



# Working Together to Improve the Operational Efficiency of Regional Distribution Centres (RDCs)





## Foreword

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The aim of this guide is to:

- Describe the main areas of, and issues relevant to, RDC operations
- Give examples of how, and by how much, RDC operators and partners have changed their operations for the better
- Signpost a range of sources of more in-depth good practice information on specific subject areas

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## 1 About this Guide

# 1.1 What Is the Purpose of this Guide?

This guide has been researched and designed to help encourage greater understanding and increased take-up of good practice in operating regional distribution centres (RDCs) in an efficient and sustainable way. Its role is to encourage the partners involved in RDC operations, including RDC operators and senior managers, to take actions to improve efficiency and meet customer service obligations, while at the same time reducing the environmental impact of their operations.

## 1.2 Who Should Read it?

You should read this guide if you are:

- Directly responsible for the day to day management of RDC activities, such as operations managers (both in-house and third party)
- A senior manager, such as a logistics and distribution manager who is likely to take ultimate responsibility for any initiatives that are developed
- A transport operator, supplier or any other party whose own operations may be influenced by RDC operations

## 1.3 How to Use the Guide

For some organisations, this guide will act as a valuable revision and checklist to help ensure that all the opportunities for operational efficiency within their business have been identified and, more importantly, acted upon.

For other organisations, particularly those that have experienced recent growth in their warehouse operations, it will act as an essential reference document, outlining the various steps towards efficiency and sustainability in operations. It should also offer these organisations guidance on the future direction of their RDC operations.

## 1.4 How Will You Benefit?

The benefits of researching, reviewing and implementing operational best practice can be significant. By implementing best practice, an RDC operations or logistics manager can lead the way in reducing both operating costs and inefficiencies, therefore helping to improve profitability and minimising the environmental impact of operations. A transport manager involved in servicing RDCs can also benefit from operational efficiency, by implementing best practice within the fleet, for example, by improving communication links and reducing empty running.

The guide is also intended to act as an effective signpost to further points of reference and additional opportunities to share information and good practice with industry groups and other organisations involved in RDC operations.

Much of the information contained within this guide is also applicable to the operation of national distribution centres (NDCs). Although these operate on a national scale and tend to hold more stock than RDCs, the processes of inbound movement of goods and internal product management leading to outbound movement of goods are fundamentally similar.

Because of the interrelated nature of RDC operations, it is worth remembering that the initiatives and technology discussed in this guide, such as hand held data terminals and radio frequency identification, may often be useful tools at a variety of points in the supply chain, and not just at one specific stage of RDC operations.

## 1.5 What Is Covered in the Guide?

- Section 2 Understanding RDC Operations defines the role of the RDCs, key operational stages, strategic considerations and potential points of conflict with other parties
- Section 3 Inbound Activities covers the better management of goods arriving and entering the warehouse - intake planning, vehicle reception and product receipt
- Section 4 Internal Product Management is about using systems within the warehouse to help balance supply with demand - the warehouse design and layout, the warehouse management system (WMS) and handling and storage systems
- Section 5 Outbound Activities identifies best practice in the preparation and despatch of goods to customers - outbound planning, load preparation, picking and packing, cross-docking, product despatch, vehicle specification and vehicle loading
- Section 6 The Importance of Partnerships covers working together with your staff, suppliers, customers and contractors as well as the broader community
- Section 7 The importance of Performance Monitoring and Key Performance Indicators (KPIs) - a brief guide to performance monitoring and KPIs commonly used by RDCs to improve operations

The guide has a practical approach and contains case studies and easy reference tables. Throughout the individual sections, 'First Ideas for Action' tables outline simple first steps for improving efficiency for the various parties involved in RDC operations.

## 1.6 Good Practice Checklist

The checklist below will give you some indication of how the guide may apply to you.

Operational Checklist	Tickbox ( <b>√</b> or ×)
When inbound drivers arrive at your RDC do they receive clear instructions on what to do and where to go?	
Do you have a system in place to deal with missing documentation for inbound product? Does this system work?	
Have you recently reviewed the design of your warehouse to find out if space can be better utilised so product movements can be decreased?	
Do you use a warehouse management system (WMS), and if you do, can it be improved or updated? Are there better packages now on the market?	
Have you recently reviewed the type of storage system used in your RDC? Would very narrow aisle racking help to increase storage capacity?	
Could you make environmental and financial savings by switching from diesel to LPG or electric forklift trucks?	
Are your picking and packing operations as good as they could be? Can processes be improved or could technology like scanners or voice picking be introduced?	
Have you looked at ways that vehicle utilisation could be improved to reduce your transport costs?	
Could you improve relationships with your suppliers, customers, contractors and the local community? For example, have you ever considered setting up an RDC freight quality partnership?	
Do you use key performance indicators (KPIs) to measure efficiency of inbound, internal and outbound processes (e.g. on-time arrival of vehicles, picking productivity and throughput) to assess the effectiveness of your operations?	



## 2 Understanding RDC Operations

## 2.1 The Role of the RDC

There is a common misconception that only major supermarkets operate RDCs, but they are actually used in a wide range of market sectors and can take many different forms. Major retailers operate RDCs to manage deliveries of products from suppliers to retailers. Producers and suppliers also run RDCs to provide materials for 'internal customers' such as manufacturing and production facilities. More recently, the 'shared user' concept has become more popular whereby a third party will operate an RDC on behalf of a number of clients (in order to achieve economies of scale that the organisations cannot achieve individually).

Fundamentally, RDCs exist for one or both of the following reasons:

To provide a buffer between supply and demand: there are certain kinds of products (for example groceries) that have a fluctuating demand. It makes sense to have a small stock of these products so that when customers' demand rises, they can be supplied more quickly. With the advent of just in time (JIT) manufacturing and other 'lean' systems however, companies are finding ways to make this buffer smaller and smaller

To allow consolidation and sorting of products: suppliers tend to produce large volumes of a small range of goods, whereas retailers, like supermarkets, tend to demand smaller volumes of a large range of goods. RDCs allow many different types of products to be consolidated and delivered in a cost-effective way

## 2.2 The Need for Efficiency

In recent years, because production costs have increased, logistics activities have gained increasing strategic importance for most companies. In addition, consumer demands have become more complicated and product life cycles have shortened, while the product range has increased. Companies are faced with the challenge of producing an increasingly large variety of products in a responsive manner, while keeping materials and inventory to a minimum.

RDCs have helped many companies meet these challenges, by allowing a greater (often national) consistency of product availability and helping control the outward movement of products to manage fluctuations in supply and demand. They also help minimise travel distances by uniting suppliers and customers that may be spread over a wide geographical area.

If not managed effectively, an RDC can actually become a barrier that prevents a product getting to the customer, for example, through incorrect picking of products or misrouting of consignments. RDCs represent a major component of total logistics costs and, generally speaking, may not in themselves generate a profit getting a product to customers is what generates the value, not merely storing it in an RDC.

The key to efficiency is to maximise throughput at minimum cost. Cost pressures mean that many RDCs no longer hold large reserves of products and operate at a steady pace. RDCs need to be an efficient, effective and sustainable link between suppliers and with the customer. There are many companies finding new and innovative ways of meeting customer demands in a cost-effective manner. For example, using good warehouse design principles to minimise handling, or working more closely with suppliers and customers to lower costs and increase responsiveness to demand.

## Efficient Consumer Response

Efficient consumer response (ECR) is a discipline dominant in the grocery supply chain, which focuses on change and continuous improvement in efficiency. The three elements of ECR are:

- - Providing consumer value
  - Removing costs that do not add value
  - Maximising value and minimising inefficiency throughout the supply chain

To implement ECR, distributors and suppliers may make fundamental changes to their traditional business processes using modern technology tools. Their aims are to:

- Provide consumers with the products and services they want, when they want them
- Reduce inventory



Streamline product flow

Eliminate paper transactions

Continuous replenishment (CRP) is a key ECR issue for food retailers. CRP includes the concept of 'vendor managed inventory', where the manufacturer influences stock levels at the food retailers' distribution centres. Some operational ECR agreements might involve the manufacturer or supplier automatically replenishing the warehouse and being responsible for constant item availability.

In practice, the procedure includes:

- Warehousing data (stock levels and transactions) for each relevant item are sent from the distribution centre of the retailer to the manufacturer/supplier
- The data is analysed and an optimised order advice is generated



- The order data is used by other integrated processes (such as production planning, purchasing, picking etc)
- Order messages are finally created and sent to the client

## 2.3 Strategic Considerations: Critical Issues in RDC Operations

It is important to recognise at the outset, that as an RDC operator, you are one important link in a system. Your operations influence, and are also influenced by, other operations both upstream (suppliers) and downstream (customers) in the supply chain.

The entire system will be most successful when different parties work together to maximise efficiency, so it is important to understand the different issues faced by suppliers, RDC operators and customers. Given the need for greater efficiencies, what then are the main issues for the various players involved in RDC operations? The main issues faced, all underpinned by service level delivery, are:



- Costs
- Information

## Reliability

Suppliers and transport operators want vehicles to be handled promptly when they arrive at an RDC, so they can be unloaded quickly and move on to carry more goods. RDC operators expect vehicles from suppliers and sub contractors to arrive at the appointed time, with only the correct products on board and the necessary accurate documentation readily available. Because many different products are often handled at RDCs, there is a need for a uniform set of procedures to allow them to move products in a controlled and traceable way.

## Costs

By nature, different players involved in RDC operations aim to minimise their own costs, but the complicated nature of supply chains means that one party may minimise their own costs at the expense of others. For instance, a large customer may minimise inventory costs by using JIT, but this may force a supplier to produce in smaller, more uneconomical batches that require more frequent transportation. Good practice in RDC operations involves understanding the whole supply chain costs, not merely by each member of the RDC supply chain working at the expense of others.

## Information

Information helps ensure that different parties involved in RDC operations work towards the same goals. For example, advance notice of difficulties from one party will help another adjust their schedules and minimise disruption to their activities. For your operation to be most efficient, it is important to understand the different objectives of the various parties with whom you deal with and to realise that by sharing information with others, you can make efficiency improvements to your own operations. For example, if substantial delays in offloading are being experienced on site, then through close communication in notifying suppliers and inbound hauliers of the problems, an RDC operator can reduce the level of queuing at the RDC gate. Although most inbound traffic may have dedicated delivery windows, some smaller vehicles with multiple drops may be able to divert and carry out other deliveries while the delays clear.

## 2.4 RDC Operation Stages

Figures 1 and 2 provide an overview of the key operational stages of RDCs. The following generic stages are relevant in most operational settings:

- Inbound Activities booking in and planning deliveries, receiving the vehicle and its load and 'put-away' of the product
- Internal Product Management the internal systems that help relocate and store products within the warehouse
- Outbound Activities planning deliveries, picking and packing goods from the warehouse, cross-docking and vehicle selection and loading









## 2.5 Key Efficiency Factors in RDC Operations

For RDC operations to be most efficient, there is a need to:

- Ensure customer service levels are met
- Maximise the overall effectiveness or throughput of the operations at a minimum cost
- Minimise the environmental impact of operations

## Meeting Customer Service Levels

Setting appropriate and achievable service levels in partnership with others in the supply chain sets the foundation on which efficiency targets can be set, measured and reviewed. This provides the basis for contract price and future service level agreements. Pre-planning, sound organisation and active operational management are vital.

## Maximising Effectiveness While Minimising Cost

Because customers often consider RDC operations as a cost, rather than a profit centre, there is a real tension between service and cost. For example, critical upgrades and improvements to the WMS to improve warehouse efficiency might be denied, due to the capital investment necessary. While this type of pressure or

questionable economy exists in RDC operations, some businesses have responded positively to this challenge, consolidating into a series of fewer, larger RDCs and investing heavily in management and operating systems that maximise efficiency.

# Minimising the Environmental Impact of Operations

Although environmental performance may not be at the forefront of every RDC operation, and probably not accounted for in any normal financial review, it is increasingly becoming a part of everyday business life as well as being a key Government policy area. This manifests itself in environmentally based taxation and legislation, both in the operation of transport and in the way in which packaging and waste are dealt with. Many companies also wish to demonstrate to customers that they take their corporate environmental responsibilities seriously. Making the most of the environmental benefits arising from improvements in operational efficiency can offer win-win opportunities.

For example, the Co-operative Group recycled 550 tonnes of plastic packaging waste from its stores through three of its RDCs in 2001. This had a direct positive impact on the environment and helps to demonstrate to the Co-operative Group's customers that the company is an environmentally aware retailer.

## 3 Inbound Activities

#### Figure 3 Inbound Activites



If RDCs only sourced product from one location, it would probably be quite easy to manage inbound deliveries. However, most RDCs tend to consolidate deliveries from many different suppliers, and this can make inbound operations complicated.

Inbound movements are just one operation in a greater 'flow' and are often driven by outbound operations (i.e. customer orders). Obviously, the effectiveness of outbound operations will determine how much product can be brought into the RDC in the first place.

## 3.1 Intake Planning

Intake planning is the first key stage in the operation of an RDC. This refers to the activities taking place before goods actually arrive at the warehouse - booking in deliveries, planning resources for intake and linking these with the resources needed for outbound movements.

The key stages in intake planning are outlined in the table below.

Table 1 Intake Planning: Key Stages



Share booking information with relevant parties



Link intake with outgoing requirements, (e.g. for cross-docking)

While the task of booking-in deliveries may seem straightforward, it is important because if deliveries are not co-ordinated properly, they can have significant repercussions on other aspects of your and suppliers' operations.

It is essential that the booking system in place is robust and effective to reduce the likelihood of any errors. Good communication is essential when booking delivery times to avoid any misunderstandings. RDC operational staff need to be aware of, and be trained in, the system for taking a booking. The party making a booking - possibly the supplier or the contract haulier - should be given clear information about the agreed delivery window, any special delivery instructions and be issued with a booking reference number for verification. Bookings are as important as any other aspect of RDC operations, such as vehicle scheduling, and should be given just as much attention.

As far as possible, delivery schedules should be designed in a way that maximises staff utilisation. For instance, scheduling vehicles and loads to arrive evenly over a delivery period and not in 'bunches' can help minimise staff downtime.

It is important that scheduling information is shared among other relevant parties in the supply chain. Many supply chain planning and warehouse management software packages provide 'visibility' so that suppliers and transport operators can log in and see exactly when and where deliveries need to be made, as well as specific booking times. This can help reduce delays and increase throughput.

### **First Ideas for Action**

#### Inbound Transport Operators and Suppliers

Talk to the RDC manager about your scheduling needs. If certain time slots are better for your operation, they may be able to accommodate you

### **RDC Operators**

Look at your shifts. Can you change to meet demand better? If the length or start time of shifts could be changed during peak periods such as the end of the week, would this meet demand better?

Because most tasks in RDCs are performed by people, this makes staffing a central consideration in the forward planning process. Fluctuations in demand mean that resource requirements can vary by month, week, day, or even by the hour. Therefore, staff levels need to be adjusted quickly to meet seasonal demands. The case study opposite shows how Waverley TBS was able to Case Study 1: Improving Performance through Better Human Resource Management at Waverley TBS



Waverley TBS, a subsidiary of Scottish & Newcastle, is the largest wine and spirits wholesaler to the on-licence trade in the UK. The company mainly imports wine in bottles and in bulk from around the world, distributing to hotels, restaurants, pubs and directly to secondary distribution depots run by Scottish & Newcastle and other companies. The company's RDC in Tyne and Wear employs 75 people and is one of two facilities serving the UK market.

One of the biggest challenges for the company has been the highly seasonal nature of demand for

product. Apart from longer seasonal cycles, such as the Christmas period, the RDC also has to deal with peaks and troughs in weekly cycles. High levels of demand are experienced on Tuesday, Wednesday and Thursday, but significantly lower levels for other days. This means planning can be difficult and can create problems in meeting orders. Added to this is the fact that the RDC holds 1,800 different product lines or stock keeping units, which can make outbound activities time consuming and slow. Investing in additional warehouse capacity was an expensive option the company was keen to avoid.

In 2003, the company decided to implement a range of improvements in human resource management to address these problems. It was decided that more flexible shift patterns were needed to cope with the changing demand cycles. On Mondays, warehouse staff are now given the option of working a shorter shift provided they make up the hours on Tuesday to Thursday. So far, staff have responded very positively, and it means that additional resources can be used without the expense of overtime. In addition, employees are contracted not to take holidays in November and December, which is the busiest period for the RDC.

RDCs are one link in a tightly managed chain, so a

on other areas, such as product despatch. Good management of inbound vehicles means that transport

problem at vehicle reception can have knock-on effects

improve product intake (and subsequent stages of internal product management and despatch) through improvements to human resource management.

## 3.2 Vehicle Reception

Vehicle reception is the actual process of a vehicle arriving to be unloaded at the RDC, and encompasses a wide range of procedures. These include controlling the flow of vehicles, dealing with queuing issues, advising drivers about site requirements and delivery bays to be used, and responding to problems such as vehicles running late or arriving early.

The key stages in vehicle reception are outlined in the table below.

Table 2 Vehicle Reception: Key Stages

	Arrival at RDC		Advise driver of:
• •	Validation of booking Advise receiving	:	Site procedures Unloading point and time Holding area (if applicable)
	point of arrival	•	Any outbound controls

and warehouse labour can be used more effectively but, most importantly, that outbound operations (which may actually be carried out by the same vehicles) are more efficient, meaning that product gets to the shelf or to the customer when it needs to. Establishing fixed delivery windows can allow you and your suppliers to better manage certain fast moving goods, such as fresh foods. It should, however, be remembered that these fixed windows might be inflexible for the delivering haulier.

A common problem for hauliers servicing RDCs relates to the amount of time spent queuing to be offloaded either on or off site. Many complain about the limited entrance capacity at RDC sites and often the need to queue on the public road outside. It is important, therefore, that simple procedures are developed and outlined to operators in advance to ensure drivers know what to do if they encounter a backlog on arriving at the RDC and to reduce the potential for causing obstructions or nuisance to other road users. For example, can they be redirected to suitable off-site parking to wait to be called forward rather than park at the roadside? While waiting, can they use RDC facilities? A diverse range of vehicles may service an RDC. Large single drop consignments from suppliers are likely to be delivered in articulated vehicles with bodies appropriate for the types of product being handled, for example, insulated or refrigerated vehicles for certain foodstuffs. Single pallet or less than full load consignments, on the other hand, may arrive in smaller rigid vehicles, so it is important that facilities exist to offload a range of different vehicle types in as safe and efficient a manner as possible.

Although there may be inherent risks involved in preloading trailers, such as damages to product or theft,

increasing the number of trailers available might reduce motor vehicle turnaround time and actually lead to increased utilisation of drivers and tractor units. Fundamentally, trucks are designed to be on the move, rather than to offer additional warehousing space. This has become ever more important with the advent of the working time directive and its likely impact on road transport operations, as efficient use of available driver time resource becomes more critical.

The case studies below reveal how these ideas helped improve operations at Scottish & Newcastle and at Vitacress.

## Case Study 2: Improved Intake Planning at Scottish & Newcastle



Scottish & Newcastle is an international brewing group exporting products to more than 60 different countries. Its RDC in Normanton, West Yorkshire is one of four in the UK, all operated by ACR Logistics, and employs approximately 160 people. The RDC holds product from both local operations as well as foreign suppliers, which are assembled and despatched to the off-licence trade as well as secondary depots for onward distribution to hotels, restaurants, pubs, clubs and small regional wholesalers.

Brewing production sites often have large runs of product, and the RDC is expected to hold the additional volume. According to Jan Vermeulen, Business Project Manager North of ACR Logistics, the RDC was not always well equipped to deal with the demanding production schedules of the breweries. "We had a number of problems that were restricting our throughput. Trailer turnaround times sometimes took as long as five hours, staff recruitment was not effective, and our general procedures and systems were letting us down because we were getting a very high rate of returns."

A wide range of changes was implemented to operations to improve the flow of product into and out of the warehouse. The company increased its trailer pool to enable the warehouse to manage its downtime better. This meant drivers could drop trailers off and immediately pick up a preloaded trailer. Changes were also made to the way core products were handled. Traditionally, these were taken into the warehouse, put-away, picked and sent out on the same day, which created a lot of needless double handling. The distribution system was changed so that core products were transported directly to secondary distribution centres, and not via the RDC.

As a result of these changes, productivity has been improved significantly. Inbound activities can now be managed more effectively and product is despatched on time. Levels of returns have dropped, which, in turn, has reduced the time spent on re-work.

# Case Study 3: Fixed Delivery Times at Vitacress

Vitacress is Europe's largest grower/packer of watercress and specialises in baby leaf salads and other vegetables. The company supplies a number of major UK supermarkets, and sources raw materials locally and internationally. Like many suppliers of fresh produce, the company operates on a JIT system which means product is only prepared when there is a confirmed customer order. The company's distribution manager, Peter Bray, says that this means the whole product system revolves around predicted run times to delivery points. "To provide stability to our own operation and to make sure our customers' needs would be meet, we negotiated fixed booking times at the RDCs we deliver to. This means our customers always receive product at its freshest and our drivers have more certainty regarding their shifts. In addition, this has also opened the door for back-loading opportunities, which has helped us lower transport costs."

#### **First Ideas for Action**

#### **Inbound Transport Operators and Suppliers**

- RDCs are often under pressure to move very large product volumes. Make sure your vehicles arrive at the RDC on time. If you experience delays, alert the RDC as early as possible. Look for ways to improve scheduling to reduce variability of travel times (e.g. avoiding peak hour traffic where possible)
  - Talk to your drivers. Make sure they understand the need to be aware of operational and health and safety site procedures at the RDC. For example, do they know who they should speak to if they have to change a tyre on the site? Also ensure that they are well aware of procedures and penalties relating to late arrival

## 3.3 Product Receipt

Product receipt involves the transfer of goods from vehicles into the warehouse. The goods are subsequently inspected for quality and checked to ensure that the correct quantity of items has been delivered. The final step involves a confirmation of delivery being provided to drivers or suppliers.

The key stages in product receipt are outlined in the table below.

Table 3 Product Receipt: Key Stages

- Arrival at unloading point
  Validate documentation
- Validate products and quantity ordered
- If accepted, check load for quality, quantity, best before dates and pallets received
- If not accepted, procedures applied for exchange or replacement
  - Confirmation of delivery to driver

#### **RDC Operators**

- Keep your suppliers 'in the loop' and advise them of any delays or problems you experience that might affect them. This can help minimise their costs which will benefit you in the long run
- Make sure your procedure for vehicles intake is equitable and transparent. If some drivers discover they can 'sneak in' by turning up 30 minutes early, this causes disruption to your operations and creates a source of tension between you and some suppliers
- Provide accessible facilities (e.g. restrooms, coffee and tea) for incoming drivers, as you would for your own employees

A good balance between accuracy and speed is the critical issue when it comes to product receipt. Speed is important because products cannot normally be confirmed as received unless they have been checked against a consignment note (although in reality some consignees may accept products unchecked). Accuracy is critical because if a mistake is made counting or scanning, it costs time and money to investigate errors that may not become evident until later in the process. Ultimately, these problems represent inefficiencies that make it more difficult to get products to your customers.

Good clear product labelling is, of course, vital to help ensure accuracy at the time of product receipt. The information on the product label in terms of product description, quantities and destinations should be consistent with the details contained in the consignment notes.

It is important that there is a system in place to deal with lost consignment notes. It is inevitable that on some occasions drivers will turn up without the correct paperwork for their load. A decision needs to be taken as to whether or not to accept the load and the paperwork forwarded later. If the paperwork could be faxed through, will this be acceptable? If so, is there a system in place to make sure the faxed copies get from the office to the unloading bay?

Technological solutions can help overcome some of these problems and are likely to become a more attractive option as the costs of associated hardware and communication reduce. For example, electronic data interchange and radio frequency identification can help reduce or eliminate inaccuracies arising from manual counting procedures. Bar coding technology is widely available and generally very affordable and can also be used to improve product intake. Instead of manually counting unloaded items, they can be scanned in minutes or even seconds, with 100% accuracy.

Technology may not be appropriate for all types of operations (such as low volume goods), so it is worth noting that better practices in manual handling systems can also help improve your operations. For instance, making lists used for cross checking clearer and easier to read, for warehouse staff, may reduce errors significantly.

# Case Study 4: Radio Frequency Identification at Vitacress

Although Vitacress and its customers run efficient operations, discrepancies between proof of delivery notes and checks done at product delivery are a fact of life. Regardless of who might have made the mistake, it takes alot of time on both sides to resolve. Technology, however, is helping overcome this problem.

One of the company's major customers has recently started using radio frequency identification at one of its RDCs. The system involves a tag being attached to each tray of salad products loaded on moveable racks, or 'dollies.' Each tag contains information about the product, its use-by date and Vitacress' supplier code. Soon, additional information will be added relating to the depot and the store to which the product is destined to go.





When a load arrives by lorry at the RDC, the dolly is taken out and pushed through a port hole which instantly scans the contents. This is much more accurate than other methods, which rely on someone with a scanner to physically scan every tray. This has virtually eliminated discrepancies at the point of receipt. The system is also web enabled, so Vitacress' distribution manager can log onto his customer's website in the morning to find out if deliveries arrived on time on the previous day.

Vitacress has just invested £35,000 in a system to write to the tags, but should recover the costs within two years as a result of reduced turn around times. In addition, there is also a significant cost saving for the RDC because product receipt is quicker and more accurate. Thesystem means there is greater transparency for the RDC, suppliers and customers because everyone can see exactly where orders are.

## First Ideas for Action

#### **Inbound Transport Operators and Suppliers**

Emphasise the importance of RDC procedures to your drivers. Make sure they always have paperwork ready when unloading. Ensure drivers are aware of procedures for dealing with consignment note alterations, which can be a common point of conflict

#### **RDC Operators**

- Try to minimise turnaround times for your suppliers by unloading vehicles as quickly and as safely as possible. Look at technology such as bar coding and radio frequency identification that may help you speed up the process
- Talk to your supplier and make sure they understand the system you have for dealing with order discrepancies/consignment note alterations

## 4 Internal Product Management

#### Figure 4 Internal Product Management



Internal product management refers to the set of processes in which unloaded products are prepared for onward movement, or placed into storage. Warehouse design, internal IT systems, storage systems and handling equipment all affect the performance of an RDC, but once developed or installed, they tend to be difficult and costly to modify. It is therefore important that these areas are carefully considered from the outset.

Capital and infrastructure are long-term investments, so it is important to balance present systems costs and benefits with more strategic considerations. Will the storage system and handling equipment you use now, be suitable for other types of products which you may carry in the future? Is there sufficient additional capacity in the RDC to allow your business to grow? Getting these things right from the beginning can help avoid wasting resources in the future.

The key stages in internal product management are outlined in the table below.

Table 4 Internal Product Management: Key Stages

- Cross-docking where incoming products are already prepared for despatch
- Incoming products for storage allocated to specific areas in the warehouse and recorded in the WMS
- Products for storage put away by mechanical handling equipment and confirmed in the WMS

## 4.1 Warehouse Design

If you are an RDC manager, it is probably unlikely that you will be able to start with a new and 'ideal for purpose' facility. It is more likely that you walk into a well-established facility that has evolved over time. That does not mean, however, that principles of good design and layout have to be ignored. By making simple changes to your workspaces you may be able to increase productivity by enabling staff to get more quickly to the items they need. The way products are organised in racking, shelves and on the warehouse floor is critical. Without a well-structured system in place, deliveries are likely to be missed and products will inevitably go missing or get damaged.

Important considerations in warehouse design include:

- Maximising space utilisation
- Minimising and controlling movement
- Providing a safe work environment

Of course, it is important to remember that when changes are made to warehouse floor layout or product location, staff need to be well briefed. People become used to finding items in the same place, so when changes are made, minor disruption can be experienced as staff become accustomed to the changes.

Many RDCs now use 'warehouse simulation' software packages as a means of modelling different layouts and scenarios. Basic modelling packages can be purchased off the shelf, or alternatively, specialist consultants can be used to carry out larger modelling on an operator's behalf. Keep in mind, however, that as well as being potentially expensive depending on the level of detail required, any modelling solutions need to be specific to the individual warehouse, and software packages may need to be tailored to your own operations.

Although technology can offer a helping hand in warehouse design, simple initiatives can often be the most effective. For example, a colour-coded system can be used to show when cages or pallets are due to leave the warehouse, and can help highlight those that might be late. Working areas can be arranged in a way that minimises cross movements. This can help make operations more efficient and safer, by reducing the potential for collisions between people and handling equipment. It may make a great deal of sense to have fast moving items in more accessible areas of the RDC than slow ones.

The Henkel Loctite case study shows how improvements to the interface between vehicles and the warehouse can improve vehicle loading and turnaround. The Costco case study provides an example of how poor physical layout can delay picking operations and can have an impact further down the supply chain.

## Case Study 5: Flexible Loading and Unloading Facilities at Henkel Loctite Adhesives

Henkel Loctite Adhesives is an international company that manufactures consumer products for the DIY and stationery retail, commercial and educational markets. The company's UK NDC is based in Winsford, Cheshire.

Several years ago, the company's business volumes increased to the point where it needed to consider contracting external storage. When constructing their own larger building, management looked at the basic warehouse infrastructure to see where they could achieve some quick wins to improve vehicle turnaround times and throughput. The company invested in loading docks with 'dock levellers' -

## Case Study 6: Warehouse Layout -What to Avoid



Physical layout becomes increasingly important as more and more products lines are carried. The logistics team at Costco, a cash and carry company, conducts regular visitsto other RDCs to see if they can find ways to improve their own operations. Recently, they visited an RDC operated on behalf of a supermarket and according to Logistics Manager, Ian Chalmers, saw problems caused by a fundamentally flawed warehouse design. "It looked to us as though very little thought had gone into the way products were arranged. For instance they had vegetables sitting right next to DVDs, which meant that they were inevitably packed into the same cages. At the store end, no one would have wanted these two products together. It took one poor person at the RDC 45 minutes to do a pick, because they had to go up and down so many different aisles. It was useful for us to see this because we used the visit to create a case study to show managers how we could improve our own picking operations."

devices designed to bridge the gap and level out the height differences between vehicle beds and building floors - as well as full size access doors to enable vehicles and trailers to be reversed inside the building. This provided the facility to load and unload trailers from the rear or the side, and all in conditions that protect products and employees.

The levellers also provide the flexibility for transport operations to deploy varying vehicle/trailer types (such as double deck trailers) to suit different operational needs of customers. In situations where product is placed adjacent to the trailer parking area within the warehouse, the system means that side loading and unloading can be completed in just seven to eight minutes with two forklift trucks. This has helped increase throughput and lower unit costs significantly.

### First Ideas for Action

#### **RDC Operators**

Conduct a warehouse review. Look at the physical layout and understand why it is used that way. Are there any clear bottlenecks? Remember to consult your warehouse staff because they have the most experience in dayto-day operations

## 4.2 Warehouse Management Systems (WMS)

The main purpose of a WMS is to control the movement and storage of materials in a warehouse. It is an IT system designed to control the movement of stock into, through and out of a warehouse. It is normally based around software, a server and PCs, and often incorporates mobile transaction recording devices, either hand held or mounted on mechanical handling equipment. A WMS can be thought of as the 'command centre' that links different systems together and monitors incoming goods, customer orders and stock levels. A WMS can help you manage your resources better and have positive benefits throughout your operations, for example, reducing labour costs, increasing throughput and storage capacity and enabling more responsive customer service. It is important to remember that the success of a WMS depends entirely on good quality management and that, as with any IT based system, there are inherent risks in relying solely on a WMS. If the system goes down or develops a bug, then warehouse operations can be severely affected. RDC operators need to make sure that they have adequate system support, on a 24-hour basis if the operation requires it. Any WMS should also be flexible enough to allow for upgrades at a later date. Ideally, the WMS should also be compatible with other IT systems within the RDC operation, such as delivery scheduling software.

Because a WMS manages and tracks all product flows, it is integral to good inventory management. When inventory data is updated in real time, stock can be kept low, but at a level that enables demand to be met adequately. While it is beyond the scope of this guide to cover issues relating specifically to inventory management, it is worth remembering that keeping inventory at extremely low levels may not always be the best policy if it means you are forced to transport smaller quantities of product frequently.

The Akzo Nobel case study presents an example of a WMS interfaced with mobile radio data terminals (RDTs) - these are robust computing devices used to send and receive information over a wireless data network. There are many of these systems available on the market, with various levels of sophistication and additional features. These can include the ability to interface with other IT systems, like supply chain management software or enterprise resource planning systems, which are used to handle the manufacturing, logistics, inventory, distribution, shipping and accounting processes.

## Case Study 7: Warehouse Management Systems at Akzo Nobel

Akzo Nobel is an international paint and decorative coating manufacturer with operations in approximately 60 countries. The company is split into three different divisions (Coatings, Pharma and Chemicals) and has manufacturing plants and RDCs in a variety of locations throughout the UK.

The company's RDC in Warrington operates 24 hours a day, receiving bulk products from manufacturing locations in the UK and mainland Europe for storage, picking and supply to trade customers (e.g. builders).

### Replenishment

Radio data terminals (RDTs) are an integral part of the distribution centre's WMS, and have allowed overall operations to be managed more effectively. After products are identified on receipt, the WMS reviews stock levels and tells fork-lift truck drivers where they need to be stored by sending a 'put-away' location to the RDT. The system makes decisions about where products should go based on product throughputs (i.e. sales), physical characteristics (such as weight), current stocks and available space. When products have been moved into storage and tasks have been completed, it is confirmed by the driver's RDT, and inventory records in the WMS are automatically updated.

#### Picking

Outbound requirements are also fed into RDTs that are used by pickers. The WMS provides instructions about the products that need to be collected and where they need to go. The RDTs are used to confirm items that are picked, and inventory is again updated. This system enables work to be centrally monitored on one computer screen, which means that output can be easily adjusted in real time.

#### **System Benefits**

Because the system manages all picking and packing operations, Akzo Nobel was able to use the data to reorganise the warehouse in such a way as to minimise travel distances by operators (i.e. having most frequently picked products closer to outbound bays). It also avoids the need for operators to visit the central control room repeatedly to receive instructions and confirm actions. This has reduced the average picker travel distance by 90 metres per assembled pallet, resulting in lower costs and increased throughput. More generally, the company's WMS has helped it reduce inventory levels, but at the same time, be more responsive to customer demand.

#### **First Ideas for Action**

#### **RDC Operators**

- Look at how well your WMS is interfaced with other company systems. Does the system automatically re-order stock, or does someone take data off the system and re-input it into another system? Look for areas where paperwork and re-typing of data can be eliminated
  - If you don't use a WMS, evaluate the costs of investing in one. Quantify and cost the time you currently spend updating inventory and generating orders to replenish stock. While the cost of a WMS may seem high, it may reduce a great deal of paperwork and pay for itself within a few years

## 4.3 Storage Systems

Your storage system may already have been established, but it may be worthwhile to review the equipment that you use to see if it is still the most effective. The main types of storage systems include:

- Block Stacking the storage of product in rows, so that each row touches another, i.e. there is no clearance or wasted space between rows. Block stacking conserves space, but should only be used when storing large quantities of an item
- Adjustable Pallet Racking one of the most popular of all storage systems for pallets. The system consists of vertical frames and horizontal beams which are adjustable in height to accommodate a variety of pallet sizes
- Drive In/Drive through Racking provides an ideal solution for crushable goods that cannot be block stacked or for pallets with predictable stock movements, as stock rotation is operated on a 'first in, last out' basis. Fork lift trucks drive into the installation to pick up or drop pallets, which are stored one behind the other on specially cantilevered rails
  - Very Narrow Aisle Systems require the use of specialised handling equipment and can further increase the storage capacity of warehouses beyond narrow aisle and standard wide aisle systems. Very narrow aisle systems make it possible to store and retrieve unit loads in aisles as narrow as 1.6 m (63 inches)
- High Bay Racking storage up to the eaves of the warehouse, often up to around 25 metres in height

Obviously, one of the key trade offs lies between the need to maximise the space used, but at the same time provide easy access to the products stored to minimise handling. The physical characteristics of the goods themselves will determine the type of system used, but investment decisions should be guided by a number of considerations:

- Ground level space and height limits available
- Throughput speeds required
- Future capacity and flexibility requirements
- Comparative costs

The case study opposite shows how mobile and very narrow aisle storage systems can be used to increase storage capacity and utilisation of warehouse space.

When considering mobile racking, the following must be taken into account:

- The more specialised a warehouse is, the less flexible it is and potentially the more difficult it is to adapt to future needs
- Training is essential for staff using mobile racking
- There are potential health and safety issues due to the system's moving parts
- A contingency plan needs to be put in place in case the system breaks down

## 4.4 Handling Systems

There are many different forms of handling equipment available for materials. The key is in knowing which type of equipment is most appropriate in a given context and which is most suitable for your operation. Like most other equipment used in the warehouse, the physical characteristics - size and weight - of your products will determine what you need to use. The distance products need to be moved will also be a factor.

For most RDCs, the type of equipment used generally comes down to decisions between:

- Counterbalance trucks, reach trucks or pallet trucks
- Manual, electric, diesel or gas power sources
- Short and long term costs of the various options
- Appropriateness for the specific operation

Counterbalanced fork lift trucks are robust and quick, with capacities that can range from 1,000 kgs to about 45,000 kgs in the case of container handlers. Generally, these trucks are used to lift and stack to heights of up to around 5 metres. The load is carried in front of the front Case Study 8: Improving Warehouse Utilisation through High Density Storage (Turners (Soham) Ltd and Bibby Distribution Ltd)



#### **Mobile Racking**

Turners (Soham) Ltd is a third party logistics company specialising in temperature controlled transport and distribution activities. The company's main

RDC in Newmarket, Suffolk, has 49 loading bays and approximately 9,290 m<sup>2</sup> (100,000 sq ft) crossdocking space. More than 700,000 cases are picked each week for a wide variety of clients.

This site uses a proportion of mobile racking in the frozen store. This has enabled the company to maximise storage density. Each length of racking can be moved and 'parked' close together. Whole aisles can be moved to allow fork lift truck access between racks to store and retrieve pallets. The system has doubled the storage capacity of conventional wide aisle racking. As an added benefit, the new racking system maintains temperatures more effectively than others because of the higher density of product storage, which has reduced power consumption.

wheels, so a counterbalance weight is built into the rear of the truck. Turning circles for medium capacity counterbalance fork lift trucks can typically be about 4 metres, limiting the amount of work which can be undertaken in tight spaces.

Reach trucks, on the other hand, may only require a turning circle of about 2.5 metres, depending on the size of the load. Reach trucks are electrically driven and the load is carried partially within the area between the truck wheels. This means the overall length of a reach truck is likely to be shorter than that of a counterbalance truck and there is no counterbalance weight. When a reach truck lifts or sets down a load, the whole mast slides forward bringing the forks forward to a position where they can access the load. The capacity for reach trucks is typically around 1,000 kgs to about 4,000 kgs, with a maximum lift to about 8 metres.

The hand pallet truck is the most commonly used truck for horizontal movement of pallets. Cranking the steering arm pumps the truck's hydraulic system, lowering the front wheels and raising the load enough to allow movement. Hand pallet truck lifting capacities can go up However, as is the case for any storage method, there are trade-offs that need to be made. Care is needed to store items so as to minimise rack movements, and this can be difficult without a good WMS. The equipment is also a lot more expensive than normal racking systems, involves higher maintenance costs and specialist mechanical handling equipment. Despite these issues, however, the increased storage capacity means that the investment will pay for itself within five years.

#### **Very Narrow Aisle**

Bibby Distribution Ltd is one of the UK's leading independent third party logistics companies, and has 41 operating centres across the UK. The company's RDC in Bicester, Oxfordshire, is dedicated to a single client in the brewing industry. The site operates with very narrow aisle racking layout, which has 25% more pallet space than conventional wide aisle racking. Although this achieves increased capacity due to its denser storage profile, the downside is that it can act as a limiting factor on speed of throughput. These problems have been overcome through better forward planning and 'dual cycling' (putting away and retrieving pallets during visits to each aisle). Because the warehouse can store more, the costs of additional storage required at times of peak volumes can be constrained.

to around 2,000 kgs and are ideally for use only on good condition horizontal floors. For more frequent moving over longer distances or inclined floors, electric pallet trucks may be preferable. These can be pedestrian controlled or ride-on, with load capacities up to around 3,000 kgs.

Manual trolleys and pallet trucks are relatively inexpensive and easy to manoeuvre in tight spaces, but certain factors need to be taken into account when using manual equipment in an RDC environment:

- The performance of manual equipment can be affected by the surface on which it is used
- Its ease of use can be affected by any slope
- Covering large distances from aisle to aisle using manual equipment can be time consuming and energy intensive
- There are health and safety related issues concerning the use of manual equipment and operational risk assessments should be carried out and appropriate training provided to staff



Compared to manual equipment, powered vehicles often require more space, but have greater lift capacity and can reduce travel time within the warehouse.

In terms of different fuel types, diesel and gas powered vehicles provide high levels of power and lift which can enable better use of space in hard to reach areas, but may pose problems if used in confined indoor areas. Electric vehicles are cleaner and can improve the quality of warehouse space, but may not provide the same performance as gas or diesel vehicles and require dedicated charging facilities.

Choosing the most appropriate equipment for any application is important to make sure the operation runs as efficiently, effectively and safely as possible. Time spent on equipment specification and selection is, therefore, time well spent.

One of the major considerations in acquiring and using handling systems and equipment is likely to involve costs, both in terms of up-front investment and ongoing running costs.

The following financial aspects should be considered:

- Capital investment cost
- Possible residual or resale value
- Operating costs
- Costs relating to training staff
- Energy consumption
- Maintenance
- Cost of consequential loss through equipment downtime
- Savings resulting from the use of the equipment

The case study opposite shows the issues considered by Bibby Distribution in deciding on the most appropriate handling equipment to use in its chilled warehouse.

#### **First Ideas for Action**

#### **RDC Operators**

The market for handling and storage systems changes rapidly. Look at your systems regularly and find out if they are still the most appropriate type for your product mix. Ask your warehouse staff how effective equipment is, and how they think it could be improved

## Case Study 9: Materials Handling Equipment at Bibby Distribution Ltd

Bibby Distribution Ltd was interested in using electric counterbalanced fork lift trucks for its third party logistics facility in Bicester due to their lower running costs and they produce no emissions (improving air quality in the warehouse). When considering longer term costs, however, the company choose gas powered trucks. This decision was made for several reasons. Firstly, the company would have needed to construct a special area for battery recharging outside the warehouse because, if placed inside a chilled environment, the heat from charging equipment would have increased power consumption and the risk of contamination. Secondly, there would also have been an increased health and safety risk due to moisture build up on the charging equipment. Lastly, the lower air temperature would also have slowed the charging rate of the batteries. By investing in gas powered fork lift trucks, the company has been able to improve productivity without the need for additional capital investment. Its very narrow aisle trucks are electric, but receive power from a continuous conduit - a 'buzz' bar - attached to the very narrow aisle racking.

## 5 Outbound Activities

#### Figure 5 Outbound Activities



Although all operations in an RDC can be considered important, outbound activities represent one of the most critical stages because they involve goods being transferred from you to your customers. If a product ordered for stock is late, it may not have any discernable impact on business, however, if a product does not arrive when a customer needs it, they may become dissatisfied and switch to another supplier or brand.

The effectiveness of your outbound activities will influence, and be influenced by, the effectiveness of other operational stages such as inbound activities and internal product management. The three key stages in an outbound distribution system are planning, product and load preparation, and product despatch.

## 5.1 Outbound Planning

Outbound planning involves the processes that take place before goods actually leave the warehouse booking deliveries out of the RDC and in with their end destination, planning resources to handle workloads and linking these with the resources needed for inbound movements.

The key stages in outbound planning are outlined in the table below.

Table 5 Outbound Planning: Key Stages

- Establish schedule and bookings
- Share booking information with relevant parties
- Prepare resources for planned workloads
- Link intake with outgoing requirements, (e.g. for cross-docking)

Like unloading and put-away, most tasks relating to load preparation and despatch are performed by warehouse staff, which means that adequate planning of human resource is critical. Staff attitudes and approaches can vary from shift to shift and RDC managers should try to ensure all staff are consistent in their approach to systems and procedures.

To maximise throughput, many large RDCs use additional trailer capacity to allow them to prepare loads throughout the day. This can be a particularly useful strategy in the context of high volume cross-docking operations, but may require significant capital investment. Although an increase in the trailer fleet for preloading operations may lead to reduced utilisation per individual trailer, it can also lead to reduced turnaround times for tractor units and, therefore, more efficient use of the fleet's motor vehicle resource. As with inbound planning, this may be particularly useful with the advent of the working time directive (WTD) and its likely impact on road transport operations, as efficient use of available driver time resource becomes more critical.

## 5.2 Product and Load Preparation

Load preparation is the core activity of outbound operations, and involves preparing orders from items held in stock (picking), or from products recently bought into the warehouse but not put into storage (cross-docking). In an ideal world, cross-docking would be used for all products moving through a warehouse because it involves much less handling than picking. Picking tends to be more labour intensive, but is unavoidable in many situations because customers will not always order sufficient quantities to allow crossdocking (which is why many RDCs exist in the first place). Once loads are marshalled, they are checked against orders or despatch documentation to ensure quality and accuracy.

The key stages in product and load preparation are outlined in the table below.

- Table 6 Product and Load Preparation: Key Stages
  - Match cross-docked products with outgoing delivery documentation and move to load marshalling area
  - Pick stored products for despatch based on data held in the WMS and move to marshalling area
  - Complete marshalled loads checked against despatch documentation for accuracy, completeness and condition

## 5.3 Picking and Packing

By their very nature, picking and packing activities tend to be more time consuming and labour intensive than cross-docking. As order quantities become smaller and stock keeping units increase, this becomes even more time consuming and costly. The central aim of any picking operation should, therefore, be to prepare products for despatch accurately with a minimum of handling to reduce damage and potential for pilferage, within the shortest possible time frame. The case study below provides an example of how technology and redesigning warehouse processes can help to achieve this.

Voice picking technology is now being used by many different companies and there is a wide range of suppliers of this equipment. Voice-directed picking follows the same process as a radio frequency based scanning system, except that picking information is delivered through the picker's headset via a wireless radio frequency link from the host WMS or picking programme, rather than through a terminal screen. A typical pick operation starts with the picker hearing instructions for the next location. Upon arrival, they confirm that the location is correct by speaking either the last few digits of the location's barcode or its check digit. If the location is correct, they hear the quantity to be picked, responding with a phrase such as 'got it' when they are finished and ready for the next task. At any point in the process a picker can request more information; for example, asking that instructions be repeated or the product described. If the picker reports an incorrect confirmation number, he or she is advised and the host system waits for correction.

Two different technologies exist - speaker dependent and speaker independent.

## Speaker Dependent

Speaker dependent voice technology stores a template of each user's voice speaking the limited number of words that will be required in the picking operation. It takes about half an hour to 'train' the computer by speaking each word used in the picking cycle several times, until the system understands each user's unique pronunciation. The advantages are that this system allows any style of speaking with any accent or in any language to be recognised even in noisy environments.

# Case Study 10: Improved Fulfilment at Waverley TBS



As well as operating in a market where demand can be highly seasonal (see intake planning case study in Section 3), wine and spirits wholesalers such as Waverley TBS are challenged with managing ever increasing numbers of stock lines. At the company's RDC in Tyne and Wear, more than 1,800 different product lines or stock keeping units are held, which can make outbound activities time consuming and slow. As a result of sustained business growth, the company needed to find a way to improve its distribution system without investing in additional warehouse capacity.

As a result of holding so many product lines, single picking represented a significant component of operations. This was always very time consuming because staff had to drive around the warehouse on pallet lifters collecting items individually. In 2003, the company, therefore, decided to invest in a new system for its picking operations.

To speed up operations and improve output, a semi-automated system called Fast Alley was installed for single bottle picking operations. This involved a conveyor belt system being fitted between racks of products. Rather than having individual staff members filling cartons, they could instead be moved along the belt and be filled by people located at different points along the line. As well as improving throughput, the system also simplified operations and eliminated cross movements within the warehouse. When picks are complete, cases are weighed and shortages are identified, and cartons can then be directed to a special area for checking. Of 35,000 separate picks done each week, there has been a reduction to an average of just 20 picking errors from 85 and substantially less breakages than previously experienced. Overall, productivity increased by 30%, and by more than 50% for split case picking.

There were also a number of indirect benefits from the system. Because it was easier to learn than the previous system, training was reduced from a week to three days. In addition, the conveyor could also be used to remove empty boxes from the warehouse, which when sorted, provide the company with revenue of £50 per bale. The disadvantages with this system are the need for retraining and for individual speech units. Many things will affect the sound of a voice, from change of mood to health. When changes happen, the template may cease to recognise the changed voice. For example, a worker with a cold may have to retrain their system on some words and then retrain them back when their cold passes. Additionally, at the start of each shift, each individual picker must receive the correct voice template to ensure voice recognition.

## Speaker Independent

Speaker independent systems, on the other hand, do not require unique voice templates. They use the broad voice recognition rather than unique templates. Any user can use any speech unit, so there are no logistics issues at the start of each shift. In addition, there is no picker time spent training and retraining the system. The disadvantage with this system may be that it is language specific and may not cope as well with speech variations and accents. The benefits of using voice systems obviously vary from company to company, but significant improvements in accuracy and productivity have been frequently reported across a range of different industries. Although capital investment may be significant, improvements in productivity and reductions in errors have been reported to lead to payback within as little as six months, where more than one picking shift is operated. If single picking shifts are operated, then payback in improved efficiency over one year may be a more realistic expectation.

While the value of technology is not in doubt, it is worth remembering that it is possible to make significant improvements to your operations by other means. For example, the case study below shows how 'store friendly' units of distribution can help improve productivity further down the supply chain. Quality procedures undertaken by all staff throughout the picking and packing process - allowing damages to be identified and rectified at any time - can also be used to ensure products are delivered to customers in the best possible condition.

# Case Study 11: Store Friendly Delivery at Boots



Boots is an icon of the British high street, however, having well positioned retail outlets can sometimes create challenges for transport and distribution, says Kevin Dann, South West DC Group Manager. "Many of our stores are in very narrow streets, which means a lot of our deliveries need to be made by smaller vehicles. Additionally, many of our stores don't have much back shop space, which can limit our ability to get stock in quickly. We are a retail driven organisation so getting the product onto the shelf when it is needed is everything." According to Kevin, roll cages, were particularly problematic. "Roll cages have always been the workhorse of RDC operations, but they can become dangerous and unwieldy as they get old. The biggest problem though is that they tend to take a long time to unload at the retail end. Boots sells a diverse range of products, and when they are all thrown together in roll cages it can be a labour intensive task to unpack them."

In late 2003, Boots made a strategic decision to move away from roll cages in favour of 'store friendly' units of distribution. The company has invested heavily in small interlocking collapsible crates which are now used for single pick operations. Rather than putting all items into roll cages, staff fill crates with common types of products. "So, instead of packing shampoo, mouthwash and electric shavers all in one cage, we now have things grouped together which makes them much easier to unpack at the retail outlets" says Kevin. The crates are packed together in stacks on wheeled dollies and then strapped down before they are put onto lorries.

The system is now fully implemented and in time Kevin anticipates that it will generate considerable savings for the company. "The new crates have taken longer to pack initially, but this will improve as time goes on and staff become more familiar with them. We expect that the crates will help us move product through the system more efficiently, and importantly, will save a significant amount of staff time at the retail end, which means they can spend more time with customers. Even if warehouse costs increase slightly, they will be more than offset by savings at the store end of the system."

## 5.4 Cross-docking

Cross-docking refers to a situation where product received at an RDC is not put into storage, but prepared to be shipped directly to retail stores. This practice is becoming increasingly common through the use of technology that allows suppliers to see what products are needed by end customers (e.g. vendor managed inventory). Cross-docking requires inbound and outbound product movements to be linked closely together, and for an area of the warehouse floor to be specifically dedicated to it. Because it eliminates putaway, storage and selection operations, it can significantly reduce distribution costs. Although product may in effect go out via cross-docking as soon as it comes in, it is important to still record what's been received and what's passed through the RDC. So, systems still need to be in place to check product labelling and accompanying paperwork. The case study below examines an effective cross-docking operation used by cash and carry company Costco.

# Case Study 12: Cross-docking at Costco



Costco is an American based company operating a chain of cash and carry membership warehouses that sell nationally branded and selected privatelabel merchandise to businesses purchasing for commercial use or resale, and to individuals who are members of selected employment groups. The company's business is based on achieving high sales volumes and rapid inventory turnover. Prices are kept low because retail outlets offer a limited assortment of merchandise in set quantities. For this reason, very little handling needs to be done at the company's NDC in Magna Park, Lutterworth. The 14,399.5 m<sup>2</sup> (155,000 sq ft) warehouse is primarily across-docking operation. A purchasing department in Watford consolidates orders from the 15 retail warehouses (outlets). Product is brought into the warehouse each morning and rarely stays in more than 24 hours. Loads are bar coded and arranged in the centre of the warehouse according to their final destination. Theyare then consolidated, stacked and put into trailers, which are parked and picked up the following day. Shipments to Scotland are done via rail because it is more cost effective. Ordering in larger volumes helps keep the prices low and the company also uses its international purchasing

power wherever possible. For example, if US operations order 100 containers of patio furniture, UK operations might order five more on the back of the order to get the same low price. Costco's operations are focused on moving volumes quickly and with a minimum of handling, and there is a high level of awareness of logistics issues through all levels of the company. Unlike many other organisations, Costco's purchasers are highly familiar with minimum order quantities and the way the warehouse operates. They know, for example, how many cartons of tissues fit onto a pallet, and order accordingly to allow minimum handling at the NDC. The drive for efficiency is not just confined to UK operations. Recently, the company developed a model to show overseas vendors how to pack containers to maximise loads. Instead of packing products and then loading containers with pallets, which take up a lot of space, a system is used whereby groups of boxes are clamped together with nylon bands. These can then be unloaded very quickly with special clamps when they arrive at the warehouse. Extra care has to be taken to ensure the load is secure and to reduce any likelihood of damage. The company has also been developing an operational manual for its UK suppliers, based on a similar initiative undertaken for its US operations which was found to be highly successful. The manual instructs suppliers on how goods should be presented, recycling and bar coding standards, how reference numbers work and so on. As aresult of these initiatives and a recent push to increase back-loading (see Vehicle loading, Section 5.7), the company's logistics costs are just 0.75% of turnover, which is much lower than other companies moving comparable volumes of product.

#### **RDC Operators**

Look at the stock keeping units handled in your warehouse and see if they can be unitised to reduce handling. Are there certain low value items that could be sold in pallet quantities to allow cross-docking?

## 5.5 Product Despatch

Product despatch is the final stage of the RDC operation. Vehicle specification and vehicle loading are the two key processes that take place during this stage. Transport represents a very significant component of total logistics costs in most operational settings, and so it is worth remembering that even minor improvements in vehicle utilisation (made either by you or your contractor) can result in large cost savings.

The key stages in product despatch are outlined in the table below.

#### Table 7 Product Despatch: Key Stages

- Ensure correct specification trailers (e.g. temperature controlled) for allocated loads
- Load products onto designated trailer or vehicle for despatch
- Move loaded trailer to holding area to await despatch
- Provide trailer and load identification reference information to site exit control
- Issue load and vehicle documentation to driver
- Locate correct trailer and depart on journey
- Validate trailer and load information at exit

## 5.6 Vehicle Specification

Time spent developing the best specification for a vehicle is time well spent. Decisions relating to vehicle specification can actually be made on several levels. At a strategic level, vehicle specification involves making sure that the vehicle you purchase (or lease) is the most appropriate for the work you need to do. This involves considering a wide range of factors, including purchase price, maintenance costs and running costs. A cheap but poorly specified vehicle, unfit for its intended purpose, could end up costing more in fuel over its service life than an initially more expensive vehicle, but one which is more appropriate to its intended use.

Develop a quality programme to show employees good packaging techniques for value adding or customisation work. Positive messages can be reinforced by relatively simple methods like posters around the warehouse

On a more practical operational level, vehicle specification involves matching the right vehicle to the right load. In other words, you need to consider any special requirements of the products, and make sure the vehicle is not too big or too small for the load. While it may seem economical to use only one or two types of vehicle in your operations, costs will be driven up if you transport a high number of part loads. Investing in additional trailer capacity within the fleet may seem expensive, but can help improve vehicle turnaround time. If well managed, this might improve asset utilisation but it carries with it the risks inherent in leaving products loaded on vehicles, such as damages and increased risk of theft.

The case study overleaf shows how improved outbound scheduling and vehicle specification can lead to significant cost savings.

### Finding Out More

Truck Specification for Best Operational Efficiency - a step by step guide to vehicle specification, from chassis, engine and transmission specification, through to choice of body aerodynamic features and ancillary equipment.

To obtain a free copy of this guide, call the Hotline on **0845 877 0 877**, or visit **www.freightbestpractice.org.uk** Alternatively, email **info@freightbestpractice.org.uk** for further information.

# Case Study 13: Scheduling and Vehicle Specification at NHS Logistics Authority



NHS Logistics Authority manages the warehousing and distribution of medical supplies on behalf of hospitals, clinics and doctors' surgeries. The Authority employs over 1,400 staff and manages more than 43,000 different product lines. The organisation has an annual turnover of more than £770 million and has six RDCs spread across England. The greater part of the transport operations is contracted out by the Authority to a third party. The contractor employs 368 staff to carry out the Authority's business.

The primary goal of the Authority is to deliver in full and on time to the customer in the most cost effective way. The Authority recently rationalised its RDC network from 12 to 6 to achieve cost savings, however, this means that new regions are geographically larger and hence kilometres of travel have increased. Transport has been identified as a priority area. In particular, the Authority aims to reduce kilometres of travel, decrease vehicle turnaround times and increase vehicle utilisation generally.

Working with its contractor, the Authority is introducing a number of initiatives to increase current vehicle utilisation by around 20%. Traditionally, vehicles tend to leave depots at 06:00 and most return at 13:00. However, following talks with a number of its customers, it now also carries out night deliveries to many of them. It is practical for many hospitals to do this because they always have staff available at night to receive products. In Normanton alone, this initiative is saving more than £160,000 per year through reductions in travel time. Double deck trailers have also been introduced on a particularly long route from Normanton to Gateshead. This has reduced the runs required each day from seven to just three - effectively cutting costs in half.

## 5.7 Vehicle Loading

Considering the distances delivery vehicles can drive each week over the course of a year, it is very much in your best interests to maximise the loads in outgoing vehicles. Fewer part-loaded vehicles mean fewer deliveries and lower costs. Look at ways to increase vehicle fill rates. It may be possible to make improvements by modifying your units of distribution or by better vehicle specification. Ask your customers how often they actually need to receive deliveries. As shown in the case study on page 25, it may also be possible to reduce your transport costs simply by encouraging customers to switch from daily to weekly deliveries.

More efficient use of your fleet can be made by scheduling deliveries and planning routes to minimise journey times and reduce overall distance travelled. Computerised routing and scheduling packages and in-cab telematics equipment, such as vehicle tracking systems and on-board navigation units, can help you optimise the use of your fleet resource and enable you to react more quickly to events requiring changes to your operation.

Factory gate pricing may also be an area which could be explored to improve fleet utilisation. This is based on the same principle as 'ex works' in international trade terms - in other words, the price for the product is agreed between the supplier and the customer but excludes the cost of any transport from the factory, i.e. it is up to the buyer, rather than the seller of the goods, to arrange transport. Through successful load planning and vehicle routing, factory gate pricing can offer opportunities to back-load vehicles which might otherwise run back to base empty after completing deliveries.

It is worth remembering that your transport operations do not finish when vehicles reach the customer. As the Costsco back-loading case study shows, empty running vehicles present an opportunity to generate revenue.

## Case Study 14: Reducing Deliveries at Philips DAP



Philips is a global company with operations spanning more than 62 different countries. Philips DAP

(Domestic and Personal Care) is one of five divisions within the company and sells everything from electric

toothbrushes to coffee machines. In 1997, the division made deliveries to its customers every day of the week. The division found that it was wasting a lot of resources sending out a large number of small orders and decided to start making deliveries just once a week. After consulting with customers, it found that smaller deliveries often caused them headaches anyway, and somewhat unexpectedly, most actually welcomed the change. As a result, the division was able to reduce its transport costs by 30%.

### Case Study 15: Back-loading at Costco

Costco moves a large amount of freight to its cash and carry membership warehouses, and for this reason, transport has always been identified as a key area for efficiency improvements. According to Ian Chalmers, Logistics Manager, the company was always interested in back-loading opportunities and other ways of improving vehicle utilisation, but was keen to avoid the practical difficulties that sometimes arise with these types of initiatives. "We considered doing something like factory gate pricing (where customers arrange inbound logistics and transport of product from suppliers), some years ago, but we decided this would lead to a lot of administrative problems. If you wanted to take a load from say Stoke back here to Magna Park under factory gate pricing, you would have to charge the supplier a certain amount, pass most of it onto the haulier, and

keep the difference. It creates so much paperwork, and given the cost of raising invoices, it just wouldn't be worth it", said lan.

To avoid these administrative hassles, Costco has instead opted for a system where the haulier charges the supplie rdirectly on the company's behalf. Ian has extensive experience in haulage so knows when they are charging a reasonable rate. If he thinks they are getting charged more than they should, the company can contact other hauliers to see if it can get a better price. This approach means the company gets a good price and reduces transport requirements while avoiding administration costs. Costco is now back-loading on 97% of its transport operations. It has been doing this for about three years and as a result of this and other initiatives (see Cross-docking, Section 5.4), transport and logistics costs have been reduced significantly.

### Finding out More

Computerised Routing and Scheduling for Efficient Logistics - two guides (full and pocket-sized) describe the different types of computerised vehicle routing and scheduling systems available and their benefits.

**Telematics** - provides details of the basic elements of telematic systems and the information you get from them, as well as providing advice on what you should consider when buying a system. **Make Back-loading Work for You** - provides practical advice to help integrate and increase backloading within your activities in order to improve and reduce empty or light running.

To obtain a free copy of any of these guides, call the Hotline on **0845 877 0 877**, or visit **www.freightbestpractice.org.uk**. Alternatively, email **info@freightbestpractice.org.uk** for further information.

## **First Ideas for Action**

#### **RDC Operators**

- Look at loaded vehicles leaving the RDC. Is there a lot of empty space in trailers? Could internal shelving or another type of vehicle configuration improve vehicle fill?
- Would factory gate pricing help to improve vehicle utilisation by providing inbound loads for your vehicle fleet?

## 6 The Importance of Partnerships

#### Figure 6 Importance of Partnerships



By their very nature, RDCs work with many different organisations, which makes partnerships a vital ingredient of any system. Close collaboration with other organisations up and down the supply chain, such as suppliers, customers and contractors, ensure efficient day-to-day operations and may enable you to identify other areas where changes can be made.

The idea of partnerships can be extended to the staff within your own organisation. There can be no doubt that performance in an organisation improves when employees feel valued by management and have a sense of ownership of what they are doing.

This section also examines the concept of RDC freight quality partnerships (FQPs), which involve close working between private companies, local authorities and other relevant stakeholders. They have been developed successfully in the freight transport industry and offer a number of potential benefits in the context of RDCs.

## 6.1 Internal Partnerships: Your Staff

Recruitment and retention tend to be problems for most RDC operators. Despite recent advances in technology, most physical processes in warehouses are actually performed by people, which means that your employees are your most valuable asset. Because RDCs tend to operate together in clusters at strategic locations, employees can easily move from one facility to another when the market is strong. This makes recruitment and retention strategies particularly important - selecting the right people for the job and building a cohesive team that works well together can improve productivity. Consultation with staff members to ask their views on what could be done to make the operation more efficient can help make people feel more involved.

Demand can often be seasonal, creating a need to 'flex-up' during peak periods and take on new staff, who then need to be released during low seasons. Recruitment is important because it allows you to meet demand effectively. Better retention strategies help you keep your core experienced staff who are highly familiar with your operations, productive and can help train new employees, as shown in the case study on page 26.

Look at your employees as partners in your organisation, not simply a cost. The reality is that many tasks that are performed in an RDC are repetitive. Providing better facilities for your employees such as childcare, study rooms and even gyms, may seem expensive but can have a positive effect on retention and may be economical when you consider how much you spend looking for a new employee every time one leaves. It is now standard practice in many companies to offer education and training for career development. Flexible work practices can also make it easier for part time workers to come back to your operations when you need them.

#### **First Ideas for Action**

#### **RDC Operators**

- Encourage mentoring for new employees and help them develop important skills more quickly
- Reward staff during busy periods and always encourage and provide a forum for feedback
- Engage staff in the running of the operation by asking them for their views on how things could be done better
- Empower staff with the responsibility to take the lead in certain areas by creating 'Issue Champions'. Separate Champions could focus on reducing fuel consumption, improving health and safety performance, reducing damages to products or increasing recycling of packaging

## 6.2 External Partnerships: Suppliers, Customers and Contractors

It should always be remembered that RDCs are simply one link in a greater supply chain, and the efficiency of the operation will depend to a large part on the efficiency of other parties you work with. As shown in the case study on page 28, something as minor as a load which overlaps a pallet can cause your whole system to experience problems. You can overcome many of the problems you experience in your own operations simply by improving the way you communicate with your suppliers and customers.

## Case Study 16: Encouraging Employee Contribution and Input at Cadbury Trebor Basset

Cadbury Trebor Basset is an icon of the confectionery industry and has a comprehensive distribution network within the UK and internationally. The company prides itself on having good relations with its employees and has



always recognised that it is in its best interests to have well trained and motivated employees operating in a safe environment.

At its RDC in Chesterfield, Derbyshire, the company's policy is to set clear objectives, make tasks easy to undertake and ensure staff are well trained and fully understand business requirements. A significant emphasis is placed on working safely. All staff at the RDC are trained using standard 'lesson plans'. These are 'check list manuals' that provide information relevant to particular training subjects. The plans ensure that no key areas are overlooked, whilst enabling those carrying out the training to do so in a way that best suits them.

The company has also adopted a peer orientated approach to training. A 'buddy' system is used to improve the skills of new employees. From experience, the company has found that highly proficient pickers quickly identify the most effective methods and can pass these abilities on to others to improve their performance. Guidance from them is more readily accepted by their peers, than from direct supervisory or management instructions.

These initiatives have enabled Cadbury Trebor Bassett to maintain high levels of workmanship and productivity, and to retain staff in an increasingly competitive labour marketplace. The need to actively encourage and value employee input and contribution is felt to be extremely important in achieving high levels of customer service. This is also a quality that is looked for in the company's third party operations. As a supplier, get to know your customers' operations and the types of problems they experience. Ask if you can visit your customers' RDCs and meet the operations or logistics manager. Invite them to come and look at your operations. By establishing a rapport with the companies you deal with, it will make it much easier to solve problems when they occur, as shown in the case study opposite.

### **First Ideas for Action**

#### **Inbound Transport Operators and Suppliers**

Why not visit the RDC with a driver when they are making a delivery? This will help you better understand their operations and find ways of working together to make improvements. It also represents an invaluable opportunity to get to know the operations or logistics manager

### **RDC Operators**

- Take your buying staff on a tour of the RDC and show them how it operates. Making buyers aware of capacity issues can smooth out inbound deliveries because they will better understand the limitations of the RDC
- Invite groups of suppliers to visit the RDC to see your operations

## 6.3 RDC Freight Quality Partnerships

Freight quality partnerships (FQPs) are partnerships between the freight industry, local government, businesses, community groups and other relevant stakeholders. The aim of a partnership is to develop an understanding of freight transport issues and problems, and to promote constructive solutions that take into account environmental and social concerns. In the partnerships developed to date, there is clearly a range of issues that are of common interest to RDC operators (or in the case of business parks, groups of RDCs), local authorities and the general community, such as traffic congestion and deliveries at unsocial hours. The partnerships provide an ideal forum in which to explore these issues and find solutions to problems that may affect your operations as well as others. Case Study 17: The Power of Partnerships: Philips DAP and NYK Logistics



NYK Logistics manages the warehousing and transport operations for Philips DAP (Domestic and Personal Care) from a shared facility at Grange Park, Northampton. The two companies have been working in close partnership for about four years.

#### Working with Each Other

According to Marianne Wilson, Logistics Manager at Philips DAP, the arrangement has been very successful from the start because the two parties work together as partners. "We have always had a very constructive and open relationship. The key is to understand where the other party is coming from and to talk to each other openly about issues and problems that need attention. Often, there will be things we don't agree on, but we tell each other that."

Isabelle Risse, the Philips DAP Contract Manager at NYK Logistics, expanded on this, saying "For a strategic partnership to work, you share the benefits, but you also have to share the pain. If Phillips asks us to do something which may be impractical or expensive for us, we explain it to them and reach a compromise." The relationship between the two companies has been strengthened further through joint social events, such as the annual Philips/NYK bowling day. The relationship works so well that NYK staff identify themselves as working for Philips. "If you asked any of my warehouse staff who they worked for, they would say Philips, not NYK" said Isabelle.

#### Working with Others

After making a number of improvements to their own warehouse operations, the two companies are now focused on streamlining outbound logistics. The nature of the product means demand tends to be very high in the lead up to Christmas, which means that it can sometimes be difficult to get product into customers' warehouses. Sometimes communication may break down between the customers' buying departments and their warehouses, which means loads can arrive only to get turned back. "This has a huge impact on our logistics costs. Because we do value added work for many of our customers, if a load gets returned, we often have to do reworks and this becomes very expensive", Marianne said.

The two companies have always adopted a very constructive approach to dealing with these types of problems, and visit customers' premises on a regular basis to see how things can be improved. "For example, we were getting a lot of returns from one customer, so we went and visited one of their RDCs", said Isabelle. "We found that because they use robotics equipment, if a load overlaps on a pallet, it cannot be handled. This was very useful for us to know because we were able to make the necessary changes very easily to rectify the situation. It would have been very difficult to learn about this problem without actually seeing their operation." The companies also invite customers to come and look at their own operations, and there has been a positive response to this. According to Marianne, "it is a very constructive process because if everyone gets an understanding of what each other's problems are, it makes them much easier to solve."

## Finding out More

> Freight Quality Partnerships - a step by step guide on how to set up and run FQPs.

**Freight Quality Partnerships Case Studies** - examples of what has been done in existing partnerships.

To obtain a free copy of any of these guides, call the Hotline on **0845 877 0 877** or visit **www.freightbestpractice.org.uk**.

Alternatively, email info@freightbestpractice.org.uk for further information.

## 7 The Importance of Performance Monitoring and Key Performance Indicators (KPIs)





# 7.1 The Importance of Performance Measurement

Unless you can accurately measure the resources you use in delivering services, it is very difficult to identify areas that can be improved or assess the impact of any changes you make. Benchmarking, targeting, monitoring and reviewing are the 'glue' that binds initiatives together and allows you to build on the positive changes you make to your operations.

The starting point for any performance monitoring programme should be internal benchmarking. There is little point trying to compare yourself to others if you don't have a thorough understanding of your own operations to begin with. Figure 8 shows the key processes in a benchmarking and performance monitoring programme.

KPIs should be effective management tools, helping you to run your operation. However, if too many KPIs are developed or those selected are too complicated to measure reliably, then they start to lose their real usefulness to the operation.

KPIs need to be kept simple and be easy to measure. Careful consideration should be given to the type of KPIs you choose to measure and monitor your performance. As a general rule, err on the side of simplicity. Try to have as few KPIs as possible (perhaps even just one for each operational stage) and make them easy to measure and to interpret.

In addition, operational staff need to see the real value in monitoring performance levels, if they become immersed in recording too many obscure individual KPIs, they are likely to lose sight of the wider operational benefits. The Figure 9 overleaf contains a range of KPIs that are commonly used by RDC operators.

Figure 8 The Key Processes in a Benchmarking and Performance Monitoring Programme



#### Table 8 Commonly Used KPIs

Inbound	On-time arrival (%)	Number of vehicles arriving +/- 15 minutes of booked time as a proportion of total arrivals
	On-time unloading (%)	Number of on-time vehicles unloaded +/- 15 minutes of booked time, as a proportion of total on-time arrivals
	Inbound load accuracy (%)	Number of incorrect items as a proportion of total items received (per load)
Internal	Capacity utilisation (%)	Number of utilised stock locations as a proportion of the total capacity at any point in time
	Cost per unit received/stored/ picked/despatched, etc (£)	Attributable fixed and variable costs divided by number pallets/cases or other units related to the activity being measured
	Fixed/variable costs (%)	Total costs, split into those that vary with level of activity and those that remain constant regardless of the level of activity
	Labour costs (£)	Operational labour costs as a proportion of total costs
	Mechanical handling equipment utilisation (n)	Number of hours actual use recorded by each truck for each shift/day/week (this is important where costs to users are based on levels of use)
	Number of very narrow aisle truck movement cycles (put-away and retrievals) per hour (n)	Number of actual recorded operating hours per truck divided by number of movements
Outbound	Picking productivity (n)	Number of pallets or cases picked in each hour devoted to picking activity (This can be measured by operator or as a total)
	Picking accuracy (%)	Number of incorrect items picked as a proportion of the total picked (this can be a retrospective measure with errors being identified at the point of delivery. Providing relevant records are maintained, this can be measured by operator or as a total)
	On-time despatch (%)	Number of on-time loads completed +/- 15 minutes of scheduled time as a proportion of total loads
	On-time in full deliveries (%)	Number of deliveries made on time with correct (exact) load as a proportion of total deliveries (relevant even if RDC is not responsible for final deliveries)
Inbound/ outbound	Pallets/unit throughput (n)	Number of pallets/units received and/or despatched per hour/shift/day/week/month/year
	Case or other individual throughputs (n)	Number of cases or other individual units received and/or despatched per hour/shift/day/week/month/year
	Loading bay utilisation (n)	Total number of vehicles unloaded/loaded per shift/day divided by number of bays

## 7.2 Setting Targets

Once KPIs have been selected and a way of measuring them has been established, the next step is to set targets for improvements. This is where external benchmarking can be very useful. Where possible, try to look at what other similar organisations/operations are achieving. While it may not be possible to know what your direct competitors are doing, it may be useful to visit warehouses that are a similar size and have a similar range of products. This can at least give you an idea of what is possible and what you should aim to achieve. Rather than comparing absolute numbers, you might want to aim for general improvements to your operations in percentage terms (e.g. a 15% increase in picking accuracy or a 5% increase in throughput).

## 7.3 Monitoring and Reviewing Performance

Targets don't need to be perfect - the act of setting one and monitoring your progress towards achieving it is important. Always remember that monitoring and reviewing is an on-going process. If the target was met very easily, you need to go back and look at your benchmarking, and increase the target. If you fall well short of the target, you should try to understand why this might have occurred and re-adjust your future target levels.

#### Remember

Activities contracted out to third parties, like transport or warehouse operations, should also be benchmarked, monitored and reviewed in the same way as in-house operations. Contractors will often calculate and report KPIs themselves but, as a minimum, they should provide the information you need to derive them yourself.

## Finding out More



**Key Performance Indicators for Non-food Retail Distribution** - discusses the results of the 2002 benchmarking survey in this sector.

**Key Performance Indicators for the Food Supply Chain** - discusses the results of the 2002 benchmarking survey in this sector.

Key Performance Indicators for Pallet Distribution Networks - indicates how to measure key performance indicators and discusses the results of the 2004 benchmarking survey in this sector.

#### Fleet Performance Management Tool -

Excel<sup>©</sup> based tool to help small to medium sized fleet operators improve their operational efficiency through the management of KPIs. Consists of a CD and accompanying manual.

To obtain a free copy of any of these guides, call the Hotline on **0845 877 0 877**, or visit **www.freightbestpractice.org.uk** Alternatively, email **info@freightbestpractice.org.uk** for further information.

## 8 Useful Contact Points and Additional Reference Information

## 8.1 Contacts

The Chartered Institute of Logistics and Transport in the UK, with over 22,000 members, is the professional body for those individuals and organisations that are involved in, working in, or that have an interest in, the logistics and transport sectors.

The Chartered Institute of Logistics and Transport (UK) Logistics and Transport Centre Earlstrees Court Earlstrees Road Corby Northants NN17 4AX **www.ciltuk.org.uk** Tel: 01536 740100 Fax: 01536 740101 Email: **enquiry@ciltuk.org.uk** 

The Chartered Institute of Purchasing and Supply is an international organisation, based in the UK, serving the purchasing and supply profession. The institute is dedicated to promoting best practice, continuous improvement in professional standards and raising the awareness of the contribution that purchasing and supply make to corporate, national and international prosperity.

The Chartered Institute of Purchasing and Supply Easton House Easton on the Hill Stamford Lincolnshire PE9 3NZ www.cips.org Tel: 01780 756777

Fax: 01780 751610 Email: info@cips.org

## 8.2 Useful Trade/Industry Publications

Logistics and Transport Focus - the journal of The Chartered Institute of Logistics and Transport. www.ciltuk.org.uk

RFID Journal - independent media company devoted solely to radio frequency identification and its many business applications. www.rfidjournal.com

RFID News and Solutions - a bi-monthly publication for supply chain professionals in most major industries and vertical markets who are responsible for designing, purchasing and implementing RFID technologies and solutions.

### www.rfidnas.com

Modern Materials Handling - a publication for supply chain professionals in most major industries responsible for purchasing and implementing materials handling solutions.

### www.mmh.com

Material Handling Product News - a journal reporting on the entire range of material handling products, from those used at the loading dock, to those required in the manufacturing process and for storage and distribution. www.mhpn.com

Supply Chain Management Review - a senior level publication dedicated to the art and science of moving goods to market.

www.manufacturing.net/scm

Freight Best Practice publications, including those listed below, can be obtained FREE of charge by calling the **Hotline** on **0845 877 0 877** or by downloading them from the website **www.freightbestpractice.org.uk** 

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#### Fuel Management Guide

This is the definitive guide to improving the fuel performance of your fleet. It gives step-by-step explanations of the key elements of fuel management, how to measure performance and how to implement an effective improvement programme.

## **Developing Skills**



#### Safe Driving Tips

Written especially for commercial vehicle drivers, this pocket-sized guide provides essential safety hints and tips on all aspects of driving safely.

Equipment and Systems



## **Testing Times for Trucks**

This report briefly describes four trials that test the effects of differing variables on fuel consumption.

## **Operational Efficiency**

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#### Heathrow Airport Retail Consolidation Centre

This case study explains how consolidated services to Heathrow Airport reduce lorry congestion and improve air quality.

### Performance Management



## Introduction to Job Costing for Freight Operations

This guide is aimed at helping you understand the true cost of your operation down to individual vehicles in the fleet.



## Efficient Public Sector Fleet Operations

This guide is aimed at fleet managers in the public sector to help them improve operational fleet efficiency.

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