



# HOW TO DESIGN THE PERFECT WAREHOUSE OPERATION FOR YOUR ONLINE RETAIL BUSINESS



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## HOW TO DESIGN THE PERFECT E-COMMERCE WAREHOUSE OPERATION FOR YOUR ONLINE RETAIL BUSINESS.

### WHAT ARE THE PRIMARY CONSIDERATIONS WHEN DESIGNING AN E-COMMERCE WAREHOUSE OPERATION?

The number one consideration for an online retail fulfilment warehouse is cost. Online retail is a competitive business and keep it overheads and order related costs as low as possible is vital to building a sustainable business, for this reason the number one consideration when designing a fulfilment warehouse to support your online retail operation is efficiency.

By building a warehouse that is efficient as possible in its use of all resources, from space to staff time and delivery costs we are able to fulfil orders at the lowest possible cost and hence maximise profit which is the only way to ensure that your business will be there for the long term.

### WHAT IS AN E-COMMERCE WAREHOUSE OPERATION?

For the purposes of this white paper an “e-commerce warehousing operation” is the combination of a building a set of processes and procedures and software that underpins them combined with the people who operate the processes is on a daily basis.



The purpose of the e-commerce warehousing operation is to store stock securely, to document the amount of stock available for sale at any given time, to accept inbound deliveries of stock and to ship orders placed through multiple sales channels as fast and as efficiently as possible.

Most e-commerce warehousing operations will also handle reverse logistics (customer returns) but this is a separate topic which is not discussed in this white paper.

## THE KEY FACTORS TO CONSIDER WHEN DESIGNING YOUR E-COMMERCE WAREHOUSE OPERATION.

The key things that you need to consider when designing your e-commerce warehousing operation can be split up into the following categories software, warehouse size and layout, processes and procedures, personnel considerations and scalability.

Let's explore each one of these considerations in detail.

### SOFTWARE

The first key factor to consider when you design your e-commerce warehouse operation is the software that will underpin it, most processes in an e-commerce business are software driven but the warehouse operation is likely to be the most critical of them all.

Furthermore, the choice of software to run your warehouse operation defines what is possible in all other areas of your warehouse operation. As an example, if you want to conduct picking in your warehouse using voice guidance but your software system does not support that function then you are simply unable to use it. Similarly, if you want to track the serial numbers of items you have sold and who you have sold them to your system must support that feature in order for you to enable it.

### ABOUT ME AND ABOUT ETAIL SUPPORT

As you probably know if you're reading this document I have been involved in e-commerce as a business owner or director for over 20 years, in that time I've run many warehouses supporting e-commerce operations with turnovers up to and including \$100 Million per year. Today I run eTail support a software business which provides a comprehensive business management system for online retailers.

eTail support includes all of the features discussed in this document and more besides so if you want to set up a perfect e-commerce warehouse operation for your business, we can help just get in touch with me through LinkedIn, at [roger@etailsupport.com](mailto:roger@etailsupport.com) or through the eTail support website <https://etailsupport.com> to discuss what we can do for your business.

Software's role is to automate, streamline, and optimize the processes within your warehouse . Every business has different requirements for their warehouse processes, it's vitally important that you define the warehousing processes that are best for your business and that your software supports them rather than your processes being defined by what your software can do.

Flexibility is a key aspect of the eTail support system, it can be customised to support any warehouse process and procedure as part of the initial installation and setup.

By effectively utilizing software across various stages, you can create a more efficient, scalable, and resilient ecommerce warehouse operation .

Software plays a crucial role in making ecommerce warehousing more efficient in several ways:

## WHAT YOUR SOFTWARE NEEDS TO DO

### 1. AUTOMATING MANUAL TASKS:

Your software system needs to track stock levels, automate replenishment orders, and optimize storage locations, eliminating manual counting and record-keeping as far as possible. It should also automate tasks like the generation of shipping labels sending order updates and tracking numbers to customers and it should make normal warehouse processes as smooth and easy for your staff as possible.

Pick & Pack processes are normally manual processes, but your warehouse management software can help to make them much more efficient by providing more effective consolidation of orders to minimise the time it takes to pick and increase the overall speed of order processing.

eTail support is able to help with these processes and support whatever style of picking that you prefer.

### 2. OPTIMIZING PROCESSES AND LAYOUTS:

eTail support makes it easy to find which products are your fastest moving so that you can consolidate them into a single area, it then helps to produce pick lists based exclusively on these products that can be picked and shipped very efficiently.

Work orders to move products for bulk storage to the pick face are produced automatically Book holders can be picked directly from bulk storage.

Trolley based pick and pack, audio prompted pick lists and straightforward paper based picking are all supported, you choose how you want to work and detail support will make it easier for you.

### 3. IMPROVING VISIBILITY AND DATA-DRIVEN DECISIONS:

Reporting is key to helping management take the right decisions for the development of an online retail business, Real-time Inventory Tracking provides visibility into inventory levels across locations automatically updating sales channels and enabling better decisions on restocking and preventing stockouts .

Performance Analytics Dashboards track key warehouse performance indicators (KPIs) like picking accuracy, fulfilment speed, and costs, identifying areas for improvement .

Using eTail supports enhanced tools can provide to inform strategic decisions about warehouse layout, staffing, equipment, and overall operations .

### 4. REDUCING COSTS AND WASTE:

Labor Optimization: Automation reduces reliance on manual labour, lowering labour costs and increasing overall productivity .

Inventory Optimization tool allow better forecasting and helps to minimize overstocking and storage costs, ensuring optimal inventory levels .

## WAREHOUSE LAYOUT

The primary consideration when designing a warehouse layout will be efficiency.

Warehouse layout can contribute to efficiency in three different ways.

1. Optimise the use of space to maximise the usefulness of every square foot that you rent .
2. Optimise the number of racking locations to reduce overall Capital Expenditure (sometimes short and to “CapEx”)
3. Increase picking operators’ productivity .

The first two are about ensuring but the layout of the warehouse is done as efficiently as possible, the placement off the racks, your goods in area and your goods out area and any other working area that you need will contribute to the optimization of your warehouse space and of the equipment and racking that she placed inside it.

To manage these processes effectively, follow this process.

Firstly, determine the warehouse space that you actually need

Calculate how many pallets and cartons you plan on carrying at any one point and convert that into a volume in cubic meters - you will be using storage and shelving systems to get the most out of your total space but you will need around 30% more cubic volume for storage than the volume of the stock that you store due to inefficiencies in racking systems and the space required for isles etc.

Of course, you also need to consider the space needed for other warehouse operations. So, once you calculate the storage space you need, you’ll need to add in space for these other activities and for the people who will perform them.

You will need adequate space for each of the following stages.

- A space for “receiving” or “goods in” including unloading quality control checks and maybe the labelling of incoming stock as well.
- Storage as outlined above.
- a staging area for orders you have shipped during the day but which have not yet been collected by your couriers, many of our UK based customers remove this requirement by packing goods directly into couriers own trailers using a loading dock, but if you ship with Royal Mail or in lower volumes you will need an area to store bags or ‘Yorks’ containing your ship to items.
- a pick and pack area
- space for a returns department and for the storage of dead or quarantine stock.

Where you put these various areas is important the layout that you choose should be managed in a way that increases the efficiency of the flow of goods and improves visibility for management and workers while of course maintaining safety for everybody. eTail support can help with the layout of your warehouse as part of the setup process if required.

While considering the layout of your warehouse it is a good time to consider what machinery you might wish to install to help automate repetitive process is and hence improve efficiency in your operation.

4 great examples of efficiency improving tools are.

Forklift-trucks and pallet jacks are an essential part of any warehouse operation, many different kinds of forklift truck or pallet mover are available, some warehouses perform all of their picking from electric pallet trucks which can greatly improve speed and efficiency, especially in larger warehouses .

Bar-code scanners and handheld data terminals can help streamline the picking process with text or audio based picking instructions taking the place of paper based work orders (discussed in detail below). Using this kind of technology can reduce the need for or even eliminate cycle counts by drastically improving picking accuracy.

A conveyor belt can safely move heavy containers from one area to another, eliminating the need to carry stock and thus putting less strain on employees.

A laser DIM-weight scanner can automatically measure the size of your shipments after they have been packed, this can help you to reduce shipment costs and the data that this process provides can be fed back into the product records to correct any erroneous data and to make package size calculations more accurate as time goes by.

There are many other kinds of machine designed to automate repetitive tasks such as assembling cartons, inflating box filling or compacting waste that you may wish to consider as part of your warehouse processes.

All of this kind of machinery will need space, electric forklift trucks need charging stations and those that use gas cylinders will need safe storage for their fuel, you will need to consider this in the warehouse layout.

Optimization of the picking operator's productivity is achieved by carefully considering how and where the different items that you store in your warehouse are located.

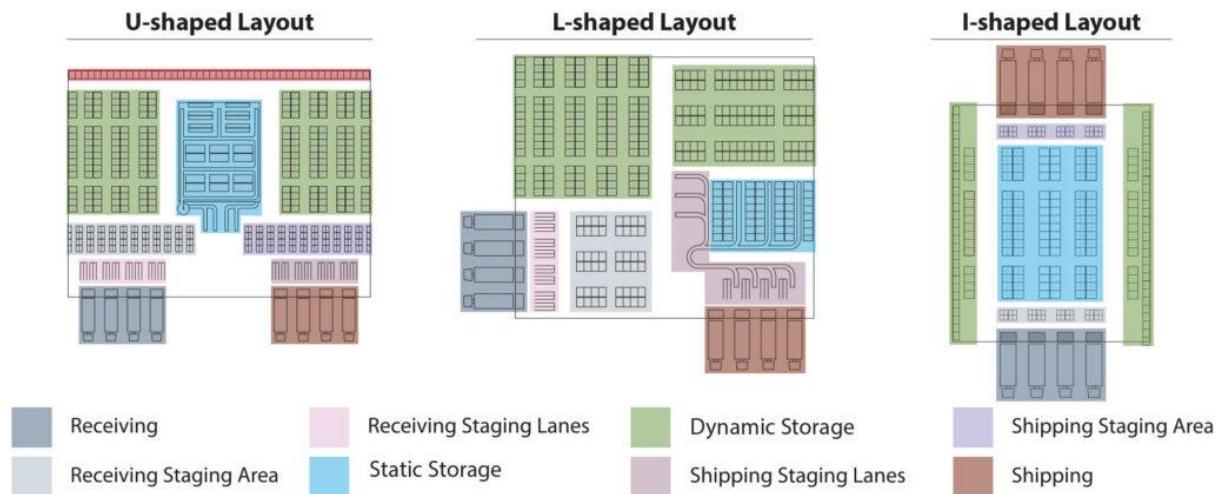
This is usually achieved by ensuring that the most commonly sold items (normally referred to as “High rotation SKUs”) are grouped together to reduce the amount of time spent by pickers who are tasked with finding these items as without this kind of optimization the time taken to walk from one location to another during the picking route can account for 60 to 70% of the operators working time. When we lay out the warehouse, we focus on improving the productivity of picking by reducing the distance that needs to be travelled when completing a pick list to achieve this we place high rotation SKUs together in the same area.

Of course, you need to consider the fact that the products that qualify as High rotation SKUs will change over time, you will need to use your warehouse management system on a regular basis to produce reports to show you which products qualify and rearrange storage accordingly. eTail support has a specific feature to help with this process, we recommend that on a monthly basis you use the Pareto principle (also known as the 80 / 20 rule) to find the 20% of active SKUs which make up 80% of shipment volume these are the high rotation SKUs.

eTail support will also help you to produce picking lists or work orders which contain only high rotation SKUs so that these orders can be picked together further increasing efficiency.

## WAREHOUSE LAYOUT OPTIONS

The way that you layout your warehouse will often be dictated by the size and shape of the building that you use but in principle there are normally considered to be 3 types of warehouse layout as shown below.



Many warehouses are also able to improve efficiency by storing bulk stock separately in bulk storage locations and producing separate work orders to take goods from bulk storage and refill the separate pick face storage locations where orders can be picked more easily.

eTail support enables this kind of function by considering the bulk storage locations and the regular picking locations to be two separate virtual warehouses with transfers being made between them as required using separate work orders.

Technology can be used to vastly increase the productivity of picking operators, handheld terminals are cheap and very effective alternatives to paper based picking lists, when combined with barcode scanners and portable label printers they can enable picking and packing to be done on the warehouse floor for small items which is often the most efficient way to operate.

Handheld terminals can be used to guide picking operators using both text instruction or audio instruction or a mixture of the two depending on the requirement. Technology of this kind has a payback period of weeks or months and it is highly recommended as a key part of your warehouse operation design.

Picking productivity can be greatly enhanced if the box or other packaging that used to be used to ship the goods is available for the picker to put the product directly into as part of the picking process, to manage the picking process in this way it is important to know the size of the package in advance of picking the goods this can only be achieved if the size of the individual products is known in advance and the software used is sophisticated enough to calculate the package size from the order details. This capability is built into the eTail support system and as long as the product data is correctly maintained the system can achieve an accuracy rate of over 90% on predicted package size.

It is normal to group orders which use the same size of packaging together allowing the picker to simply place the items required by the customer directly into the packaging during the picking process thus reducing the overall number of operations that need to be conducted to ship a single order.

If the goods can be identified as part of the picking process using a barcode scanner then the picker may also be able to seal and label the box at the end of the process, alternatively where quality and accuracy of picking is vital it may be more appropriate to pass the open box to a 2nd operative who can cross check the contents before completing the package, eTail support has the flexibility to support either procedure or indeed to support warehouses which use both depending on the product type value or the order size.

## PROCESSES AND PROCEDURES

Clearly defining the processes and procedures which will be used in your warehouse and documenting them effectively is a very important part of setting up a warehouse operation to support your online retail business for the long term.

The installation of the eTail support system includes the production of a warehouse process manual, this task is undertaken by eTail support in cooperation with the customer and results in the production of both digital and physical copies of the manual which will be made available to all of the warehouse staff after installation.

The warehouse process manual includes comprehensive description of the normal warehouse process is to be used for each order type and the process is to be used when exceptions or errors are encountered. The warehouse process manual is a living document and will be subject to regular updates in line with the development of the business, the addition of new product lines and changes required by management or enforced by changes in regulation.

The health and safety of warehouse operatives is a key consideration when the warehouse process manual is written, it will include a comprehensive section on health and safety, manual handling rules etc and as such it should form a part of the warehouse employee handbook.

## PERSONNEL CONSIDERATIONS

In most Western countries staff salaries have risen to the point where the cost of employees is the greatest single cost for any online retail business after the cost of goods and the cost of marketing so getting the most out of your staff is vital.

In your warehouse operation the best way to achieve this is through effective staff training, once the warehouse processes have been clearly defined and documented it is important that they are effectively communicated to staff through a training process on the easy availability of documentation.

Allowing staff to suggest changes to the processes is an important way to improve staff morale and retention and to improve the processes overall. The process of receiving and rejecting certain changes suggested by staff can also be important as it allows the opportunity to point out problems with shop floor shortcuts and to prevent them from becoming de facto process when they are in fact counterproductive.

## SCALABILITY

Scalability is a key factor to consider when deciding on the size of your warehouse, warehouse leases are often quite long, three years is considered quite a short lease and so e-commerce business in my experience have signed leases of 10 or even 20 years, so it seems to make sense to consider your peak requirements and size your warehouse around those. I would strongly counsel against this approach; it requires accurate forecasting a future sales which is always very difficult and even if your forecast is correct it can lead to you paying for a building for many years which is too big for your actual requirements.

There are many options when it comes to scaling up your e-commerce business, if you need to store more inventory at certain times of the year then it may be worth considering seasonal storage in a third party warehouse outside of your main facility which will only need to pay for when you are using it, also you may be able to have your suppliers store inventory for you until you need it at no charge.

If you need to increase throughput in your warehouse it's worth considering operating on a 24 hour a day schedule seven days a week which can increase throughput by 140% compared to operating only 12 hours a day five days a week or by around 300% compared to operating five days a week 8 hours per day.

Many online retailers got into financial difficulty after the pandemic because they scaled up their operations to match the increased demand that they saw when traditional retail outlets were closed for many months, taking on long term financial commitments to large buildings and additional staff which they then found they did not need quite shortly after.

It's always worth considering but if your revenue and order rates go up very quickly, they can also come down very quickly, finding ways to scale your operation without making massively increased long term financial commitments is always better business than simply throwing money at achieving greater scale.

eTail support software and our professional services can help you to understand how to scale your business without taking undue risk.