An introduction to good logistics practice and its current state in UK construction

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SUMMARY

This paper offers a high level view of what would be considered as good logistics practice. It describes how good logistics is fundamentally based on principles on good management but differs from conventional management in that it takes a process, rather than functional, view of the organisation.

Eight elements of good logistics practice are described:-

- Understanding and meeting customer needs
- Supplier partnerships
- The role of information technology
- The importance of data management
- Controlling materials and information – using IT and data
- The management and supply of delivery channels
- The elimination of waste – developing a lean business
- The reduction of lead times – building agility

The paper concludes with some brief observations of the extent to which these principles are applied in the UK construction industry, based on the results of some recent case study work. The conclusion is that the construction industry is well behind the best of UK manufacturing and retail, but that there are some significant rewards for those companies that can introduce good logistics practice into their businesses.

1. LOGISTICS AND SUPPLY CHAIN MANAGEMENT

Logistics is sometimes used in a narrow sense to describe transport and distribution operations but in its widest sense (and in the author's view, its proper sense) it covers a much wide range of activities than this. It includes the integrated chain of events necessary to supply goods and services to agreed customer service levels. Indeed, logistics is synonymous with supply chain management and for many organisations it is treated with considerable strategic significance.

Logistics covers all the processes necessary to manage supplies of goods and materials, move those goods and materials through the manufacturing process, store and sort them in a way that facilitates the distribution process, deliver products and services to the customer in the way the customer requires, returns materials not required by the customer (e.g. waste and re-useable items) and support the customer with spares and after sales services. In this paper the terms "logistics" and "supply chain management" are considered to be interchangeable.

Good logistics practice is fundamentally based on principles which would be generally accepted as good management. The aim being to maximise customer service, eliminate waste of all types and deliver the best possible financial return for the business. Why would anyone not want to do it?

What separates logistics from more readily accepted good management practice is its cross functional nature and the need to manage an organisation's processes rather than its functions. Almost all businesses are managed along conventional lines with functional departments such as purchasing, production, distribution and sales. These each have their own targets and constraints and although they are required to co-operate with each other for the overall good of the business, there are inevitably areas of conflict. It could not be argued that logistics management totally removes these difficulties and if we take human nature as our guide, we can be reasonably certain that it never will. However, by setting up processes and departmental interfaces to integrate the activities involved in the flow of goods and services from supplier to customer, it helps all parts of the business focus on its customers (both internal and external) whilst at the same time working to minimise costs.

Logistics management is about managing processes and controlling the movement of materials and information throughout the business. It requires each functional activity in the business to consider its role in a chain of suppliers and customers, where these can be either internal or external. It is also about delivering value; that is, each element of the supply chain should add value for the next customer in the chain. In this sense even stock holding can add value if the holding of stock is the only way in which customer service can be maintained. Managers have to understand that whilst they can expect certain service levels from their suppliers they also have obligations to their customers. In this respect logistics

management has many similarities to total quality management. In order to work in this way businesses need to implement some basic good practice principles.

2. LOGISTICS PRACTICE IN THE UK

Businesses in the UK have embraced supply chain management at least as energetically as any in other part of the world. In particular, UK retail companies, the best of which are recognised as being the best in Europe, have proved decisively that integration of the whole supply chain is the single most effective way of gaining competitive advantage through increased customer service and reduced costs. Companies such as Argos, Boots and Tesco have invested (and still are investing) huge sums of money in their supply chains and distribution infrastructure and are continually looking for ways in which inefficiencies can be driven out of their processes. They still have their functional departments but they recognise the significance process management and the interaction of procurement and distribution.

The best of UK manufacturing has also embraced good logistics practice. Production with a small product range and large production runs is relatively easy, but customer demands are for ever wider choice with immediate delivery. This results in the need for much more rapid production response if large stocks are to be avoided. The dynamics of this in a modern manufacturing process are highly complex with a need to manage perhaps thousands of product variations to meet what is often unpredictable short term changes in demand. The only way in which these complex problems can be managed, whilst at the same time remaining competitive, is to consider the whole supply chain so that suppliers are included in the process and the business is driven to meeting end customer demands.

3. GOOD LOGISTICS PRACTICE

The development of good logistics practice has occupied many excellent minds over many decades, particularly with the growth in consumerism over the last forty years. There have been numerous books and papers published, many of which go into great detail on just a small part of this vast subject. It would therefore be impossible to review the subject in any depth in a single paper. However, there are some principles which have been found to be generally applicable and the aim of this paper is to summarise the most important in a way that might be a starting point for those in the construction industry seeking to learn from other sectors. To this end, eight elements of good practice have been identified. These are summarised in the following sections.

3.1 Understanding and meeting customer needs

No business can hope to excel unless it understands its customers' needs and is able to respond to those needs better than or at least as well as, its competition. By definition, supply chain management is about serving the customer. Therefore, a full understanding of customer needs is fundamental to the implementation of an effective supply chain. Customers can be both internal and external.

The internal customers are those individuals or departments within the organisation which require a service from another part in order to fulfil their responsibilities. In practice everyone in an organisation will at some time be both supplier and customer, probably at the same time. It is this supplier-customer relationship which creates the chain of activities. Good logistics practice dictates that the internal service levels are clearly defined, measured, reviewed and modified as appropriate.

It can be surprisingly difficult to define and agree external customer requirements clearly and precisely. What the customer asks for is sometimes not what the customer really wants. Indeed, it is not uncommon for service demands to be made not because of the real requirements but because of service failures in the past. Such problems can only be dealt with by:-

- keeping close to the customer
- always working to add value to the products and service being provided.

Once the customer service requirements have been defined and agreed, the logistics processes to meet those requirements can be put in place. It is then important that customer expectations are managed so that demands are not made for service levels that have not been agreed without due consideration of the commercial arrangements. In order to "fine tune" the supply chain there is a need for:-

- constant monitoring of service levels
- regular review

3.2 Supplier partnerships

The management of suppliers is an essential element of good logistics practice. Essential suppliers should be treated as partners and they should be involved in helping to improve the whole logistics process by the way in which they contribute to the product design or by the way in which the manage and control the supply of their products. Adversarial relationships with suppliers are not productive and are not necessary, and should not be confused with contractual obligations.

In the automotive industry the idea of suppliers delivering "just-in-time" to the point of assembly on the production line is well established and well known. This means that suppliers are managing the inventory on behalf of their customer and hence they are highly trusted. The benefit to them is the guarantee of continued business provided they meet performance targets.

The trend in many manufacturing businesses is to involve suppliers in a greater part of the manufacturing process so that much of the final production is the assembly of pre-fabricated sub-assemblies. This is certainly true in the automotive and aircraft industries. This is good logistics practice because it:-

- involves the supplier in the design process,
- reduces the number of items to be managed within the business,
- reduces the number of suppliers,
- improves quality management by placing the onus on suppliers to deliver fully checked and tested components and systems.

In retail also, the best suppliers are expected to do more than simply deliver a product. They are expected to meet specific delivery time slots with regular deliveries of small quantities and some are expected to manage the inventory of the goods they are supplying, within the retailer's premises. In order to manage the inventory they are given access to the retailers daily sales and forecasts of demand which would normally be considered as highly confidential information.

In general, good logistics practice is to reduce the supplier base to the minimum compatible with the secure procurement of the items needed for the business. This means that suppliers should:-

- be trusted
- treated with fairness in a partnership
- given full information to meet the demands being placed on them.

In these circumstances multiple resourcing becomes less and less common.

3.3 The role of information technology (IT)

The importance of good information technology in the application of good logistics cannot be overstated. Those retail and manufacturing businesses which have been most successful in developing their supply chains have done so by building processes and using IT to control and manage them. Indeed it is fair to say that good logistics practice depends on the effective use of IT systems. The issue here is not business accounting systems, which almost all companies now use, but systems which help track goods and materials through the supply chain and provide the users with up to the minute information on what is happening throughout the business. IT systems are fundamental to the integration of supply chain activities.

The best systems are those which are fully integrated and allow smooth exchange of information between all functions of the business as well as suppliers and customers. Such systems, however, are few and far between and even those companies with the most effective logistics processes in place will still use several IT systems. The requirements are vast covering purchasing, production control, inventory management, warehouse control and transport planning – to name just a few.

Not so many years ago the so called EDI (electronic data interchange) systems were seeing rapid advancement and many companies make use of these to exchange information with both suppliers and customers. These required special networks which were expensive to set up and run. However, businesses can now take advantage of the internet to exchange information at much lower cost and this is likely to be the way forward with new possibilities opening up all the time. "E-commerce" is a much abused and misused term. It is much more than retail sales through the, so called, "dot com" companies and in its widest sense, it is the future for sharing of information and for reducing the costs of doing business.

3.4 The importance of data management

IT systems cannot be used effectively unless they hold accurate data. In particular, for logistics processes, there is a need to have accurate data about every unique item of material used in the business which ultimately ends up as part of the delivery of goods and services to the customer. It is through the use of this data that bills of materials are made up and items are tracked through the supply chain. In many respects this data is the starting point for effective supply chain management and without it no business can hope to gain control of its processes.

Such data would typically include:-

- Product unique identity code (defines, colour, style, material, design, etc.)
- Product dimensions
- Product weight
- Items per unit load (e.g. carton. Box, crate, pallet)

Modern retail businesses could not operate as they do without detailed product data at a very detailed level, where a carton of an item has a different product identity to the item itself. The best manufacturing companies, and in particular the automotive and aircraft industries, could not manage their businesses without accurate product data. They depend on it for managing their suppliers and it is fundamental to specifying the manufacture and assembly of the final product.

3.5 Control materials and information – using IT and data

Appropriate IT systems and good data used together are the basis for tracking and control. A business with good logistics processes will know at any time:-

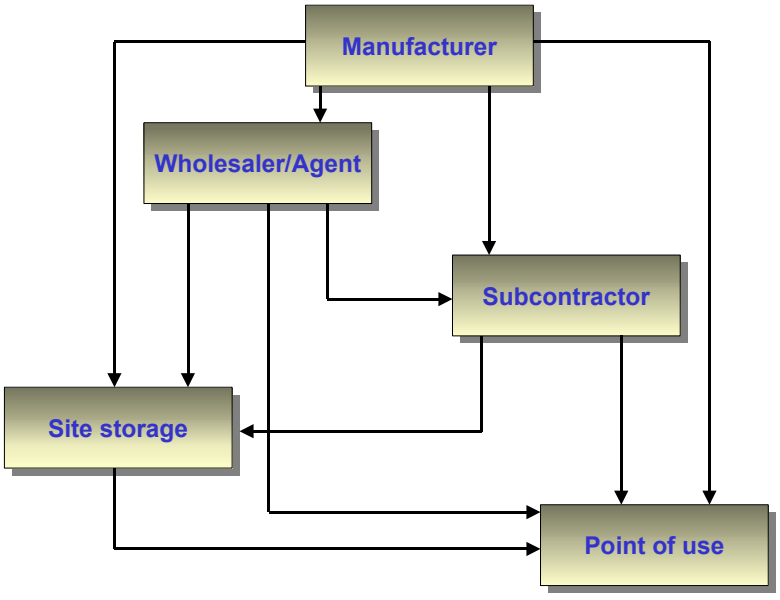
- What quantities of goods are held
- Where they have come from
- Where they are now
- Why they are there
- What will happen to them next

This control of both materials and information is the key to management of the logistics process. Not only must the systems be in place to manage the data but the data must be analysed to provide useful information which is widely shared and easily available to all who need it. This will include making information available to suppliers and customers as required to facilitate the logistics process. Forget the idea that "knowledge is power" and the old fashioned methods of drip feeding information. Open the tap wide and allow free access to good quality information for all those involved in the supply chain.

3.6 The management of supply and delivery channels

The route through which products are sourced and delivered to the customer or point of assembly are commonly known as channels. Channel management is an important element of logistics good practice. For any business the choice of channel for a particular element of the supply is made with the objective of minimising the total cost of moving that element to its point of use. In retail for example, it might be cheaper to arrange for supplier deliveries of slow moving product to a central warehouse which would contain all the stocks of that item from which the retail shops would be served. For faster moving product however, it might be cheaper to arrange for supplier deliveries to a number of regional locations which in turn would deliver to the shops.

The following Figure provides a simplified view of what is meant by delivery channels. In this case there are eight possible routes (or channels) that a product could take to the point of use.



Summary of Delivery Channels

3.7 The elimination of waste – developing a lean business

No-one wants waste and yet we all see businesses that are generating unnecessary waste continuously. Some of it is easy to see but there is much which is not immediately apparent. The most common form of this hidden waste is time related. That is, tasks or processes taking longer than they should do resulting in more effort and slow response to demand. Excessive inventory is also wasteful and if high inventory is necessary to meet service levels then the chances are that something else is wrong, upstream in the supply chain.

Examples of waste are:-

- Unwanted materials, due to over-ordering, damage or incorrect specification.
- Effort and resources expended on activities that do not add value to the end product. This could be as simple as double handling within a warehouse, for example.
- Re-work due to poor quality design or manufacture.
- Time that elapses between the start and finish of activities, such as between placing an order and receiving the items, or between receiving them and using them.
- Stocks of anything that is not for immediate consumption, especially where this has been bought 'just in case'.

Best practice companies produce process maps for all activities involved in 'delivering' the final product. They then measure each part of the process in terms of cost and time, understand its key drivers, determine waste elements and then set about making reductions in that waste. The maintenance of high quality and a "right first time" culture is essential for the elimination of waste and for the delivery of good customer service.

3.8 The reduction of lead times – building agility

A well managed supply chain should be capable of responding to change, in line with the dynamics of the particular sector in which it operates. Retail companies, for example, need to be able to respond to the peak activities at Christmas but this is largely predictable and can be planned in advance. On the other hand, a manufacturer of garden watering equipment can be faced with sudden increases in demand if there is unexpected hot weather on a Spring Bank Holiday. Such a business needs to be very agile in its ability to ramp up production at short notice.

Agility and leanness could be seen as being mutually exclusive; the first requires capacity to be reduced to the "bare bones" whilst the second needs spare capacity to meet rapid changes in demand. However, the common theme is what is sometimes called "time compression". That is, the ability to take time out of the process both to improve response and reduce costs.

In practice both agility and leanness are important, but what is the right balance for one business will not necessarily be right for another. The best companies recognise where they need to be lean and where they need to be agile and work on each accordingly.

4. LOGISTICS IN UK CONSTRUCTION

These good practice principles are not difficult to understand. As stated at the beginning of this paper they are, in many respects, simply common sense, good management practice. However, their application needs a particular attitude of mind and in some cases a complete re-think of the way business is done. This comes essentially from looking at the business as a continuous process to serve the customer, rather than as a series of functional activities.

Recent case study work undertaken by BRE and THE LOGISTICS BUSINESS has shown that there is a long way to go before the construction industry is able to match the best of manufacturing and retail businesses in the way in which the supply chain is managed. Some construction companies are starting to lead the way but others have not even started to see the opportunities.

We have no reason to believe that the cases we have studied are not typical of UK construction as a whole and when we compared the way in which the case study companies work with the principles of working discussed above, we have come to the following broad conclusions:-

- Understanding customer needs
  - There is a failure to see the chain of customer supplier relationships.
  - The customer needs and service levels are not defined and monitored, and hence improved.
- Supplier partnerships
  - There are generally too many suppliers.
  - The relationships are adversarial rather than managed through service level agreements.
  - Supplier selection is driven by price driven, rather than by value.
  - There is s tendency to secrecy rather than the sharing of good quality information.

- Information technology
  - Construction is well behind most other industries in its use of IT systems for logistics and supply chain management.
  - There is a need for significant investment in IT.
  - There is need to use IT to improve the way in which customer/supplier information is shared.
- Data management
  - There is lack of understanding of the importance of capturing and managing data concerned with goods and materials
  - The only significance of product identification and quantities is in relation to purchasing and cost management.
- Control materials and information
  - Standard technologies such as bar coding have made little or no impact
  - There is no visibility of materials in the supply chain, particularly on site
  - No effort is made to reduce material waste, reduce double handling or improve efficiency generally through an understanding of where goods are and what has to be done with them.
- Supply and delivery channels
  - There is a lack of understanding of the significance of channels in improving service and improving value for customers in the supply chain.
  - The way in which goods are sourced and the channels used for supply are driven largely by supplier price considerations.
- Elimination of waste - leanness
  - Material waste is taken for granted as part of a construction project.
  - Material waste is built into the cost planning.
  - Sources of wasted time are generally not well understood.
  - Waste is not monitored and no targets are set for improvement.
- Reduction of lead times - agility

- Agility is related to reducing wasted time and this is not something which is controlled.
- Do companies in construction really know what they need to do to be able to respond to customer and economic demands?

5. CONCLUDING REMARKS

The principles discussed in this paper will act as a starting point for construction companies and their suppliers to think about how the introduction of supply chain thinking and good logistics practice can improve their performance.

There is no doubt that the best of manufacturing and retail businesses have proved the value of good logistics practice and they are continuing to invest in their supply chain development. However, each sector has its own special requirements and there is no simple formula for success. The way forward for construction companies is to consider the special requirements of the process of supply in their market place and then consider how the principles can be applied to begin to change the way in which they work.

No one should underestimate the size of the task, but those who make the effort will certainly reap the rewards.