

TRANSFORMING SUPPLY CHAIN WORKFORCE MANAGEMENT

IN A VOLATILE WORLD



The Step Change in Online Demand is Putting Pressure on Profitability

Mastercard Spending Pulse™, which looks at all spending types for retail (excluding automotive and gasoline), recently reported that US e-commerce sales grew by 47.2% in the October 11 to December 24 period in 2020, compared to the same period in 2019.¹ Certainly, this significant growth is likely to stick post-pandemic. For retailers, the shift from profitable channels such as convenience to e-commerce can quickly erode profitability due to additional costs of fulfillment such as labor and delivery.

Supply chain organizations are under pressure to deliver consistently excellent service and reduce costs as the competition for labor grows. To overcome this dichotomy, they need a different approach—one which optimizes labor and orchestrates supply chain fulfillment nodes holistically. Whilst competing for labor based on price will remain the number one factor, good employee engagement and performance management are key to employee retention and productivity.

Workforce Sources and Strategies to Meet Today's Demands

Several retailers have scrambled to improve capacity through recruitment and expanding their partner ecosystem. For example, in the UK, Morrisons' products are available on Amazon Prime;² Deliveroo is delivering groceries for M&S, Aldi, Morrisons, and Co-op;³ and Amazon Fresh offers free delivery for Prime members in and around London.⁴ In the US, around 45% of millennial and Generation Z shoppers primarily shopped for groceries online in 2019.⁵ This market is met today through the likes of Instacart, which provides a personal shopper to fulfill online orders.⁶ Retailers, however, see Instacart's shoppers risking the experience of in-store shopping, and therefore are looking at fulfillment from dark store locations that are laid out to be pick-friendly.⁷

¹ Mastercard Newsroom, "Mastercard Spending Pulse: U.S." (Dec 26, 2020), accessed Dec 2020, <https://www.mastercard.com/news/press/2020/december/mastercard-spendingpulse-u-s-retail-sales-grew-3-this-holiday-season/>

² Essential Retail, "Morrisons expand Amazon Prime online delivery service" (May 11, 2020), accessed Dec 2020, <https://www.essentialretail.com/news/morrisons-expands-amazon-prime/>

³ The Independent, "Which supermarkets let you order your groceries through Deliveroo?" (May 19, 2020), accessed Nov 2020, <https://www.independent.co.uk/extras/indybest/food-drink/deliveroo-supermarket-delivery-grocery-morrisons-coop-a9457006.html>

⁴ Business Insider, "Amazon has started free grocery delivery to some Prime members in the UK. The boss of British grocer Waitrose called it a 'nuclear' option in the battle for online supremacy" (July 29, 2020), accessed Nov 2020, <https://www.businessinsider.com/amazon-launches-free-grocery-delivery-prime-members-uk-2020-7?r=US&IR=T>

⁵ Statista.com, "U.S. consumers: Online Grocery Shopping – Statistics & Facts" (Oct 14, 2020), accessed Nov 2020, <https://www.statista.com/topics/1915/us-consumers-online-grocery-shopping/>

⁶ Forbes, "Instacart Surges Past Walmart In Online Grocery Market" (June 9, 2020), accessed Nov 2020, <https://www.forbes.com/sites/jessedamiani/2020/06/09/instacart-surges-past-walmart-in-online-grocery--market/#aaafd4819721>

⁷ CNN Business, "Why supermarkets are building 'dark stores'" (Oct 31, 2019), accessed Nov 2020, <https://edition.cnn.com/2019/10/30/business/grocery-delivery-pickup-walmart-kroger-stop-and-shop/index.html>

Some retailers are following the Ocado model (distribution center based fulfillment) and investing in the automation of pick, pack, dispatch, and delivery tasks.⁸ However, a majority of orders will continue to be fulfilled by humans for some time, albeit in some cases with improved productivity driven by automation support.⁹

Traditional labor management solutions take a simplistic approach of translating demand to a labor requirement. This may result in planning more or less than the resources available with the right skills for each area for a specific shift. Operationally, recording an individual’s performance against defined engineering standards has been in place for many years in distribution centers. However, this misses the key step of having the right people with the right skills on-site to meet demand, before their effectiveness is tracked.

Retailers also need to contend with in-shift disruptions due to staff absenteeism, sub-optimal labor performance, automation failure, short-order lead times, and disruption to transport due to road closures and truck delays. All of these require re-planning and orchestration in near real-time to protect customer service and the cost associated with omnichannel and in-store replenishment (see Figure 1).

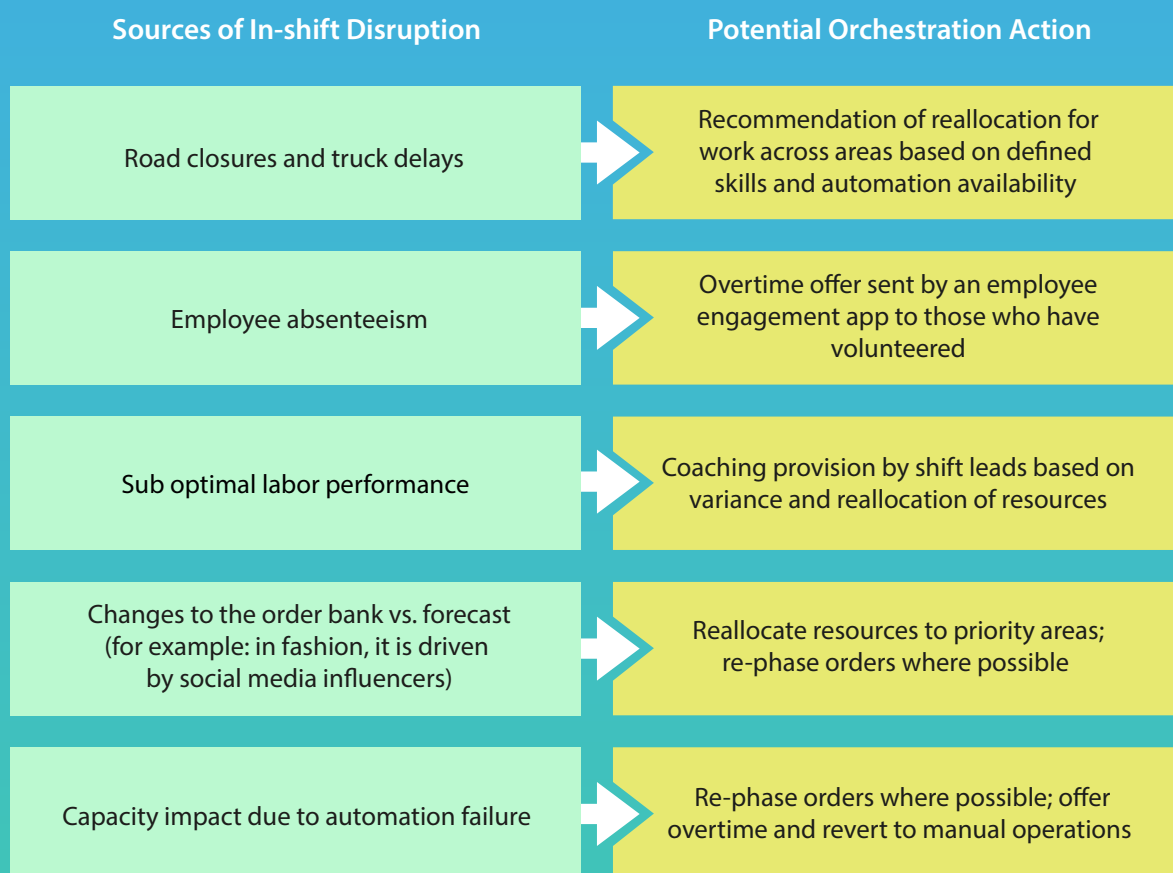


Figure 1: In-shift disruption sources and orchestration action

⁸ BBC, "Ocado shares rise 44% on news of Kroger tech deal" (May 17, 2018), accessed Nov 2020, <https://www.bbc.co.uk/news/business-44151028>

⁹ Industry Week, "Amazon's Automation Overreach" (Sep 5, 2019), accessed Nov 2020, <https://www.industryweek.com/technology-and-iiot/article/22028191/amazons-automation-overreach>

Six Key Elements of AI-Powered Workforce Optimization

AI-powered workforce optimization can help retailers to attract, retain, engage, and manage a workforce, while reducing labor costs and maximizing labor productivity. There are six key elements that must be addressed:

1. Labor forecasts based on multiple drivers: A typical demand plan for a distribution center includes outbound demand such as home delivery, click and collect and store replenishment, as well as expected inbound flow from suppliers and returns. Machine learning can enhance the forecasted demand plan. For example, it can reference the orders received in similar prior promotions, the geographical split of orders to support in-shift planning (meeting critical cut-off times for ship or air links), or the split of order types such as next day versus longer lead time. Machine learning can also forecast absence at different times based on history.

The output is a labor forecast by shift matched to each individual based on their skills, qualifications, and performance while factoring in the parallel complex shift patterns that are offered to attract labor.

2. Integrated labor and automation planning: Retailers are increasingly using automation to combat labor shortages and improve productivity in distribution centers; collaborative robots (cobots) are supporting productivity improvements by reducing walking and heavy lifting. Automation should be planned in conjunction with labor to ensure that demand can be met by all the site's assets. This can be done by mapping the demand for labor with the demand for material handling equipment (MHE), or in a more complex environment by utilizing the site capacity, rates, and constraints to ensure that the demand can be met through automation. Figure 2 shows the overall solution across planning and orchestration, for both human and automation resources.

3. In-shift disruption management: The tactical resource plan can also highlight bottlenecks and support demand adjustments such as picking longer lead-time orders early to realign demand and operational capability. The resulting operations plan can then be shared with all stakeholders, including carriers. If applicable, carriers can provide cut-off times to support in-shift operations. Based on details about the employees at work and their skills, as well as the status of order processing against the plan, the AI-powered solution can propose reallocation of resources, where possible, to protect services (see Figure 1).

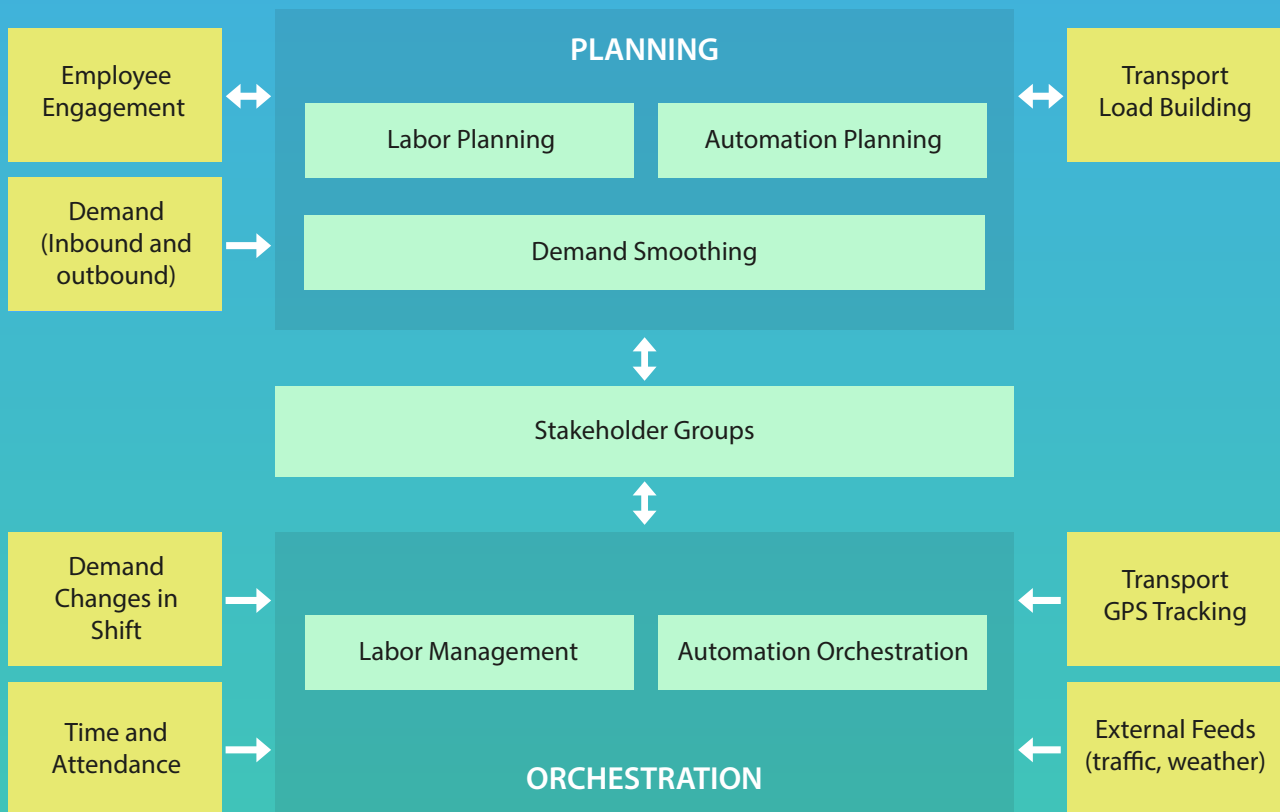


Figure 2: Integrated labor and automation planning and orchestration

4. **Integrated training and equipment maintenance schedules:** Additionally, employee training and certification renewal activities can be included in the plan. For example, the recertification requirements for material handling equipment (MHE) can be tracked and the training hours can be automatically proposed when there is less demand. Similarly, equipment maintenance can be scheduled when it is underutilized.
5. **Employee engagement with digital:** Employees should be able to engage with each other and the management through a mobile app that allows them to volunteer for overtime, swap shifts, request holidays, and manage long-term sickness. This helps to meet employees' growing expectation to interact digitally with their employer, helping organizations to attract, retain, and engage their workforce.
6. **Productivity and labor standards:** As with a traditional labor management solution, engineering labor standards can be used to determine expected productivity at an individual or group level, and the transactional data can be leveraged to refine the labor standards and determine the impact of fatigue across a shift.

Conclusion

As retailers look to trim costs and optimize rosters with a constrained workforce, real-time visibility and control with an accurate labor schedule and the ability to orchestrate a distributed workforce will be crucial enablers for effectively optimizing a cobotic workforce.

Early implementations of workforce optimization solutions have delivered a 5% reduction in direct labor costs.¹⁰ As a result, the number of solutions in the market is likely to grow; Gartner has already published a magic quadrant for workforce engagement for contact centers.¹¹ It is to be expected that workforce engagement (and optimization) will similarly be in scope for analysts in the near future.

¹⁰ redPILoT, Innovation Award (April 8, 2019), accessed Nov 2020, <https://2019.promatshow.com/attendees/innovation-award.aspx?ref=attendees&id=677>

¹¹ Gartner, "Magic Quadrant for Workforce Engagement Management" (Feb 20, 2020), accessed Nov 2020, <https://www.gartner.com/doc/reprints?id=1-24N84QO7&ct=201123&st=sb>



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