HOW TO DETERMINE WHICH E-COMMERCE FULFILLMENT SOLUTION IS BEST FOR YOUR BUSINESS

SSI SCHAEFER
BEST PRACTICE GUIDE

2021
2022

A Best Practice Guide to Getting Started or Retrofitting Your Fulfillment Solution

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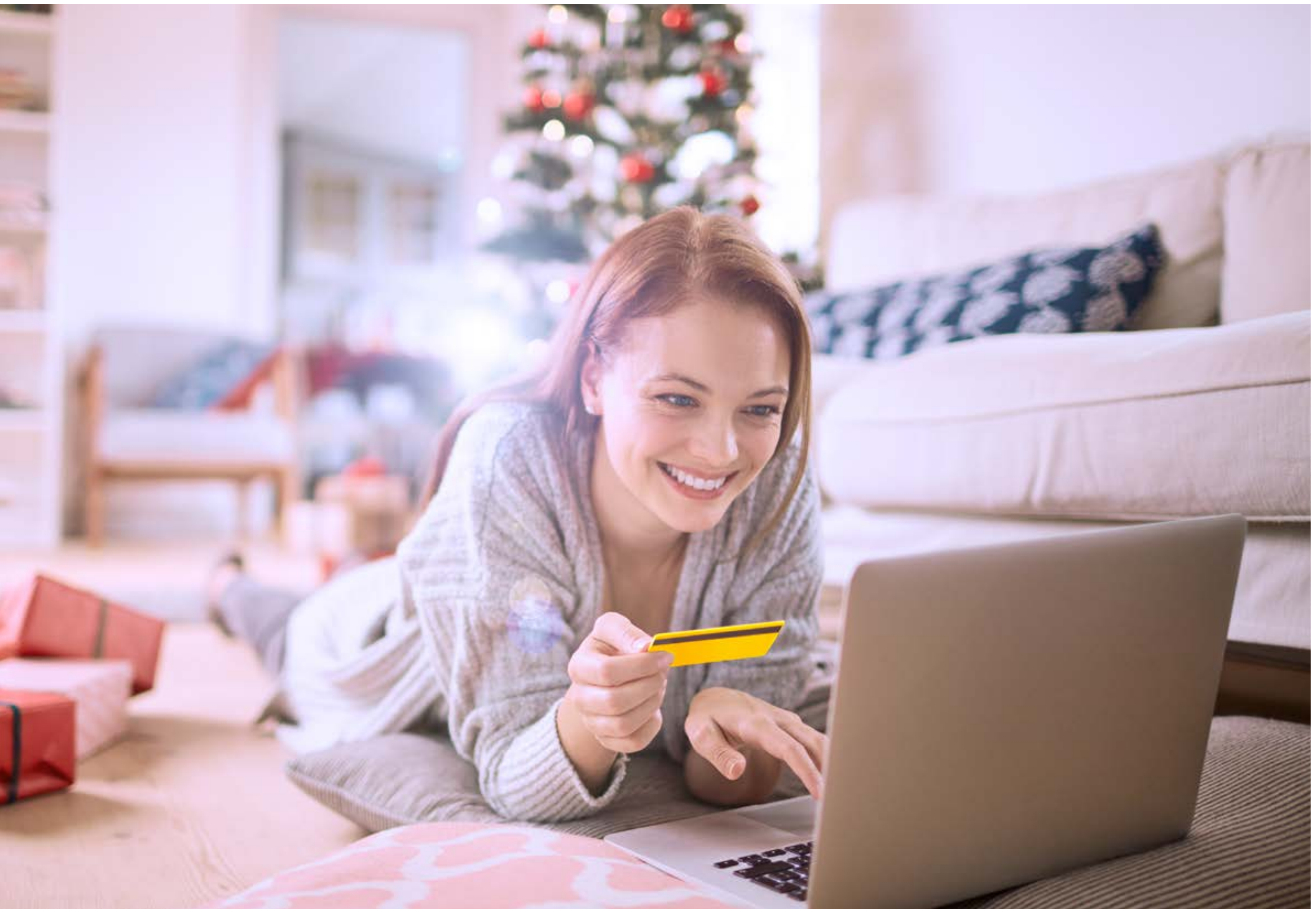
CURRENT MARKET STATUS



Currently, retail is shifting in ways that we've never seen. Between changes in consumer buying patterns, unrest in market conditions, and now a pandemic, retail and brand manufacturers are facing major challenges and reinventing themselves to attract consumers.

Before the global COVID-19 pandemic, e-commerce was on a track to reach 22% of all purchases by 2023 according to eMarketer. Amazon and other large retail giants contributed to the consumer shift with free online shipping and same day deliveries. COVID-19 will accelerate the adoption of e-commerce and cause a permanent change in buying patterns. Many would-be brick and mortar shoppers are trying e-commerce, and the adoption behavior is sticking according to UBS analysts. eMarketer also stated that UK e-commerce jumped 10% since the pandemic, and forecasts a growth of 20% by the end of the pandemic. Brand loyalty is also wavering as out-of-stock products are forcing consumers to pick other brands or shop online elsewhere. With this new shopping reality, retailers and brands are finding ways to circumvent the online experience. Aside from panic buying, the reality of consumers' e-commerce shopping patterns are changing too.

Grocery and food retail represent the larger shift in adoption. However, other retail segments are seeing a different reality, which looks dire. With malls shuttering

and consumers staying home, the shift is to focus on e-commerce. Distribution center growth has been fueled by this behavior change and over the past decade, e-commerce and omnichannel fulfillment centers have been growing while brick and mortar locations are closing. Manufacturers are also looking to make the switch. As more of the brick and mortar retail distribution network closes, brands are switching to online: Selling directly to the end-consumer and fulfilling orders to keep sales and brand loyalty afloat. As once powerful retail stores close, brands need a direct to consumer strategy—and e-commerce is performing. Categories for products such as healthcare items, small appliances, food and beverage, sporting goods, and pet food are trending in an upward direction. But with brick and mortar stores closing, decreasing categories are forcing brands to deal direct—like clothing, luggage, and household goods. All of these facts point to one thing—have an online selling strategy or shutter.

WORKING TO IMPLEMENT AN E-COMMERCE DISTRIBUTION STRATEGY

With so many changes happening in the market, both retailers and manufacturers are looking for ways to implement or revamp digital strategies. E-commerce fulfillment is something that is often overlooked, even though the frontend consumer e-commerce experience is well planned and implemented. Thus, the SSI SCHAEFER e-commerce experts have prepared this guide to help you determine online order complexities, how to plan, and how to execute fulfillment depending on your strategy.

Expect to understand the differences in automation storage and retrieval equipment, sortation, picking options, warehouse technology, and consumer touchpoints within the fulfillment process. Upon completion, one will be able to make an informed decision on whether or not automation is the right choice or which fulfillment method is right for a specific application. Determining how to proceed with a solid distribution fulfillment strategy and understand what steps to make start the process is key with any fulfillment process. This guide gives the tools necessary to move forward with scoping, planning, and implementation for e-commerce fulfillment.

Challenges with E-commerce Fulfillment
Recent events have increased pressure on companies to have scalable e-commerce fulfillment solutions. Many companies are forced into ad hoc, complicated processes that require constant management oversite and quickly reach a breaking point. Labor availability is dependent on the simplicity of the operation and the number of processes that an operator must perform. Added to this are capital constraints and thin margins where customers expect to pay the same cost for e-commerce as brick and mortar retail.

E-COMMERCE FULFILLMENT SOLUTIONS

There are many order fulfillment methods and many subtle variations. There are also different terminologies used to describe similar methods, for example: discrete pick, batch pick, zone pick, zone-batch pick, cluster pick, wave pick, etc.

These competing terminologies create confusion and perceived complexity. By way of simplification, all picking methodologies discussed herein can be grouped into two fundamental categories, pick-complete and pick-n-sort.

Pick-Complete

Pick-Complete means that everything needed for an order is collected in a single pass, and there is no need to perform a secondary sortation or consolidation. The most common picking methods are discrete pick, batch pick, and zone bypass.

- Discrete Pick: Order is picked to completion one at a time, by a single picker. This can be goods-to-person such as an automated storage and retrieval system (ASRS) bringing inventory to a workstation or person-to-goods.

- Batch Pick: Several orders are picked at the same time, by a single picker. Usually, the orders have similarity in terms of the inventory needed or the physical location of the inventory needed (i.e. less travel for the equipment or the person fulfilling the batch of orders).
  - Person-to-goods example is a cart with several compartments, one for each order.
  - Goods-to-person example is a workstation with several pick-to locations.

- Zone Bypass or Pick-and-Pass: A single order is assigned to a tote or carton, which then moves from zone to zone, collecting the inventory needed to fulfill the order and bypassing unnecessary zones. Different zones may have different picking strategies depending on inventory attributes (i.e. pick-by-light, goods-to-person, pick from shelf, etc.).

Pick-n-Sort

Pick-n-Sort is when multiple orders are released to multiple people or processes to be picked separately and then consolidated. The main premise of pick-n-sort is that the efficiency gained in picking makes up for the additional step of sorting and/or consolidating. This efficiency gain is more evident as SKU count increases and the distance between inventory items grows larger. Wave pick is a very common pick-n-sort method, wherein a collection of orders is released to multiple pickers or processes, each receiving a portion of the total order pool. A key consideration of wave pick is the inherent dependency of having portions of an order coming from different pickers and/or processes. Wave picking can be applied to both person-to-goods and goods-to-person methods.

- In a person-to-goods wave pick, an operator typically receives a group of orders and walks a circuit to pick all items for those orders. Several other operators are performing the same task simultaneously.

- In a goods-to-person wave pick, all orders within the wave have equal priority, and the machines work as efficiently as possible to bring inventory out for picking within the wave.

E-COMMERCE CHALLENGES

The growth of e-commerce has put a lot of pressure on all pick-complete methods as described previously. Higher throughput volumes, larger SKU counts, smaller order sizes, and faster order turn times have the following effects:

- Effect on Discrete Pick: There is a significant increase in the number of cycles (person-to-goods or goods-to-person) and larger SKU counts that increase the distance of those cycles (further distances between operator and inventory).

- Effect on Batch Pick: A single operator or workstation can only handle small batch sizes, which limits the "batch effectiveness." In a person-to-goods operation, the system must find a group of orders with common inventory located in a relatively small footprint (hard to do with SKU proliferation). In a goods-to-person operation, the distant movements of inventory and staging for batch effectiveness become challenging and often result in low and undependable batch effectiveness.

- Effect on Zone Bypass (Pick-and-Pass): Picking for large orders may still be productive (for example, an order needs 30 pieces and stops in four different zones to collect everything it needs). However, this solution is not practical for an e-commerce operation with thousands of small orders moving through a system to collect only two or three items each.

In contrast, the pick-n-sort picking method is well suited to high volume e-commerce order profiles.

- Higher volumes result in better wave pick efficiency (more volume across the same pick area).

- For the picking process, order size has little impact. If a wave consists of 20,000 pieces, it makes little difference if it is for 500 orders or 5,000 orders, providing the picking process is not severely limited by the sortation process.

However, despite the significant gain in picking efficiency, there continue to be two main challenges for pick-n-sort:

1. Sortation and consolidation are key to successful pick-n-sort methodologies. With small order sizes, the bottleneck of e-commerce fulfillment is often the turn time of order consolidation locations (CoLo). As stated above, wave pick has an inherent dependency. One order may need five items, each from a different wave zone. The order cannot be complete until the last item arrives, and the CoLo is frozen during this time. Most wave picking solutions include a fixed time for holding the CoLo and processing all orders in a wave (such as a 60-minute wave cycle producing only 1 order/hr per CoLo). High volume operations require thousands of CoLo areas, which in turn, drives pre-sort and post-sort handling. All of this erodes the original efficiency gains of the wave pick.

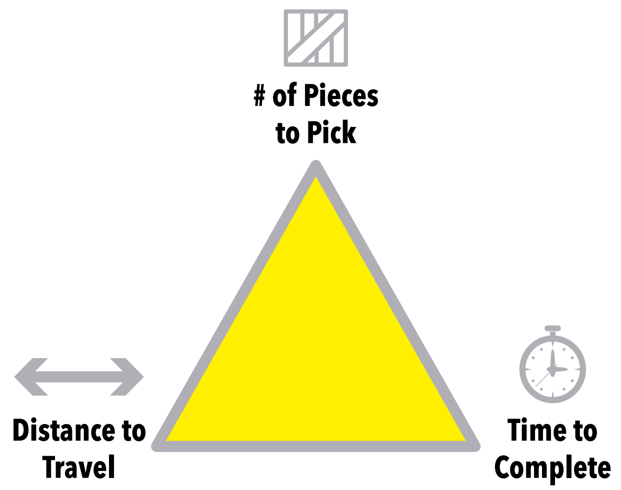
2. The second challenge of Pick-n-Sort is the struggle to balance efficiency, particularly in a person-to-goods application. For any given wave, there are three variables that affect efficiency:

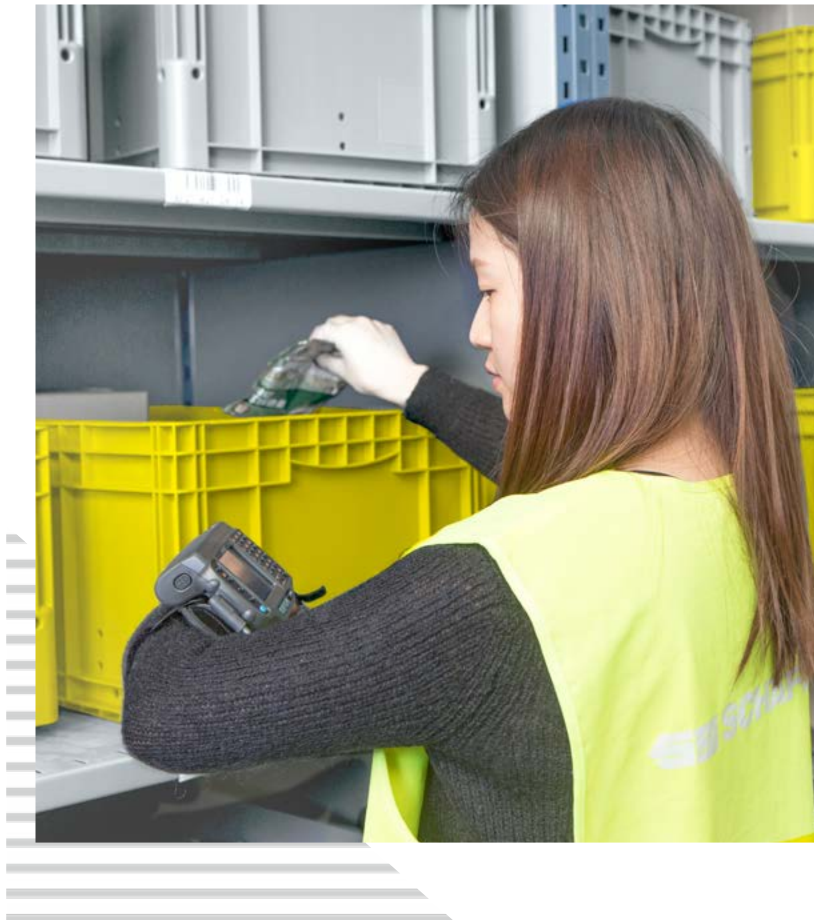
    - The number of pieces assigned to a picker.

    - The time allotted to complete picks assigned (the wave turn time, which must be synchronized with picking from other areas).

    - The pick path required to select those pieces (the total distance traveled and the impact it has on pick performance and wave turn time).

EFFICIENCY CHALLENGE OF PERSON-TO-GOODS WAVE PICK





SOFTWARE STRATEGIES TO MITIGATE PICK-N-SORT CHALLENGES

Software strategies can be used with some effect to increase CoLo turn time and to improve picker efficiency. Dynamic zone assignment, which changes from one wave release to another, can be used to better balance the workload and collective efficiency between zones.

Other strategies include effective management of order release. Traditional wave order release is simultaneous, where all picks for a wave are released at the same time to all pick zones, and all zones turn at the same rate. Other strategies include:

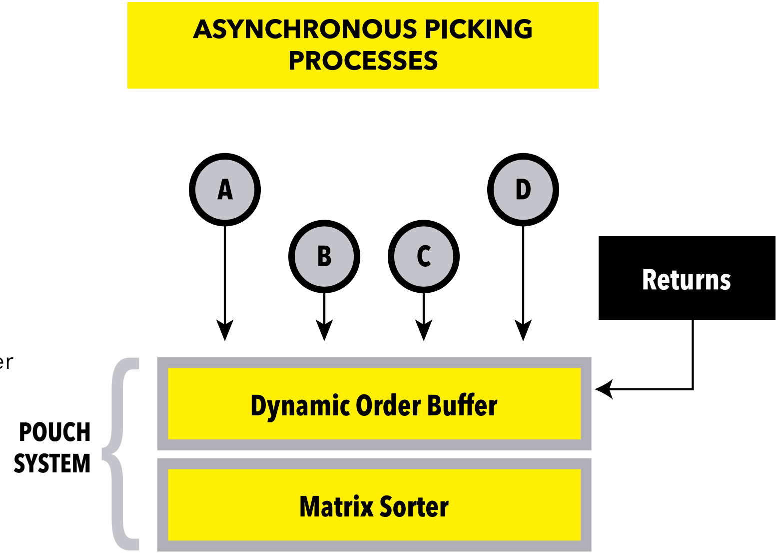
- Alternating Alignment Release: Work from lower volume, slower processing areas is interleaved into every second or third wave. An operation may include, for example, ten fast pick zones running 30-minute wave cycles, three medium pick zones running 60-minute wave cycles, and one slow pick zone running 120 minute wave cycles. With this configuration, a limited number of CoLos turn at a slower frequency, and others are allowed to turn more quickly.
- Staged Release: Rather than aligning to a specific wave cycle, work from slower areas are released first, then processed and staged. Upon staging, the next wave cycle incorporates the staged inventory into the next release for consolidation. This strategy allows separate processes to work as efficiently as possible, independent from one another. The tradeoff is that staging adds more steps, more touches, and some amount of physical infrastructure for holding staged items. In a manual operation, this may be more punitive than beneficial, depending on the amount of staged volume.

POUCH SORTER-ENABLING TECHNOLOGY FOR E-COMMERCE AND OMNICHANNEL FULFILLMENT

Software strategies combined with automated pouch sorter technology can be used to achieve all the benefits of pick-n-sort without the limitations described previously. This applies to pure e-commerce fulfillment and omnichannel fulfillment.

This is particularly important to operations originally designed to support retail operations, and now expected to fulfill more and more e-commerce orders. Following are key enablers of pouch sorter technology with enhanced software strategies:

- There are no fixed consolidation locations (CoLo) that must "turn" periodically and therefore no hard dependencies between operators or processes working at different rates.
- Each picker and/or process and/or workstation can work at its maximum efficient rate, receiving productive work assignments without the lock-step interdependency of other people or processes.
- There are no constraints caused by order size or order structure. Large and small orders are handled with efficiency. This is particularly vital to omni-channel operations doing retail replenishment and e-commerce fulfillment within the same operation.
- Staging, pre-sorting, and post-sorting are built into the pouch sorter design with little overhead cost, while greatly improving efficiency of upstream picking and downstream consolidation processes.
- Real time leverage of dynamic fast moving items that may change from day-to-day by picking full cases of inventory (vs. pieces) and buffering the leftover pieces as residual stock to be used for subsequent batches of orders.
- Returned items are easily buffered and made available to fulfill any active orders, eliminating the need to re-store the item in a specific location.



CONCLUSION

While there are many means and methods of order fulfillment, wave picking remains one of the most efficient and cost-effective picking methods. However, the effect of e-commerce with high volume of small orders has complicated the post-pick order consolidation processes.

Automated pouch sorter technology, like the SSI Carrier, can be used to achieve the benefits of efficient picking without the negative impacts of traditional post-pick order processing. Many existing operations with wave-based order fulfillment can be readily upgraded with pouch sorter technology, enabling legacy distribution centers to quickly adapt and absorb e-commerce volume.

BE PREPARED FOR THE NEXT HOLIDAY SEASON WITH OUR 5 TIPS

1000 customers from all across Europe were asked when they are planning to do holidays shopping. The favourite dates were not surprising: Black Friday (31%) and Early and mid-November (19% and 12% respectively). (source) Let's be honest, although it is how shopping is generally planned, it rarely follows the schedule in real life. Therefore, the peak season businesses enter at the beginning of November will last for almost two months with the slower start and "fire" ending.

Holiday Retail Season in 2020 definitely stood out from the ordinary way because it was mostly online. Multiple shops were either closed or had a limitation of visitors, and, therefore, put extra effort in arranging its e-commerce sector to thrive. 2021 will not also bring pre-covid crowds to the stores, but there will definitely be a solid mixture of both channels. Online, however, is forecasted to reign.

In 2020 in Europe e-commerce segment's sales increased by 56% compared to 2019. (source) With this said, there were a few particularly successful sectors: DIY & Garden products (13.8%), Food (8.2%) and Electricals (4.7%). (source) With this in mind, customers from the Nordic markets tend to support local retailers. (source) This means a great opportunity for local online platforms to get ready for the holiday in terms of clear communication, well-planned stock and highly efficient intralogistics.

Do not let anything mess with your sales triumph!

1. **Think "yesterday"**

You need to know your top products

With online retail, the stock has an extremely wide range of products. The demand among them is very flexible and changing from day to day. The only solution for not having the most demanded items out of stock is to maintain thorough statistics. A wise approach here will be to analyze weekly or monthly the sales for each SKU to track the trends and define the top products. Having this done will allow the online retailer to arrange the storage in the best possible way. For example, the best sellers will go to the area with quick access to infeed, picking and outfeed stations for the faster goods flow.

A complete WMS system tracking goods in- and outflows will be a huge help.

2. **We are here to help**

You need to delegate DC process design to the experts

Booming e-commerce leaves businesses no other choice but to keep up. It is a great thing when the industry you operate in is growing. However, such a rapid pace can be a challenge in terms of required investments vs. the currently available budget. With this concept in mind, some companies start with developing the solution in-house. This may work out well but do not overlook the potential risks. These can be getting a temporary solution without the needed future expansion degree in mind or simply not picking the best combination available on the market. It may be a pragmatic approach to contact an expert in intralogistics and delegate them the job of selecting one of the thousand options and designing a tailor-made system to cover your need for today, tomorrow and the years to come.

3. **"We would like to return this"**

You need efficient return handling

And this will happen a lot. In the traditional and well-known brick-and-mortar concept, it is a default function to return something that did not fit in any aspect of you or your lifestyle. With the lack of physical contact with the item before purchase, it is only logical to see a much higher degree of returns. A wrong item can be delivered, the goods can come with damage from delivery services or it can simply turn out to be a misunderstanding of size, functions set or appearance of the product.

A business can lower the returns rate by improving its picking solution, reviewing delivery contracts and adding more detailed product descriptions to the platform. However, a certain percentage will still exist. This leaves a spot for return handling process development. Whether it is done manually or with automation, returned goods need to be checked, repacked and placed for storage, processed within the inventory management system and marked available for the new orders. All of the above are to be completed fast and error-free.

4. **What about more places?**

You need more picking stations if your business is affected by peak seasons

When the gap between ordinary day sales and peak season/holiday sales is big, it makes sense to have a few additional places organized in advance. With the picking stations, it does not require much more investment to increase the number. While for most of the days this station can be empty or merged with the next one to create a larger space, the space is already equipped to support you during Holiday Retail Season.

Regarding the inventory and storage locations, general advice would be to plan 20% to 30% more storage space to cover the peaks and leave a gap for growth while the necessary changes are processed.

5. **The big picture**

You need to test run the system before the big sales day

Details only matter while they are arranged within a larger concept. When thinking about inventory, analytics, picking and returns handling, it is vital to also test-run the system prior to the full-capacity load. With multiple rearrangements in place, the process might have a bottleneck at some point, e.g. packing or delivery. Every part of the goods flow must be evenly efficient to maintain a smooth and easy process.

Once the peak season is over, take a few days to celebrate. You know that you have earned it. However, it is never too early to start preparing for the next year. Especially for the e-commerce departments or if you have larger initiatives for the upcoming year.

WHAT TO LOOK FOR IN A VENDOR

Reliability, experience, and longevity are key when choosing an automation and technology partner. In addition, it's not just about cost savings. Look for a vendor who has multiple installations in similar applications and who have a robust customer service program. Furthermore, there are other items to consider:

Integrity
While most companies do business under the premise of integrity, look for a vendor that has professionals that you can trust. Steadfast engineers who take the time to listen to your particular needs and business challenges. A good company culture needs to be one that fosters innovation and transparency. Ask about application processes for installation and operation. These processes and procedures should be well documented and available for review.

Flexibility Now and Later
Distribution centers are usually built with the mindset of having to scale, retrofit, or adding additional locations as business grows. Different applications vary and so should software and systems technology. Choose a vendor who can work with you to implement a process for strategic business goals. In addition, when processes change, and they will, choose a vendor who has the ability to update your software.

History and Experience
Some of the best technologies have come from start-up ventures. However, when it comes to distribution, choose an expert. Industry professionals agree, the barrier to entry into software isn't high, but manufacturing automation equipment and understanding distribution and warehouse operations is an extremely specialized skillset. Look for a vendor who has decades of experience when it comes to your application. Of course, higher expertise is needed for large complex projects. However, even the most simplistic application benefits from a background with decades of installation experience and best practices.

Long-term Viability
Pick a vendor who is financially stable and has long-term staying power. Technology companies come and go, so it's best to pick an automation technology company that has a long-term track record and viable business model moving forward. Review references; look at the number of employees and locations to determine future success of an automation technology partner. Also, review the client list. If larger corporations are utilizing a specific vendor, chances are that the company has long-term viability.

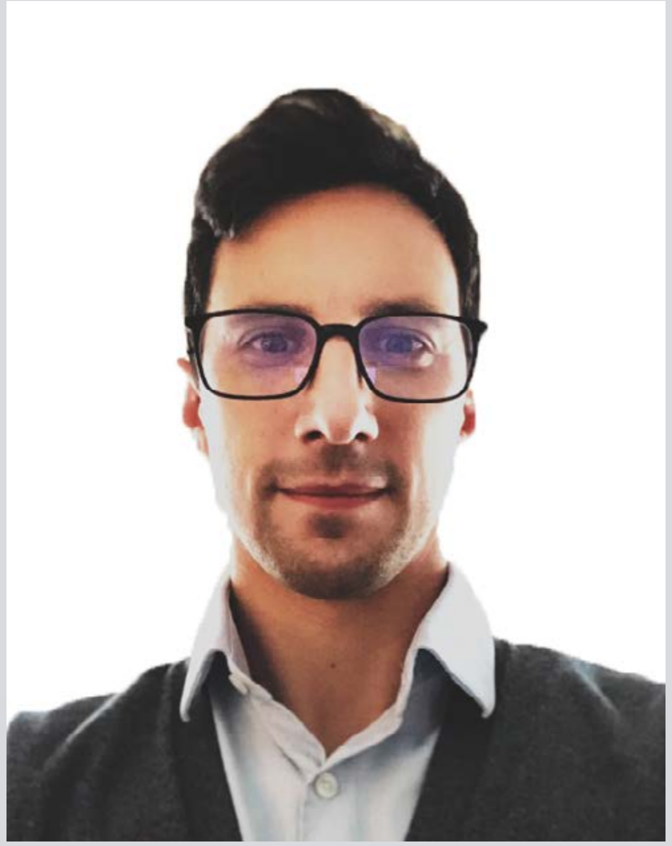
Compare Equally
As with any application, it's always best to get multiple quotes. However, make certain that they are equal. Both equipment manufacturers and software providers can vary in features and technology. Knowing what is missing from one provider from another may determine a successful bid. So, make certain to compare apples to apples. In addition, a last-ditch effort to include a technology feature to make a bid quote may not be the best scenario for a business. Proven technology has scheduled roadmaps and beta testing before releasing new features. All features should be in the market for at least 18 months to two years in order to have a proven stability.

Adaptable
Each distribution application is different, so each installation will also be different. Software and automation technology should match each requirement when it comes to system design and installation. While smaller manual applications may be able to handle a one-size-fits-all approach, scalability for future should be mandatory. Also, think about availability. Does the vendor have a local presence? How accessible are they?

References and Reviews
As with any large purchase, make certain to check references. Since it's a large investment, ask for at least two to three references. Check to see if they are similar in size and contain similar processes. The reference check will give peace-of-mind and eliminate any concerns about a vendor being able to perform certain process functions. A reputable vendor will not hesitate to show examples of previous work or take you to a site visit.

As for review sites, please take a bit of caution. Many review sites for automation and/or warehouse technology sites are a pay-to-play business model. These sites bid for search engine optimization and then sell auction placements on sites. In fact, many of these sites are owned by the same organization. Furthermore, large-scale WMS software does not warrant the same type of reviews that a personal software program would have. Users from a corporation aren't going to spend time reviewing a particular piece of custom software that is used for work. Therefore, you're better off skipping the review sites and asking for references.

ABOUT THE AUTHOR



TIMOTHEE GAUVRIT

Timothee has a background in mechanical design engineering and since 2015 has worked with the design and sales of automation department of SSI Schaefer UK. Since 2020, Timothee has become Sales Director for Logistic Systems within SSI UK.

Timothee currently leads the sales, solution engineering and data teams while evaluating automation projects and warehouse management software technology for mid- to large-scale automation projects.
With its Engineering background and Intralogistics experience, he has a good understanding of automated solutions and can effectively explain how tailored made solution help your company improve your material flows and increase productivity.

Timothee brings with him a great interest in technology and likes to think outside the normal framework to find suitable solutions based on customers own needs and challenges.

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REASONS WHY YOU SHOULD CHOOSE SSI SCHAEFER

- **Stability:**
  As a financially independent family business, SSI SCHAEFER is committed to long-term solutions. You can trust that our team of experts will be there for you today, tomorrow and in years to come.
- **Efficiency:**
  SSI SCHAEFER solutions are scalable and able to grow with your business. You can always upgrade or retrofit.
- **Quality:**
  As a systems specialist and original equipment manufacturer, SSI SCHAEFER provides tailor-made and high-quality solutions from a single source, specifically designed to meet your challenges.
- **Reliability:**
  Thanks to our worldwide Customer Service & Support network, SSI SCHAEFER ensures smooth operation of your system, both during and after installation.
- **Know-how:**
  SSI SCHAEFER solutions are always up-to-date with the latest technological standards and can be easily integrated into an existing (IT) landscape.
- **Internationality:**
  As a global organization, SSI SCHAEFER has local offices worldwide. With over 70 operative subsidiaries, our team of experts speak your language.

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