditional retail store. According to DC Velocity Magazine in an article titled: Winning the losing battle of SKU proliferation, "the trend toward new flavors, scents, colors, packages and sizes is accelerating. Mass customization is a deep-seated trend that is here to stay." Automated facilities are needed to effectively manage, efficiently handle and accurately track these extensive product offerings.

Re-Shoring: Rising shipping rates due to the cost of fuel, a 20% Chinese labor rate increase in the past 5 years, long overseas supply chains, port bottlenecks, intellectual property theft and advancements in automation, are factors driving the manufacturing sector back to North America. The emerging trend of abundant, lower cost energy is a huge paradigm shift for the U.S. which is contributing to the rise in re-shoring. It is projected the U.S. will be energy independent by 2030. We are now at a tipping point where automation adoption is a global competitive advantage for the U.S. and new jobs are following.

Consumer Safety: Food supply chain security, lot numbers traceability, identifying defective merchandise, product recalls and counterfeiting are some of the consumer safety issues that automation and logistics technology are now able to manage. Today's highly sophisticated inventory control systems can tell you where a product is located in the supply chain, where it went and when it was delivered.

Cost Control & Competitiveness: According to a senior level logistics executive for a Fortune 100 U.S. retailer, *"In addition to processing efficiencies, the reduction in labor and benefits costs are key drivers. Payroll and benefits are 60-75% of distribution costs. Benefits costs have risen steadily in double digits, far outstripping sales and profits in a stagnant economy. Use of automation becomes increasingly easy to cost justify."*

Immediate Delivery: Customers now expect same day and next day shipments at little or no additional cost. They reward retailers who can make that happen inexpensively and penalize those who don't. Only automation and new software can enable the multiple order cycles, per day pace, associated with rapid shipping expectations. Conventional batch picking by people is too slow to meet shipping cutoffs reliably.

> *"Rapid advances in sophisticated Warehouse Management and Warehouse Control software make it increasingly easy to integrate advanced automation, and also tightly control warehouse process flows. This allows you to do much more with your existing infrastructure when you combine AS/RS or robotics and enables just in time logistics in previously impossible fashion."*

Flexibility: *"Automation allows you to enter saturated and unfavorable job markets, or difficult real estate markets, by putting in supply chain capability close to your customer demographic with fewer people and less footprint."*

The need for skilled technicians to operate, maintain, support, upgrade and install these automated material handling systems is growing exponentially. Logistics automation and technology are necessary tools in today's modern warehouse. As automation adoption escalates, these skilled technicians will play a critical role in meeting ever changing consumer demands.

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