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Chapter 12

Systems

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Selecting and Implementing a Warehouse Management System

At this stage of your warehouse project you have had the capital approved and have a clear idea of the size and nature of your warehouse.

This chapter takes you through the selection and implementation of a Warehouse Management System (better known as a WMS).



When would you want a WMS?

To embark on a WMS project you need to be certain that you are going to achieve significant business benefits. Of course such systems need capital investment, plus there are some running costs involved. However, the main 'cost' is the drive, enthusiasm, and commitment needed from the entire warehousing team and senior management to ensure the system is set up correctly, used properly and regularly optimized. A WMS is not a 'quick-fix' option.

A WMS is more than a stock control system, and more than a data collection system. It is a system that helps you 'automate' your warehousing operations as much as possible.

Just because you are building a warehouse does not necessarily mean that you will definitely need a WMS. For instance, if you are renting out the warehouse or storing a small number of SKUs you are unlikely to want a WMS. We will assume henceforth however that you have done some basic homework and do need a system.

Return on Investment and WMS pricing

The days are over when companies put a large pot of cash aside to spend on IT projects on the basis that 'the company needs the system to keep ahead'. IT projects arguably should be justified on the same basis as any other business investment. A WMS is very much a tactical 'execution' system and is therefore a lot easier to justify than many IT projects. It forms an important component for strategic business improvement but nevertheless is still tactical.

The ROI process is important because it helps you to set a budget for your project and also helps you focus on the functional 'must haves' rather than the 'nice to haves' when selecting suppliers. There is nothing like money to focus the mind!

The key areas to consider are:

- the potential for a WMS to give you improved stock accuracy – by reducing errors, providing real time information and enabling perpetual inventory

- the potential for increased productivity and cost savings - through improved labour utilization, improved equipment utilization and better space utilization

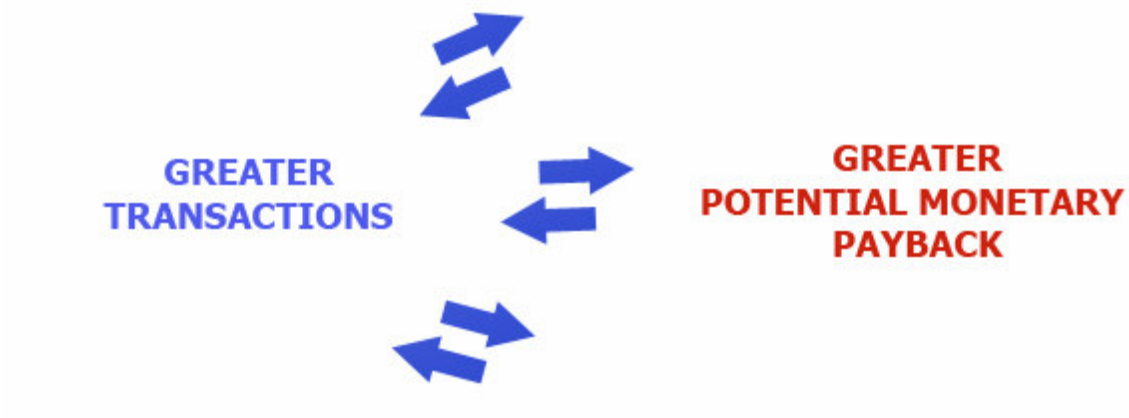
- the need for improved traceability – a WMS can give you two way traceability, almost as a by-product of being in place

- improved customer and client service – through overall improved warehouse control, improved pick and dispatch accuracy

Improved stock accuracy	Increased productivity and cost savings	Improved traceability	Improved customer and client service
Reduce errors	Improved labour utilization	Two way traceability	Overall improved warehouse control
Provide real time information	Improved equipment utilization		Improved pick and dispatch accuracy
Enables perpetual inventory	Better space utilization		

Only you can work out the return on investment in these areas. By all means get consultants and system suppliers to help you, but at the end of the day only you know how much room there is for improvement using the business 'tool' that a WMS provides.

The more transactions per day (e.g. pallet moves, picks) in the warehouse, the greater the potential monetary payback.



The more locations there are, the greater the justification. In particular if the warehouse employs narrow aisle racking there is a very high probability of a good return on investment for a WMS - it is difficult to see stock in a narrow aisle warehouse and therefore difficult to use manual systems. In addition, such warehouses normally use expensive narrow aisle fork lift trucks where optimization can bring great savings – sometimes to such an extent that fewer trucks need to be purchased and operated.

The costs of a WMS can be broken up into four main components:

- Licenses - the software license needed to run the system. Typically this is charged by 'user' - i.e. PC user or radio data terminal user although different models are now being offered, including paying by transaction and /or paying monthly rather than outright.
- Professional services, the costs for project management, training and go

live support.

- Development costs – software development costs for requirements not catered for in the package, including interfaces to third party systems.
- Support costs – this is typically an annual cost based on license costs and often development costs; look at this cost carefully, the scope of service and cost varies significantly from supplier to supplier.

Ensure that the suppliers you approach give you costs for the all the above. Ask them to indicate which prices are firm and which variable. Watch out for hidden costs such as travel costs, travel time and project management time.

Summarize all the costs in a spreadsheet, showing the initial cost and then costs for years 1 to 5 with accumulated totals. You might be surprised by the results!

In addition there are the hardware and infrastructure costs. These costs are discussed in more detail below. These costs have to be considered in terms of project budget and ROI of course, but in many cases this aspect of the project can be managed as a separate project with interdependencies with the main project.

How do I select a WMS partner?

Fortunately it is a lot easier to implement a WMS than ten or even five years ago. WMSs in that era were often highly customized and often only suitable for a particular type of warehouse. This trend is not a surprise; it is the normal trend in the software industry – more functionality, more flexibility / configurability and lower cost year on year. You still have to select your WMS carefully however – there are still some legacy systems out there in the market.

A modern WMS should be capable of working in virtually any type of warehousing environment. Modern WMSs are highly configurable, normally by the end user.

In the past the production of large detailed ITTs (tender documents) was an important part of the WMS selection process. This reflected the limited functionality that was present in most WMSs at that time. The disadvantage of ITTs is that they cannot hope to take account of a company's future requirements and are often over proscriptive in how a system should work. The other disadvantage is that many WMS providers will often not respond to ITTs nowadays – ITT responses consume a vast amount of time, time which the vendor might prefer to spend in other directions under their own control. You may, however, have specialized or complex requirements which should be fully documented in an ITT type document, with the help of a consultant if necessary.

Avoid also for similar reasons the spreadsheet templates that are downloadable from the Internet, many of these are, or were originally, prepared by WMS vendors and are slanted towards their products. Most WMS vendors therefore view such documents with suspicion.

If your ERP / business system already has a WMS then you should have a close look at that WMS first, the same due diligence applies to this selection as any other system but normally any small short falls in functionality are outweighed by reducing any risks of systems not talking to each other reliably and accurately.

Similarly if your warehouse is highly automated, with cranes, conveyors or sortation systems then you may wish to focus on the WMS provided by the automation systems company. This will typically be known as a Warehouse Control System or WCS. Again shortfalls in functionality are often outweighed by the avoidance of an interface to an external WMS.

There is still of course the option to develop a WMS in-house. Due to the 'packaged' nature of the WMS market nowadays this is very rarely viable, a typical WMS vendor will have perhaps 100 plus clients over which he amortizes the development costs; these same 100 plus clients serve to be a very valuable and thorough proving ground for the product in question. In-house development is sometimes viable if the overall requirements are particularly specialized or require very specialized integration with existing in-house systems.

A recommended way of proceeding is as follows:

Firstly prepare a short RFI document (request for information); this should typically be no more than a few pages long. In this you describe your business, your future business direction, your warehouse and your plans for the warehouse. Then talk in broad terms about what you want to achieve from the WMS; the section above should give you some help in this regard.

By this stage in all likelihood you will have completed an operational specification for the warehouse to gain capital approval if nothing else. The key elements from this specification are ideal base information for the RFI, e.g. number of loading bays, number of and type of bulk locations, number of pick face locations and pick and pack station details. Of particular relevance is the number of users, i.e. administrative users, fork lift truck drivers, pickers, packers and so on. If you already have fixed ideas on the use of mobile data terminals then by all means detail them within your RFI, if you are not at this stage then let the vendor advise you – from some you will receive good cost saving advice, from others you will get the opposite but this is all part of the exercise. Also provide a guide to the number of transactions per day (receipts, put-aways, picks, dispatches) and indicate if there are any significant peaks across the day, week or month.

There is no need to try and describe how the system should work – in fact it can be dangerous to be too specific at this point, as there may be faster, better, cheaper ways of doing things and part of the selection process is to see how potential suppliers can guide you in this regard. If necessary you can use the services of a specialized consultant to help you.

Within the RFI you will ask the vendor for budget costs and implementation timescales, naturally this information will be somewhat variable at this stage but it will help you categorize the vendors. You should also ask for basic supplier information including their company history, financial history and status. Ask them how many sites they have using their current WMS product – and be very specific on this, many vendors will list some impressive clients only for you to find that they are using other products provided by the vendor. Ask them who owns the IP (intellectual property – source code) for the WMS. Generally speaking a vendor who owns IP is more likely to be able to develop the product in line with customer needs. Also ask for details of their daily rates and support charges. The clearer and simpler the RFI is the more likely you are to receive good quality responses.

We suggest you send this RFI to 6 to 10 suppliers initially. It is relatively easy to identify potential suppliers, word of mouth and industry contacts are a good source, as are trade exhibitions. Search engine searches will also give you some names. Focus on suppliers that have experience in your market – this is particularly the case if you are a Third Party Logistics provider – WMS vendors with no experience in this sector are unlikely to have the functionality and importantly the expertise to help you. Also focus on suppliers that have a track record linking to any business or ERP system you might have.

You will do well if you get responses from two thirds of the suppliers. Some suppliers are disorganized and do not reply, others qualify their prospects very carefully and do not waste your time or theirs if they feel the initial 'fit' is not close.

Your next stage is to produce a short list of 3 to 5 suppliers. Price of course is not the main criteria at this stage but can be used to rule out suppliers that will blow your budget or suppliers whose prices look too good to be true. It is then worth getting the suppliers to visit you for an informal meeting – it will help you get a feel of their company – how professional are their people, how carefully do they listen to your needs and respond to your needs, how well do they answer your questions? Look at the size of the supplier and the size of their customers to ensure that you are dealing with a company that is used to dealing with companies of your size. Look at support cover, look at development plans, and look at track record.

Before you get into the detailed demonstration stage do a little more checking on each of the suppliers, it will help to ensure you reject unsuitable suppliers at an early stage. A good way of doing this is to telephone interview at least six reference sites, preferably sites you choose from a longer list the supplier has given to you. Naturally these calls should all be done with the knowledge of the supplier – unless you have contacts with their clients already.

Get the short listed suppliers to provide you with a tailored demonstration. To some extent you can assume that if they have many installations then the basic should be pretty much covered so get them to focus on what you believe is especially important for your operation – for instance it might be pick face replenishment, or might be kitting and assembly. At some time during the selection process you should also of course get them to give you an overview of their company, products and people and also an overview of their strategy – both in terms of company and product. Also visit their head office to get a better understanding of their culture, management and team working. It is very important to get a good 'people' fit with any organization you select. It is always worth asking the suppliers why they think they should be selected for your project.

The reference site visit or visits is often the crux to supplier selection. Make sure you are given a choice of sites, not just 'the one' and make sure it is similar in terms of size and process to yours – or preferably slightly larger and slightly more complex. If you are a 3PL provider then ensure you visit at least one 3PL site.

After this stage you should be in a good position to shorten the list to 2- 3 suppliers and often to have a preferred supplier. If you have identified any gaps in functionality then now is the time to get these specified and costed – you should expect to pay the supplier for this exercise. The suppliers should then be asked to provide an accurate project cost, clearly identifying any variable costs. This is where the contacts you have developed with the suppliers reference sites will pay off, you can talk with them about how well the supplier worked to budget and time. WMS suppliers tend to fall into two camps, those that keep very close to budgeted costs and those that always seem to manage to double the cost of the project by the time it goes live.

Additional considerations for a Third Party Operator?

A 3PL is looking after other people's stock and therefore he MUST know accurately how much he has in stock and where it is. If he does not he will lose the customer and may be financially liable for the lost stock. For this reason a good WMS, well implemented and well supported (both internally and externally) is normally essential. In turn labour productivity, warehouse utilization and efficient equipment performance is of great interest – all benefits go straight to the bottom line. These factors are of course important for an in-house manufacturing or distribution operation but are often lower on the list of business priorities.

The 3PL will normally be working to a Service Level Agreement (SLA) with his client. Again a WMS is normally an essential tool in monitoring performance against this SLA.

A WMS is also essential in many cases to raise billing and charging information. The WMS, provided that it has been designed at the outset for a 3PL environment, will record all transactions that could relate to charging.

What are the steps to putting in a WMS?

Once you have decided you really need a WMS, and you have selected a WMS vendor, then the hard work begins. There is no substitute for good and robust project management, alongside the selection of a good team. The WMS project must be owned from the top of the organization down to the bottom, a project sponsor is an invaluable member of the project team – someone who ensures that the focus is maintained on delivering business benefits with minimal disruption. A project champion is normally appointed to effectively take charge of the project and this person often comes from a warehousing background rather than an IT background. IT should also be represented on the team but increasingly IT is seen as a business support function as opposed to the main 'drivers' of a WMS project.

Use the guidance and support of your WMS vendor as much as possible, a major part of your selection process should have been to identify a vendor that added value during the implementation process. This guidance needs to be paid for of course so make sure you have budgeted for it.

Methodology before technology is the key handy reminder for virtually all IT projects – and particularly WMS projects. Ensure that your warehouse is running in an optimal manner with good people and good processes before trying to implement a WMS – otherwise expect failure! That is not to say you cannot introduce new and better processes whilst implementing a WMS – this is often the case – but if your warehouse is disorganized then tackle that problem before doing anything else.

In the case of a green field operation methodology before technology is not normally possible as timescales are tight. Here it is vital to have a strong and experienced

management team with a logistics background. In addition you might want to use the services of a specialized consultant or an interim manager. Interim management can be a very cost effective way of providing the extra resource needed in this change management process.

The scope of the project should be documented. The scope is just building on the WMS description you wrote for your RFI, ie what you want the system to do for your business. This need not be an arduous or tedious task but it is important to focus on top level business requirements and warehouse processes rather than being proscriptive as to how the WMS should function in detail at this stage. This top level approach is particularly relevant where a well established packaged solution has been purchased – such a solution at the end of the day should be highly flexible and configurable.

Interfaces to external systems, including ERP systems, Warehouse Control and Automation Systems and parcel carrier systems all have to be thought about and specified. This is a specialist area and is often one of the riskiest areas of a WMS project if not managed properly.

A project plan should be drawn up; often the WMS vendor will have a template available. The plan will detail all the tasks required, responsibilities and timescales. Regular review meetings will monitor progress against plan and make corrective actions as required. Make sure there is no project creep, learn to say no! Start as simply as possible and get some quick wins.

The Contract

A contract should be drawn up between you and the vendor. This should be done before you commit any major finances, but far enough into the initial stages of the project that you can have it scoped, planned and costed.

Your RFI and scope document forms a key part of this contract as does all documentation received from the vendor. An outline plan should have been produced by this stage, showing key milestones and deliverables. This plan also forms part of the contract.

The contract should as far as possible be in plain English. It does not necessarily need to be produced by a lawyer but you should get appropriate legal advice. The contract should in any case be produced by someone with knowledge of the principles of contract law.

Infrastructures

The IT infrastructure needs to be planned around the WMS. Your internal IT department can help with this assuming they have the skills and resources. Alternatively you can contract it out or in certain cases the WMS vendor will take on complete responsibility.

The IT infrastructure will consist of servers to run the applications, PC workstations, network infrastructure and printers. In most cases you will also use radio data terminals (RDTs) for the system. The RDT infrastructure is a mini project in its own right which needs to be planned and specified. Often the WMS vendor can provide the RDT sub system or you may prefer your IT supplier to provide the wireless network back bone and then the WMS vendor or hardware vendor to provide the necessary terminals.

Pilot Project

Set up a pilot project, either as a conference room pilot or ideally the warehouse itself. Focus on one customer, one product group or one function such as receipting. Create a testing plan and then test, test and test to ensure the system is operating as required and that operatives are working correctly.

Start working out how you are going to do a 'data take on'. A data take on is all the data you need to start and run the system including locations, location maps, product codes, product details, pallet sizes and configurations. A lot of this data could come from your ERP system. You can construct spreadsheet templates to compile this data. Also start planning the 'rules' within the warehouse, e.g. put-away rules, replenishment rules. If you are moving into a warehouse with existing stock in place then consider how you are going to label and record this stock.

Remember that you are testing for failure as well as testing for success. This is an ideal opportunity to test the interfaces to external systems; interface testing invariably takes longer than planned.

Ensure that you train the trainers and then cascade the training down to the users, this way you will build your in-house expertise.

Going Live

The go live stage needs to be planned carefully. Go live can be a 'big bang' or can be phased, according to the nature of your operation. You are likely to need extra personnel during this period. Budget very carefully for the on-site support you may need from the WMS vendor, costs can escalate in this area, particularly for out of hours, evening and weekend support. It is likely that your performance levels will be pretty low to start with until the operation has moved up the learning curve, for this reason it is best to go live during a quiet season if possible.

In Summary

As with all system projects, and indeed projects in general, the more you plan and prepare the better your results will be. Supplier selection is the crux to a successful project along with good project management and good project ownership.

Tips:

- Have a clear long term vision of what your warehouse could look like in the future; this will help you ensure you choose a solution that is sufficiently scale-able, flexible and functional.

- Unless your needs are very special and specific (and most times they are not) - go for a packaged, configurable solution – you will not know what your future needs are likely to be so there is little point in writing long and complex tender documents.

- Keep an open mind about how your WMS will operate - let the WMS vendor listen to your needs and show you different ways of using their solution.

- Choose a WMS vendor who can demonstrate significant track record in your type of warehousing operation, get them to take you to customer sites to see the WMS in action, make sure you talk to the users and the management team at each site.

- Choose a WMS vendor that you get along with – it is about partnership.

- Make sure you involve your IT team in ensuring the WMS vendor can work with you to provide solid interfaces with your other business systems – but do not let them dominate the project – a WMS is a tactical operational solution and as such in most cases the project should be run by logistics people.

- Make sure you identify a project champion in your organization, build a team around them and get them to own the WMS.

- Start simple, crawl – walk –run; get some quick wins and some enthusiasm going.

- The project is an ongoing one; keep revisiting your operation to make sure you are making the best use of the WMS, to make sure you are really optimizing your people, your warehouse capacity and your handling equipment.