

Crunching data for painless e-Fulfillment growth

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An enduring trend of the e-commerce market is continual growth. Proving that convenience is king, online purchases have become a ubiquitous part of the global economy. While this is good news for e-commerce businesses, demand puts increased pressure on e-fulfillment centers and warehouses to accommodate growth. Specialized analytics software is providing a solution, which helps to overcome traditional space, personnel, and inventory constraints by harnessing big data to identify and implement efficiency improvements.

Hans Jongbloed, Senior Postal Expert at Prime Vision, a global leader in computer vision integration and robotics for logistics and e-commerce, explores how bespoke analytics software allows warehouses to scale up operations and support growth.

No stopping online shopping

The e-commerce market is an unstoppable juggernaut. Revenue from online shopping in the USA is predicted to be US \$ 915,354 million in 2023, with a compound annual growth rate (CAGR) of 11.3% expected between 2023 and 2027.¹ With online shopping becoming ever more popular, the pressure is on e-commerce fulfillment centers to keep pace. In the US, 274.72 million e-commerce users were

¹ [eCommerce market in the U.S. - ecommerceDB](#)

forecasted for 2023 and though the curve doesn't rise as steeply as in the last five years, this number will keep on growing. In 2027, it's expected there will be around 290 million US users of e-commerce services.²

There are three key factors in effectively managing this growth. Arguably the most important is people. Having access to the right amount of skilled personnel can make all the difference when expanding. Available space is another consideration for growth. Maximizing the business footprint may involve moving to another facility or installing an automatic storage and retrieval system to hold more items in less space. The final aspect is inventory. The key here is to achieve an efficient stock profile that provides everything customers require while optimizing internal warehouse processes.

Analyzing an e-commerce operation

Any constraint regarding these factors can stifle growth, and many warehouse managers see digitalization and specialized software solutions as a way to overcome staff, space, and inventory limitations, whilst admitting that their own operations are not quite there yet. The criticality of this was illustrated in a recent survey of 250 facility managers – 45% of respondents thought that their business could become unviable without an improvement in digital technology and skills.³ Optimizing an e-fulfillment operation with software analytics requires data, and thankfully, warehouse infrastructure and other sources can provide plenty of it. Collating information from warehouse management systems, barcode scanners,

² [Number of users of e-commerce in the U.S. 2018-2027 - Statista](#)

³ [The critical role of technology in facilities management – Smart Automation](#)

sorting machines, plus online shops, retail sales, personnel, and trucks allows warehouse managers to identify e-commerce trends, spot the underlying reasons behind them and make improvements.

Turning correlations into improvements

For example, stock replenishment can be informed by data on which products sell well in certain seasons or those that are often bought together. Therefore, stock profiling can be more optimized to demand at certain times or locations. This data can even be used to influence consumers, offering recommendations through online shops of what products are popular with other buyers, or setting up repeat orders, or subscriptions, for consumables. Employing sales data and shaping customer behavior means warehouses can tailor their offerings between fast- and slow-moving stock. Ultimately, sales forecasting greatly improves inventory and maximizes space, leaving room for growth.

This information optimizes internal processes too. If Mondays are busier than Tuesdays, personnel and resources can be allocated more efficiently, targeting days with higher demand. With data and expectations regarding inbound goods from suppliers or returns, warehouses can manage stock more effectively. Information can be displayed on dashboards in the facility, allowing operators to easily digest findings and react accordingly. Streamlined warehouse processes are always a strong foundation for expansion.

No single solution for all

However, every logistics operation is different, and the effective application of analytics software differs from warehouse to warehouse. Prime Vision supports customers by assessing their data, analyzing it in detail, and providing relevant

observations as part of a joint consultation process. This ensures that what's actually important to a customer's particular operations is prioritized, with findings on these topics translated into concrete and applicable improvements. With its broad experience across a wide range of e-commerce customers, Prime Vision can interpret this from large quantities of data.

However, operators often know their challenges but struggle to find a solution. A recent Prime Vision project involved optimizing the usage of parcel chutes at a facility. Designed to sort parcels to 500 shops, the volume of items passing through the different chutes varied wildly. Some received the vast majority, overworking personnel, while on others, staff had little to do. Using analytics software to map trends and implement general rules for daily operations, an optimal parcel sorting plan was achieved, resulting in equal parcel distribution and better staff allocation across the chutes, improving efficiency. This example shows the ability of bespoke analytics software to provide an answer to a very specific question.

Prepared for anything

If growth hits a warehouse operation, it is important to be prepared. This is hard when staff, space, and stockholding can't expand proportionately. However, by identifying the 'what, where, and when' regarding a purchase, or, improving internal processes by applying real-world data, warehouse managers can be prepared for anything.

Software analytics solutions from Prime Vision, especially when combined with other scalable automation infrastructure, such as autonomous mobile robots (AMRs) and automatic storage and retrieval systems, provide a proven route for accommodating rapid e-commerce growth. By connecting to any surrounding

warehouse system, combining data, and delivering actionable insights – businesses can ensure that meeting future expansion places less pressure on their e-fulfillment operations.

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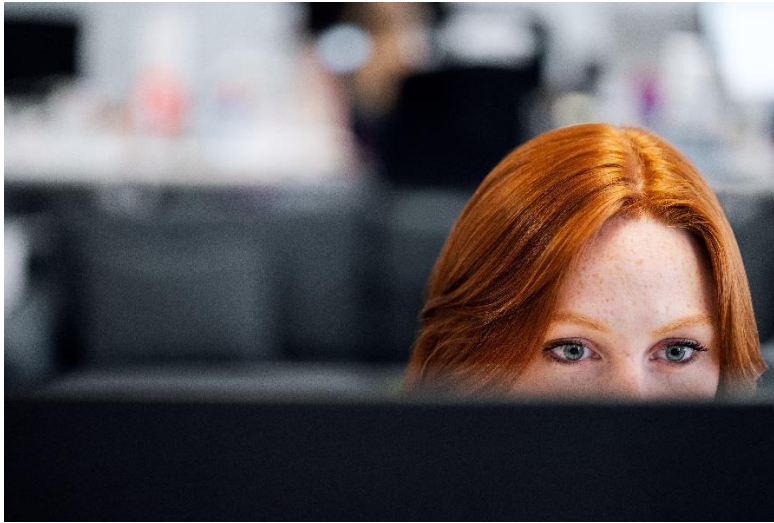


Image 1: Prime Vision supports customers by assessing their data, analyzing it in detail and providing relevant observations as part of a joint consultation process. (Source: Pexels_thisisengineering-3861963)



Image 2: Specialized analytics software can help with harnessing big data to identify and implement efficiency improvements at a warehouse or fulfillment centre. (Source: AdobeStock_272286058)

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About Prime Vision

Prime Vision is a global leader in computer vision integration and robotics for logistics and e-commerce. As an award-winning company, Prime Vision designs and integrates solutions using the latest recognition, identification, and robotics techniques to optimize the automation of sorting processes.

With offices based in Richmond, VA and Delft, The Netherlands, more than 170 Prime Vision experts provide comprehensive market and domain knowledge to companies around the world.

For more information, visit <https://primevision.com/>.

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