Retrofit vs. Greenfield

The Pros and Cons of Retrofitting vs. Greenfield Distribution Center for Today's Market

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The Pros and Cons of Retrofitting vs. Building a Greenfield Distribution Center for Today's Market

This best practice guide focuses on retailers, 3PL's or manufacturers looking to perhaps expand throughput either by retrofitting existing operations or building a new greenfield facility. While the question may seem an easy one, it's not always obvious. This guide will discuss the pros and cons of each option and give a clear understanding of what to look for and think about as you start planning.

An Unsure Economic Outlook with Historic Labor Constraints

Let's face it, the economy has been anything but sure and steady over the past several years. In fact, we've seen trends that have defied historic precursors and that have made some businesses boom while leaving others in search of a foothold to move forward in uncertainty. We've went from a good economy to a pandemic, then back to a red-hot economy, and currently dealing with inflation. Now, we're still struggling with a war in Europe, and we've been hit with staggering inflation and high interest rates. It seems that economists can all agree on a lurking recession, but to what extent? No one is for sure. However, businesses question how to move forward in these times uncertainty with tight labor markets along with an era of want it now consumer behavior.

In the U.S., job growth continues to rise,

which makes warehouse labor increasingly difficult to find. According to the U.S. Bureau of Labor Statistics, hourly rates have declined a bit towards the end of 2022 and the beginning of 2023, but still near record highs. These operational costs along with other factors are making investment in automation seem worthwhile. However, there are caveats to automation. It's not an easy decision and there are many factors to consider. Furthermore, what may be good for one business may not necessarily be the right choice for others. As with anything, there is a methodological way to determine whether automation is the best fit for your business right now. A retrofit or an expansion may be a better option depending on the circumstances. Then, it could depend on your product along with other factors that may indicate that it's best to wait for a year or two.

Total Unemployed
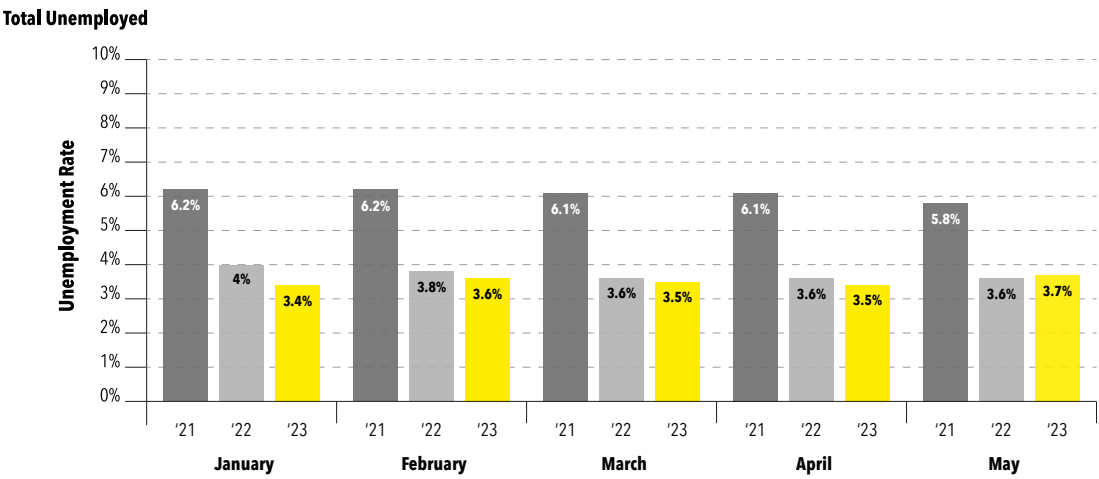
Data Source: U.S. Bureau of Labor Statistics

At SSI SCHAEFER, we are industry experts in material handling and automation. We've done countless engineering studies on how to determine if a new automation system is a better fit or if a retrofit may achieve the same business goals. Given that SSI SCHAEFER is a leader in the industry, we've been asked numerous times to publish a framework on how to work through these complex criteria. So, this step-by-step best practice guide will help guide you through questions that one should study before making an investment decision. Of course, an engineering study is always recommended before a large

investment, but this will help as a precursor in determining what type a project should be considered and the data that you'll need to move forward should you want to invest in an engineering study. This guide is laid out in sections with several points while laying out options that take you towards a highly probable solution for your business. We suggest working through these data points and contact SSI SCHAEFER with any questions. Feel free to use us as a resource as this is a large investment, and it's one that needs expert advice.

Why does this discussion matter?

A new greenfield facility is a major investment. It's one that needs to be calculated with different factors. Labor, throughput rates, error rates, and even utilities need to be factored into the equation. This guide walks you through the steps of how to gather baseline data and determine next steps.

Four Potential ways to Move or Not Move Forward

While there are many factors that determine a decision for automation, the basic outcomes will circle around four options:

1.

Pause and wait until the need arises or circumstances change,
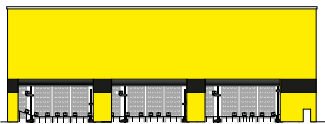
2.

Retrofit an existing system or material handling process,

3.

Expand an existing facility with a new system that interconnects with a legacy system, or

4.

Build a completely new greenfield facility.

Starting with a Baseline and a Current Look at Your Business

While staying status quo is a viable option for some. For many, it's not. It may cost more money to stay the course than if an investment is made. With that, it's important to have key data points. In order build a baseline, this is where one should start. Of course, every business is different and data points may vary based on importance criteria, but the key is to have a baseline. For this, you will need to know the following:

- Labor costs,

- SKU count and growth,

- Storage positions

- Current throughput

- Order volume, and

- Any distribution changes happening within your current process.

Let's take a deeper look into how to calculate each of these for a baseline. Again, a baseline is just that, it's the cost of what you are doing today without any improvements. While some businesses have a very finite operational view and cost associated, other businesses may only have pieces and parts of this data.

Possible Options.

Consider possible options, understand decision drivers, decide, and validate selection.
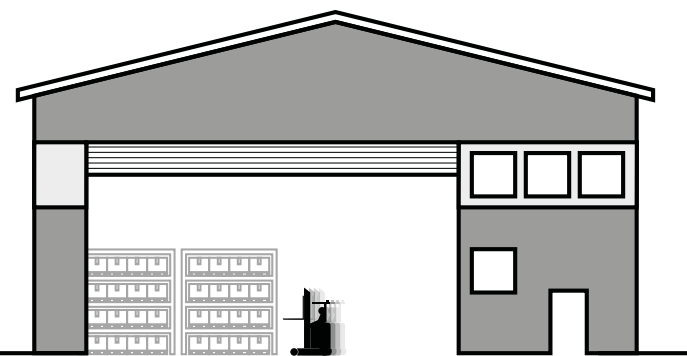
Pause and Wait

Leverage existing system to its fullest. View this as the information gathering phase of any project.
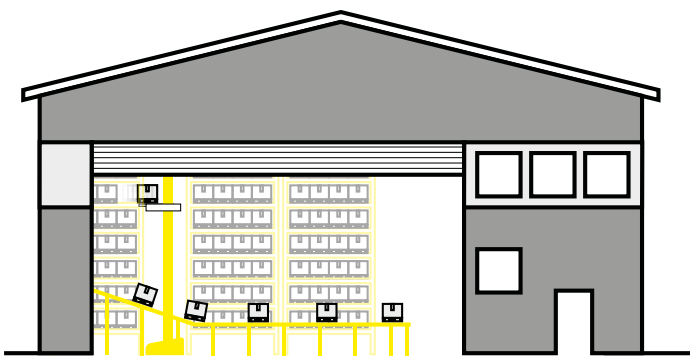
Operational improvements could be achieved by:

- Implement process improvements throughout the facility (Lean, Six Sigma)

- Share best practices and engineering standards benchmark across facilities

- Take a data driven approach to problem solving (root cause analysis)

- Develop better operational visibility through better reporting

- Review project management schedules, and possibly reconfigure warehouse for better productivity

- Invest in technical training, troubleshooting and safety

- Explore employee retention programs

Benefits

- Minimal capital investment required

- Limited operational investment required (training, retention programs, etc.)

- Little to no disruptions to existing operations

Drawbacks

- Limited improvement to operational challenges

- Possible limited or loss of market share

- Decreased customer perception due to service level

- Increased change delta making the change harder and more costly in the future

Retrofit

Retrofit an existing automated system, staying within building.

Operational improvements could be achieved by:

- Ability to accommodate additional SKUs by adding storage capacity

- Minimize the impact of downtime by building in system redundancy

- Adding incremental throughput with additional automation or workstations

- Implement automation equipment visualization (SCADA) for improved maintenance response time

- Reduce equipment planned downtime by deploying predictive maintenance solutions including a CMMS

Benefits

- Low overall capital expenditure

- Fastest path to operational improvement

- Leverage existing trained workforce

Drawbacks

- Operational disruptions during project implementation

- Increased project cost due to prolonged and off-hour project installation and testing

- Possible reduction of capacity during the implementation phase of the project

Possible Options (continued...)
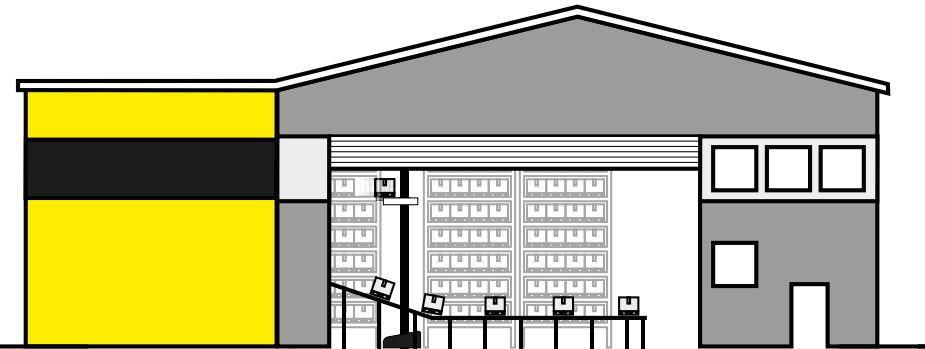
Expand

Expand an existing automated system by building out an expansion.
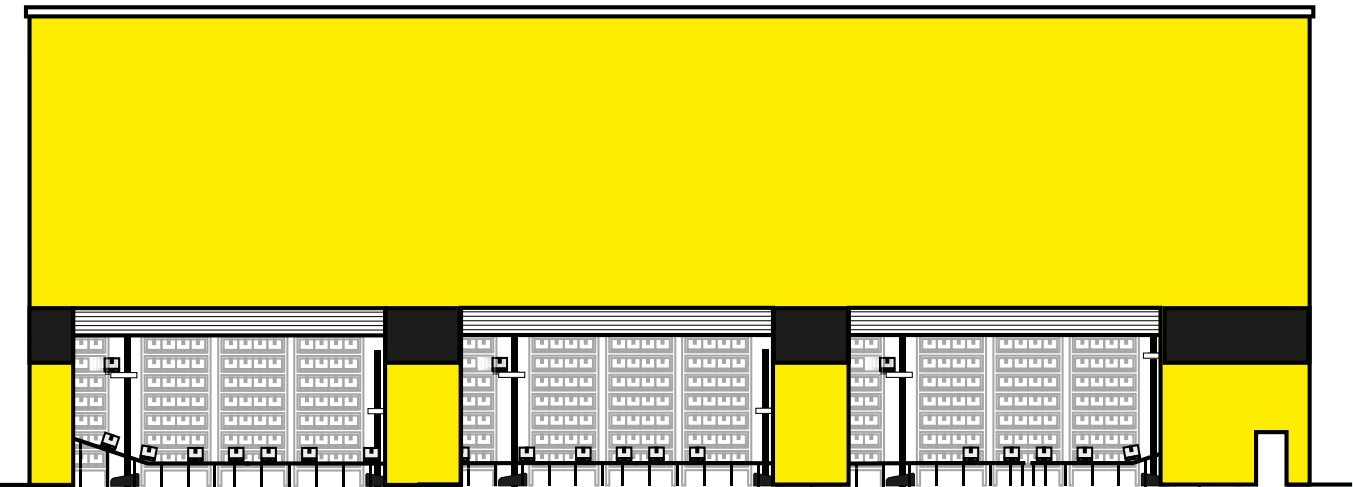
Operational improvements could be achieved by:

- Expand scope of mechanization by automating additional processes

- Atomate the lower end of the ABC curve by moving more SKUs into automation

- Adding throughput with additional ASRS aisles or workstations

- Reduce replenishment frequency by adding storage capacity

- Minimize the impact of downtime by building redundancy in the system

Benefits

- Leverage available land

- Minimal operational disruptions during project implementation

- Limited impact to existing throughput and service level during implementation

- Lower overall project cost compared to a greenfield

- Leverage existing trained workforce

Drawbacks

- Increased project cost due to building and infrastructure costs

- Longer project timeline

Build a Greenfield Site

Completely new build, which typically meets all criteria for throughput, less labor, etc.

Operational improvements could be achieved by:

- New purpose-built fulfillment facility

- Designed and optimized for your current and projected data and customer profile

- Reduced equipment maintenance and operational costs

- Pilot newer and emerging solutions to confirm viability, followed by scale

Benefits

- Opportunity to optimize process flows within new site

- Access to new labor pool

- Ability to optimize overall fulfillment network

- Possible network wide cost reduction with a site consolidation

Drawbacks

- Highest overall project cost

- Land availability might be a challenge and long project timeline phase of the project

Define important considerations and impact on the business

Before you get started on each element below, take time to really understand what the success criteria looks like for your business. While you'll need the baseline to help calculate cost and return on investment, you'll need to also measure other goals like labor efficiency, higher throughput, etc. You should also rank these in order of importance as you will need this for final assessment and will want to review once the project is complete. It will help determine if all goals have been met.

1. **Existing Space**

2. **Land Availability**

3. **Location**

4. **Labor Pool**

5. **Operational Impact**

6. **Building Code**

7. **Infrastructure**

8. **Data**

9. **Timeline**

10. **Product Considerations**

11. **Investment/ROI**

12. **Project Cost**

1 Existing Space

While this is typically the first item of consideration, there are certain aspects that one should note. Is the current building condition in good shape or does it need repair. Also, is there enough space or have you outgrown the facility?

If you are unaware of the current building codes, start researching the local building codes. It may be that this alone can help determine your next step. Many retrofits or expansions require upgrades to the facility to bring them up to code.

Utilities are another item to consider. Does the current building heat or cool easily? It may be that you need to have a higher-grade internet connection and fiber is not available in the area.

Utility access is frequently overlooked, or people tend to focus on only the energy or another utility aspect. While energy is immensely important, think about the need for access to renewable cost saving-energy. However, the need for high-speed technology is increasingly important. Land isn't cheap, and companies typically focus on acreage cost, tax incentives, and availability. Therefore, these facilities are often built in locations with little access to high-speed internet service providers (ISP). Requirements for modern distribution centers require these facilities to run with real-time warehouse management software (WMS) or a warehouse control system (WCS) that integrates into an ERP solution along with other integrated technology. Working in real-time and to meet the needs of today's customer, a reliable ISP provider is vital. It's important to do your research and to require a service level agreement with a local ISP provider.

A critical criteria decision for a site selection is the seismic activity or other natural disasters that may happen. While building a warehouse or distribution center in a seismic area can and is often done, one needs to be aware of the special needs that are associated with this type of project. SSI SCHAEFER often performs engineering studies based on these needs along with throughput expectations and storage requirements. It's best to understand any risks associated with these types of projects up-front before larger investments are made. Rack supported buildings and high bay warehouses (HBW) are especially affected by this criterion. Of course, building codes are more stringent as expected and one must consider a higher cost per sq. ft.

Two other considerations have to do with height restrictions and soil conditions. If you are considering a highly dense storage facility like an HBW, you know that heights can tower from 40' (12m) up to 148' (45m) depending upon the storage need. With these facilities, research local zoning laws to ensure there are no height restrictions or understand if special zone variance permit is needed. As for the soil criteria, a reliable foundation over weak soil is an expensive endeavor. Warehouses and distribution centers often require a minimum slab of 8" (203mm) of concrete if not more. In the case of colder climate, this too will impact the building structure as concrete expands and contracts. Again, it depends on the climate, height of the facility, and number of storage locations. A highly dense facility, cold chain, or a facility built within a seismic area will certainly affect the slab requirements.

2 Land Availability

Site selection is crucial when it comes to a warehouse or distribution center. Special requirements are needed when it comes to automation and even more so when it comes to building for a highly dense or cold chain application. Of course, there are the usual criteria points such as land availability and cost. However, much more goes into this decision.

Space for future growth is often overlooked when looking at a current project. Typically, requirements for a current application take front and center, but people often overlook the possibility of scaling for the future. If you only visualize the current scope, you may box yourself into an even greater problem for the future. The only caveat to this is having an existing land asset where an expansion or retrofit can happen on land you already own. However, if you are considering a greenfield option, make sure that there is enough room for a future expansion.

3 Location

The number one rule in real estate applies in the warehouse and distribution site selection as well: Location, location, location will of course be a main driver for your project. Obviously, building a facility within a radius of your customer footprint or suppliers makes more sense, but you should also consider access to logistics, local government regulations.

Access to main truck routes, rail, and air for receiving raw materials or inventory or for distributing goods will help lower operation costs. These facilities need easy access to exit ramps, typically two interstates or major routes, but traffic volume needs to be equally considered. While larger cities often have two or three major routes, these areas are congested and may hinder the ability to service customers quickly.

Local governments may also sway a site selection decision. For greenfield builds, often economic incentives do exist. According to Area Development, there may be up to 40 factors that could influence site location decisions. Of course, these will vary based on the industry and the need for local employment. However, it's important to note that if you are implementing a fully automated distribution center, less labor is required, and your project may not be as desirable as a manufacturing facility or another type of project. Therefore, the employment incentive may be one that is harder to qualify and receive.

Zoning regulations should be known and researched up front. Depending on the area, a warehouse or distribution center may fall within a commercial or industrial zone. Local ordinances or land use regulations have classifications on how land can be used. A distribution center that has a local pick-up area may even qualify as a retail location and change the requirements drastically. Again, it's best to do research up front.

4 Labor Market

The current labor market is not only tight one, but the rising cost associated with a skilled labor force can affect the decision as to what degree of automation is right for your operation. This may also be a deciding factor on whether to retrofit a somewhat manual or semi-automated facility. If labor is extremely hard to find within a particular area or if you're located within a tight labor market, a fully automated greenfield solution makes perfect sense and could be more cost effective.

It's also important to note that if you're planning a fully automated facility, a highly skilled workforce is needed—albeit a smaller workforce. These facilities require more white-collar supply chain and operations professionals to manage day-to-day activities and make key decisions based on real-time data as well as to ensure that the strategic vision for the organization is moving forward. Furthermore, many of these facilities require professional skillsets such as mechatronics or electrical engineers. Make certain that these types of labor pools are available within the area.

Of course, it's important to note that labor costs will drive the bottom-line profitability. High cost of living areas may hinder you to operate a more manual or semi-automated facility. This will affect your decision on whether to go fully automated with a greenfield facility or retrofit or expand and existing one.

5 Operational Impact

Regardless of which option you choose, you need to understand that there will be operational impacts. While these will vary in scope, the retrofit and expansion options see an even greater impact of disruption. Even with choosing to pause and wait, you'll see disruptions in the form of slower throughput or even having to handle inventory manually. Unfortunately, this usually results in having to add more headcount to accommodate growth.

With the retrofit option, one needs to address the downtime it will take to integrate technologies. Depending on the scope of the project, you may have to completely bring a halt to all fulfillment or bring down a portion of your fulfillment operation. It really depends on the complexity of the retrofit. An engineering study with a detailed project scope will give insight into which parts of the operation it will affect and how long it will be inoperable. When skillfully planned, a temporary—albeit often manual process can be put into place. However, as mentioned earlier, a loss in throughput will ensue.

As with any new installation, you need to plan on having install crews onsite. This is always easier when you bring operations to a halt. While this may be the perfect scenario, it's often not an option for most business operations. Therefore, plan on having even more individuals than normal onsite and know

beforehand how you want to deal with any inventory like high value items, etc.

Safety planning and considerations for safety protocols will need to be a big part of a retrofit or an expansion. Operation managers need to make this topic the number one priority. With extra crew members and heavy equipment moving onsite, safety should be at the forefront. Take extra precautions and even think about temporally moving your manual fulfillment process until the installation is complete.

With new technologies comes even greater responsibilities, this is especially true for anyone looking to break ground on a greenfield facility or even building an expansion. Any time that an automated storage and retrieval solution is put into place, skilled personnel must accompany to operate the facility. While less labor is involved with the day-to-day fulfillment process, a change management plan is typically needed to help run a highly technical facility. You will also need to think about how to keep your new facility running. While the life cycle on a highly automated distribution center is typically upwards of 20 years, it's best to have a preventive maintenance plan in place. Hiring a residence maintenance team will help offset any issues that may occur as a system ages.

6 Building Codes & Infrastructure (Constraints & Future Growth)

Let's face it, things change, and this includes building codes and growth within certain areas. This topic is usually at the forefront when deciding on whether to retrofit or expand. It's also usually the number one reason that organizations tend to move towards Greenfield or not.

Depending on the technology or process that you plan to upgrade, you may be looking at having to upgrade your facility to meet current code requirements. This is especially true when you plan an expansion. Also, if you're adding in new automation equipment, you may need to update the electrical within your current facility.

These factors alone need to be calculated into a build or retrofit plan. While it may seem easy to upgrade, the hidden costs of having

to rewire, dig up plumbing or electrical within a slab can be cost prohibitive. And, if you're looking at having to connect to municipality utilities, then it may be worth building a new greenfield facility. One should also investigate the slab requirements for any new retrofits as well as fire protection. With automation equipment, typically these need to be upgraded.

However, if you can retrofit your existing operations while being grandfathered into previous codes, that is something to consider. This route usually saves more money short term, but you need to calculate throughput with a retrofit to see how the project will scale long-term. Some businesses can get by with a retrofit just fine, while others only see benefit for a few years.

Warehouse Control System

The warehouse control system (WCS) is responsible for executing movement of units through the building. This system also utilizes logical destinations to route load units through the building. This allows the system to be dynamic and re-route traffic if there are bottlenecks at different points in the building. The WCS system is typically used in cases where there is some conveyor or sorter type of equipment used for buffering.

All of these systems produce tremendous amounts of data and rely on or real-time communications to remain effective. An integration is necessary for all equipment to run smoothly and is critical for the success of your project. Information within each system can integrate into the host system to provide additional feedback. In addition, this information is a way to leverage another touchpoint to the end-customer. Information can easily be integrated to send a text message of the packing process or indicate when additional marketing material should be included during the fulfillment stage.

7

IT Infrastructure (ERP/WMS)

Regardless of a retrofit or a complete new greenfield, plan on upgrading your IT software and infrastructure. This upgrade needs to include your hardware as well. Plan on bringing your IT professionals into the planning stages as early as possible. You will need to do a detailed inventory checklist for your software. Include the versions, licenses, etc. Map out any existing IT cabling and server rooms with capabilities as well.

If you are retrofitting to an automated solution, plan on upgrading your WMS or at the very least an integration with a new WCS. While some WMS solutions can easily handle automation equipment, not all are created equal. There are flavors of solutions that are possible like a warehouse control system (WCS) could run the equipment and connect into an existing warehouse management system (WMS). However, you may need to integrate into your ERP solution too. See a brief description of each:

Warehouse Management System

The WMS manages inventory locations, orders, and resources inside of the facility. There are multiple ancillary systems that connect to the WMS layer such as a labor management system (LMS), yard management system (YMS), transportation management systems and rate shopping (TMS). The WMS takes all inputs from various systems and manages feedback to the host systems. This software layer basically acts as an orchestrator of the entire distribution center.

Warehouse Execution System

The warehouse execution system (WES) is responsible for the order start within the building. A modern WES looks at the resources available within the facility, both automated and manual, and decides when an order should start. It does this to load balance and to optimize the flow of work within the building. For example, a strong WES system will look at a multi-line order and identify functional areas that contain the items for that order. The WES will then stagger the start of work in each area for the order so that all units arrive at the consolidation point at approximately the same time. This allows more orders to start utilizing existing resources inside the building, and it increases the production volume.

8 Order and Customer Data

Chances are that you have historical order profiles and customer data. Both are needed to help determine whether to plan for a retrofit, expand, or build a greenfield. Also, you'll need this data to do any type of data analysis. The data that you'll need to gather are:

- Order profiles and frequency (It's best to break these into categories like high volume vs. lower quantities or low value vs. high value, temperature, etc.)

- Shipment type (i.e. pallets, cases, etc.)

- Delivery locations

- Type of shipping (LTL vs. packages vs. overnight vs. ground)

- Picking unit

- Physical product properties

- Customer demographics and geographic locations

- Supplier locations

A detailed engineering study or data analysis will utilize various types of data, but the more you have the better.

9 Timeline (Staged Switchover)

Say you're ready to move forward on a project. You'll also need to consider a staged switchover. This will happen regardless of a retrofit, expansion or a greenfield. While items may vary based on which route your project takes, you will still need to incorporate the planning, nonetheless.

Even the most well laid out project can see a bump in the road. During installation, plan for a few weeks buffer just in case. It could be a delay in a part, a supply chain issue, or now we know a pandemic can wreak havoc, but plan on having a few weeks to adjust if needed. Testing typically takes a few weeks. If there are any issues that need resolving, then it could take longer. This is why it's crucial to give some buffer time. The larger the project, the more time you should allow.

A training period and increased labor staffing should also be in the plan for the end of the project. Expect throughput to go down while you implement the switchover. You'll also see an increase in cost per item picked during this time. While this may not take that long, you will need to run in parallel for a few weeks or at least until you can get the new software and system running perfectly. Furthermore, before any testing or switchover begins, it's imperative that all data is backed up and that you have the capability to rollback if needed. This is your safety net for any disruption that may happen during this time. Also, processes are going to change. If you are an ISO certified facility, you will need to document the changes and update your procedures. You should also take advantage of the slower period to do any type of training manuals or video recording during the testing phase.

10

Product Considerations (Velocity and Slotting)

Given the fact that you're looking at a project, your current processes most likely need an overhaul, and/or throughput is suffering. Now is the time to review slotting of items in either your manual or automated picking areas. Slotting is the process of creating an efficient organization strategy in your facility. Most fulfillment centers organize around SKUs (stock keeping units). While there are various strategies pertaining to slotting, best practices still favor SKU velocity. However, this may also vary depending on the season.

You should identify any peaks volumes and fast-moving SKUs. Fast movers should always be positioned near the shipping area for greater throughput. One should also look at any combination of SKUs that are typically picked together.

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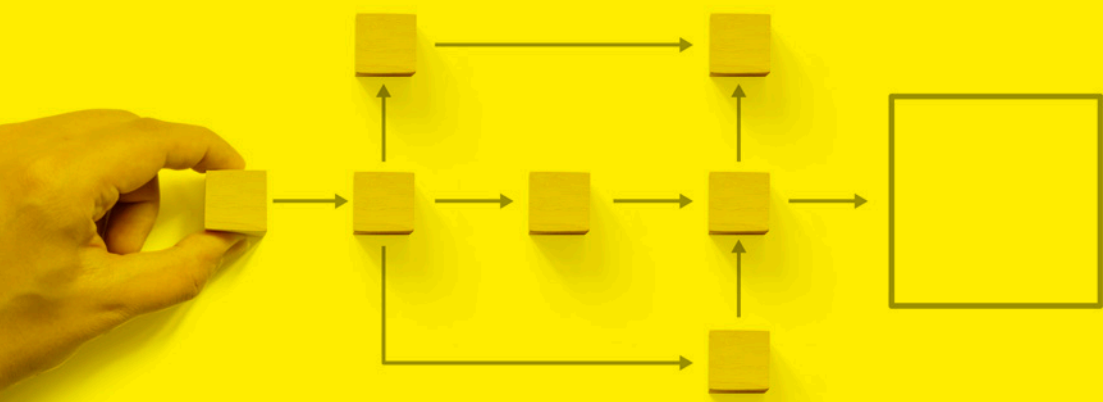
Slotting by zone or material handling is also favorable. Again, this may vary by SKU, but if you're handling food, perishable goods will need to be a specific temperature or high-value items in cages or perhaps a vertical lift module. It's best to start with an outline of your current facility and then identify these areas. For example, if you have any areas that need to utilize the forklift or an AGV, then all those items should be placed in a specific area to utilize the appropriate equipment. You'll also need to do the same procedure for your new project regardless of a retrofit, expansion or even a completely new greenfield. Again, an engineering study can help determine the best flow and process for greater throughput. However, it's best to have a good understanding of your current facility and what's not working before planning your new project.

Velocity and the ABC Curve

Simply put, the ABC analysis is the process to determine the value of inventory based on the importance to the business. For example, it determines each SKU based on demand, cost, and any risk data that may be pertinent. This helps an organization determine which products are ranked higher based on certain criteria. You'd want to assign the most important SKUs to the "A" category, the next important to the "B", and so on. While it doesn't have to stop at three categories, you should assign a logical category system for your business.
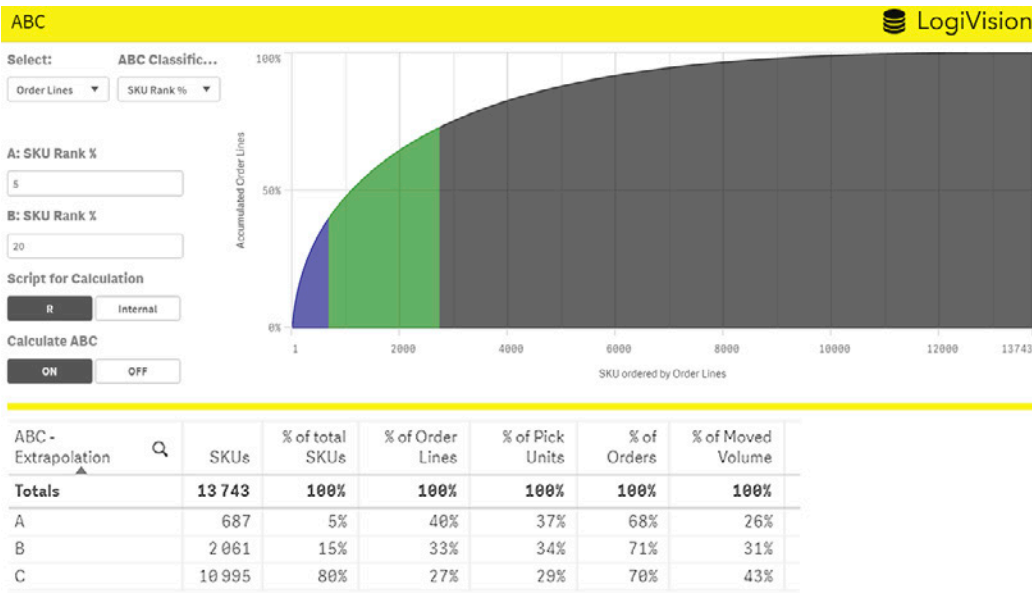
Add in the 80/20 rule, and typically you'll see that 20 percent of the products deliver about 80 percent of the revenue. While this isn't always that accurate, it usually gets fairly close. It may also save time in extensive calculations.

However, to calculate an ABC analysis, take the annual number of items sold and multiple that by the cost per item. This will give you an annual usage value per product. This is super easy to implement on a spreadsheet, but most organizations have flavors of this already. If not, this formula will work for you.

(annual number of items sold) x (cost per item) = (annual usage value per product)

So, in theory, your "A" inventory represents about 20 percent. You'll also find that the "B" inventory will represent approximately 30 percent, and the rest will end up around 50 percent. Calculate it based on the usage value and inventory turns. This will give you the inventory curve so that you can have a visual.

Why is it important to calculate these numbers or to go through this exercise? For one, it will help you map out your material handling process and facility based on the importance of certain inventory. Your "C" items should be the furthest away from picking while the "A" inventory should be relatively close to pick stations for faster throughput.

ABC - Extrapolation	SKUs	% of total SKUs	% of Order Lines	% of Pick Units	% of Orders	% of Moved Volume
Totals	13 743	100%	100%	100%	100%	100%
A	687	5%	40%	37%	68%	26%
B	2 061	15%	33%	34%	71%	31%
C	10 995	80%	27%	29%	70%	43%

11 Product Considerations (Storage Requirements)

Storage requirements vary from product to product—especially when it comes to food and pharmaceutical safety. While some products require specific climate control storage and handling protocols, others are just fine sitting in an ambient setting. If your product offering is a mix, you will need to account for both in your plan. When looking at the possibility of a retrofit or an expansion, you may want to think about just having one section of your product mix within the new area or material flow. This could save a lot of costs, especially when it comes to freezer environments. Expansions are sometime more economical if building a new freezer or chilled area with newer technology like high-density automated storage. While the upfront costs are typically higher for building climate-controlled storage space, this will help keep operating costs lower in the future.

You should factor this into your overall ROI planning.

Other items to consider are the actual planning of the build itself. Cold storage requires a very different build than ambient storage facilities. And if you're thinking about automated storage, you will need to consider that too. Facilities will require minimum slab requirement and wall thickness. These are dictated by location regulations and seismic activity, as well as temperature. Again, an engineering study is highly recommended for any type of cold chain new build or retrofit. While manual cold chain facilities may sound more economical, typically they aren't. However, it's always good to know any options up front and have a calculated ROI for decision making purposes.

As with any distribution center, problems can emerge long-term and that's not good when you consider food and pharmaceutical safety. With manual distribution facilities, there are four common areas that continually see challenges, and this may also be a deciding factor on your decision to retrofit or erect a greenfield facility.

- Condensation can find its way into a manual operation when employees go in and out of an area and it can create slick areas that are hazardous to employees—not to mention potential damage to product.

- Microbial growth in freezer applications can occur when human errors are made. Forklift damage is one such common occurrence and can lead to mold growth. Keeping these manual facilities clean is extremely challenging, but necessary. Extra planning should go into how to keep these areas free from debris and temperature leaks.

- High-touch handling happens any time you have a manual facility. However, this can be detrimental when moving product from various temperature zones. Also, not having a firm process in place like FIFO (first in first out) or picking by expiration dates is extremely important for safety and to keep cost lower.

- Labor costs account for up to 46 percent of cold chain operating costs according to the Global Cold chain Alliance. Even as more and more cold chain facilities are being built, labor remains a constant issue in today's tight labor market. Manual cold chain facilities have a higher labor turnover rate and liability increases due to the exposure. So, it may be best to think about an expansion or a brand-new facility when it comes to cold chain applications.

Plus, you still need to plan for a switchover. Even if the plan is a limited expansion for let's say freezer product, you will still need to account for movement of product within the testing phase. Think about how many pallets or cases that you will need for an adequate testing period. You will need to also test throughout the entire new material flow process. What are the requirements that you need to meet within the new area or material flow processes to meet all procedures? Make certain that you time product movement and understand temperature ratings from the storage area from goods-in to storage and all the way to dispatch. You may also want to deplete the old product first without moving it entirely and receive and store the new product in the newer area. Many facilities have run both operations in parallel until all product is depleted. This will ensure that product movement between two facilities doesn't spoil or damage product quality.

12 Investment / ROI

Of course, the ROI is one of the most critical factors within the planning process. Also, it's specifically tied to the available budget and other measures of your success criteria. To get started, work with your current system. You need to measure the costs associated with your "wait and see" plan or your process today. The need to understand how much it's costing you for staying stagnate is important to be identified. If that means less throughput and meaning lost revenue associated with it, then capture that. It's also the same with added labor costs and making certain to capture this over time with inflation. Once that baseline is established, then you can start looking at various project options–like a retrofit, expansion, or a greenfield. You'll need to add in the investment costs as well as any tax benefits.

From there, you'll need to add in your growth models for both scenarios. Do this over a course of ten years or more since most automated solutions have a lifespan of 15 to 20 years. If your current process doesn't allow you to grow, again, you need to capture the lost revenue. For your other models, you'll need to make certain to amortize any capital expenditures. For sales and labor costs, adjust for average cost of inflation, profit margins, etc.

Once you have comparison models, then you will also need to weigh the ROI against other determining factors. Even though the ROI needs to make sense from a budgetary standpoint, you may have additional factors that are even more critical like labor costs or needing more throughput capacity.

If you're not exactly sure on how to move forward with a comparison model, get a professional engineering study. Many vendors and consulting firms offer this service. To get started with an engineering study, you should plan on supplying your current data and plans on what you want to achieve. To learn more about engineering studies, feel free to contact SSI SCHAEFER. We have engineering specialist who can help with this process.

Calculate and weigh each criteria point and available option.

Utilize each pain point and prioritize your options. This is a good first step into determining which direction to pursue. Rank and weigh each factor accordingly. Layer in financial aspects and validate all assumptions with an engineering study if possible.

1	▶	**2**	▶	**3**	▶	**4**
Determine criteria factors.		Rank and weigh each factor accordingly.		Layer in financial impact.		Validate with an engineering study.
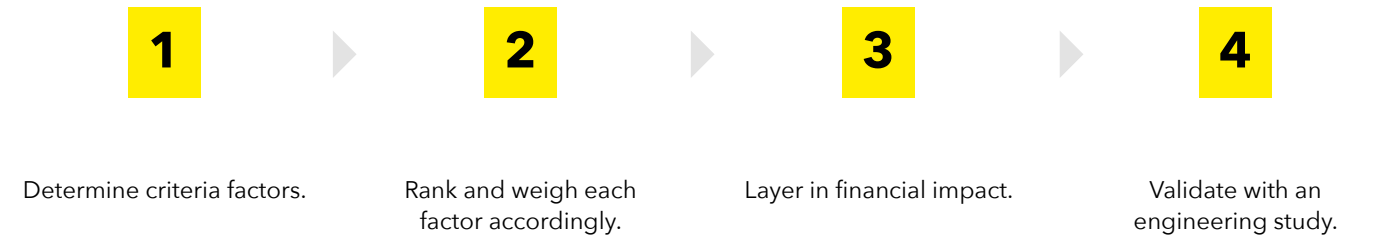
How to create your own worksheet or request one from SSI SCHAEFER.

First, you will need to weight the impact and urgency of your business. You'll want to keep these two separate, but you will rank each decision point in each section. For example:

Impact

Business Need   Strategic Fit   ROI

Urgency

Organization Readiness   Consumer Demand

Competitiveness

Assign a weight as it pertains to your organization. Typically, you'll find that all are somewhat equally important, but you may rank one a bit higher than the others, for our example, you'll see that ROI and competitiveness outranks the others. Your chart may look a bit different depending on the needs of the business.

List each criteria point that you wish to rank. These should appear on your Y axis. Rank each point with a value from 1 to 5 with 1 being low and 5 being high. Once each row is complete, calculate each factor based on the weight given for that section. If you look at our example, you'll see that land availability is ranked high with a 5. You would then take the weight rank and multiple that percentage with your rank. Here, you get a 1.5 weighted score for business need. Complete each criterion until you are finished.

IMPACT		
Business Need	**Strategic Fit**	**ROI**
Weight 30%	Weight 30%	Weight 40%

URGENCY		
Org Readiness	**Consumer Demand**	**Competitiveness**
Weight 30%	Weight 30%	Weight 40%

	CRITERIA		Land Availability	Existing Space	Location	Expand	Project Costs
IMPACT	**Business Need** Weight **30%**	What weight does this have on the business need? 1 = Low, 5 = High	Raw Score ▶	5	4			
			Weighted Score ▶	1.5	1.2			
	Strategic Fit Weight **30%**	What weight is the criteria for strategic fit? 1 = Low, 5 = High	Raw Score ▶	5	4			
			Weighted Score ▶	1.5	1.2			
	ROI Weight **40%**	What is the potential revenue savings or value? 1 = Low, 5 = High	Raw Score ▶	2	3			
			Weighted Score ▶	0.8	1.2			
URGENCY	**Org Readiness** Weight **30%**	What weight does this have on the business need? 1 = Low, 5 = High	Raw Score ▶	5	3			
			Weighted Score ▶	1.5	0.9			
	Consumer Demand Weight **30%**	What weight is the criteria for strategic fit? 1 = Low, 5 = High	Raw Score ▶	5	4			
			Weighted Score ▶	1.5	1.2			
	Competitiveness Weight **40%**	What is the potential revenue savings or value? 1 = Low, 5 = High	Raw Score ▶	5	3			
			Weighted Score ▶	0.8	1.2			
	IMPACT		3.8	3.6			
	URGENCY		3.8	3.3			

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 that has a robust customer service program for future needs. 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 you can trust. Steadfast engineers who take the time to listen to your needs and business challenges. The "one-size-fits-all" approach is most likely not what is needed for your application. A good company culture needs to be one that fosters innovation and transparency. Ask about application processes for installation and operation in companies similar to yours. These processes and procedures should be well documented and available for review for those that are outside of the competitive landscape or areas.

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 can update your software or retrofit equipment. Change requests are common as business needs change.

History and Experience

Some of the best technologies have come from startup 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. Remember, your business will grow, and you will need a vendor who can support that growth.

Long-term Viability

Pick a vendor who is financially sound 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. New technology companies are often funded by venture capitalist or private equity firms who are looking for a quick return on investment. Retail applications are long term projects that need specialized and dependable, financially stable vendors. 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 for proven stability.

Adaptable

Each distribution application is different, so each installation will 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. Think about adding SKUs, etc. and think about availability. Does the vendor have a local presence? How accessible are they?

Site Visits 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 online 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 SSI SCHAEFER

SSI SCHAEFER is a leading supplier of innovative automation systems, integrated warehouse management technology, and storage solutions for various industries. SSI SCHAEFER provides end-to-end solutions for manual, semi-, and fully automated fulfillment distribution, and warehouse operations facilities including picking, micro fulfillment, urban distribution, cold chain, storage solutions, vertical lift modules, automated guided vehicles, and warehouse management software.

SSI SCHAEFER is part of the SSI Schäfer Group, a global leader in material handling solutions. Founded in 1937, SSI SCHAEFER is a privately owned family company with over 70 office locations, 7 manufacturing facilities, and over 9,000 associated worldwide.

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Six reasons
for choosing 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 an original equipment manufacturer, SSI SCHAEFER provides tailor-made and high-quality solutions from a single source. Our products are 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 the installation.

■ **Know-how**
SSI SCHAEFER solutions are always up-to-date with the latest technological standards and can easily integrate 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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