

MANAGING TRANSPORT SERVICES: LOW FRUIT FOR SUPPLY CHAIN PROFESSIONALS

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The concept of supply chain management (SCM) has been widely understood for some time and many companies have undertaken SCM optimisation programmes. SCM incorporates many business processes ranging from purchasing, production, inventory and demand planning. However, if you challenge a SCM professional to use associate a single word only to SCM it is likely to be transport. Transport is the most visible and tangible aspect of SCM, but effective transport management is often overlooked. There are ample opportunities, especially in international supply chains, to provide significant contributions to the bottom line by improving the management of outsourced transport services.

1. Transport management: A quick win

Many manufacturers involved in international shipping experience problems related to:

- Poor visibility of delivery dates
- Frequent delays in-transit
- Too much inventory in the pipeline due to long transit times
- High and rising transport costs

Shippers can address these problems by establishing transport purchasing and transport management procedures and by managing the shipper-carrier relationship more actively. This paper outlines an approach by which shippers can target and manage these problems and obtain a range of financial and strategic benefits.

The cost of transport is more than what you pay your Logistics Service Providers (LSP). Transport affects a manufacturer in at least five distinct ways, including inventory levels, production planning and customer service. Traditional accounting systems are poorly suited to report the full cost, focussing only on the freight charges. Even so, reported transport costs are often the third or fourth highest cost item for manufacturers with the actual impact likely to be much higher.

By employing fairly straightforward techniques it is possible for a manager to make considerable savings and to strengthen the competitive advantage of their company. The implementation is likely to take three-four months, providing a good return on investment.

This paper is based on research conducted by Heriot-Watt University and is more fully described by A.R. Holter, D.B. Grant, J.M. Ritchie and W.N. Shaw in the

2. What is the impact of transport?

So far we have seen that the impact of transport is more than the freight charges, which alone can be the third or fourth highest cost item to a manufacturer. As a process, transport is repeated many times through the supply chain by various parties along a product’s journey from raw materials to the consumer. More specifically we can identify at least five distinct cost aspects of transport as detailed in Table 1.

Table 1 – The Impact of Transport

Cost aspect		Consequence	Implications
1	Freight charges	Direct cost	Freight charges or transport rates as invoiced by the LSP.
2	Inventory in-transit	Inventory levels	Transit times affect the cash-to-cash cycle for most companies. Long transit times means later payment and negatively affects the company cash flow. Cash is tied up in inventory in-transit that could otherwise have been employed elsewhere.
3	Internal management cost	Overheads	Although many companies outsource their transport needs, some form of transport management is still necessary in booking and managing the transport.
4	Production cost	Production down-time	When setting a production plan, it is vital to know exactly when material will be ready for production. Delays or inaccurate delivery information can be extremely costly, particularly in a JIT environment.
		Inventory levels	It is possible to protect the production line by building a buffer inventory of inbound material/components, in which case the manufacturer will incur additional inventory carrying cost.
5	Customer service	Financial penalties	Contractual penalties for late delivery or the cash flow impact of delayed payment.
		Loss of future business	Poor delivery performance will reflect on perceived service offering.
		Strategic lead times	Transit times affect the lead time a customer can expect for a purchase. Short transit times are vital for manufacturers competing internationally against domestic alternatives as the customer could choose the local supplier with quicker delivery.

In this paper we refer extensively to ‘transport purchasing’ and ‘transport management’. It is natural these as the same overall process as transport performance depends on which service you purchase. While the transport purchasing process determines this trade-off, transport management ensures that service quality, negotiated along the cost-service dimension, is fulfilled. The benefits described in the paper thus relates to both purchasing practices and on-going transport management.

3. Barriers to effective transport management

There are a few inherent challenges that make transport difficult to manage. These challenges can be summarised as follows:

- Transport is a service which is produced and consumed simultaneously. Thus it is difficult for shippers to judge the service quality until they actually experience it. It is difficult to know which service providers are capable of meeting performance requirements before they are actually moving your shipments.
- It is also difficult to specify exact requirements and apply purposeful performance measurement that is perceived to be fair by both parties. There are considerable risks related to transport and it is difficult to specify and agree risk-sharing with transport providers. Who bears the risk of late delivery? What are the consequences to the LSP of poor performance?
- Transport is often purchased in combination with other services such as warehousing, installation and assembly services. There are many terms describing LSPs and the services they offer. A common term is 3PL (third party logistics provider) who typically offer transport combined with other services. Traditional freight forwarders are now moving into the 3PL realm by diversifying their services. This bundling of services impacts the purchasing process and disguises true transport performance. Unless risk can be contractually avoided, the shipper will still be hurt by poor delivery performance. The need to control transport is still present, but made more difficult to control.
- It is difficult for shippers to navigate the LSP market. Who can provide the best fit with your operation, 3PLs, freight forwarders or traditional shipping lines? What value do intermediaries add? It is often difficult to compare services like-for-like making a tendering process inherently complicated.

These problems often lead to manufacturers not receiving the service they are entitled to by the LSPs and form barriers to effective transport purchasing and management. Thus manufacturers may be treated as 'order takers' by LSPs rather than being 'order makers' who tend to have some control over the purchasing process.

We define an 'order taker' as a company that cannot benefit from competition in the transport market. Thus, the company is not taking advantage of its potential purchasing power and receives poor service. Effectively, it takes orders from LSPs as the company does not know where to go, or how to obtain a good service for a competitive price. It is the LSP that sets the terms and conditions for the shipper-carrier relationship, positioning the customer in whatever way they find more convenient and profitable. Manufacturers cannot assume that LSPs will meet their needs without direction and control. LSPs are different and as we have seen it is difficult to assess their service quality before they are actually moving your shipments.

Conversely, we argue that an 'order maker' is able to exploit market conditions, obtain competitive prices and specify service levels on which those prices are quoted. An order maker is proactive, has some level of expertise in transport

purchasing and a set of procedures and tools to obtain competitive services and make the most of its purchasing power.

4. Practical transport management solutions

This section aims to describe a few simple tools that manufacturers can employ in existing LSP relationships, when tendering transport or outsourcing their transport operation. Together they form a comprehensive approach to managing transport.

Transport data

The procurement of transport services is too often delegated to staff who have no vested interest in its effectiveness. It is often an add-on to the person's job and the driving factor will be expediency so that he/she can return to their core responsibilities. Transport is often purchased as discrete, individual purchases with each movement treated as a separate occurrence.

By consolidating transport movements a shipper can dramatically increase its purchasing power. By presenting transport volumes and detailed transport flow information, the manufacturer can move away from opportunistic, single-event supplier relationships and gain recognition as a valued customer. The LSPs can then offer price and service based on full information, allowing them to plan capacity utilisation and improve visibility of expected future business. The following information will all improve the rates offered:

- Volume by trade lane,
- seasonality,
- type of equipment and
- forward shipment schedules.

Tender format and cost model

To obtain purchasing power, it is necessary to have the capability of comparing suppliers like-for-like. Transport services can be treated as a commodity as there are many providers and it is a uniform service. The LSPs want to differentiate themselves from the competition and thus cloud the decision with value adding services and promises of the highest quality service. A manufacturer would do better to clearly specify themselves which service is required, thus enabling the comparison of apples to apples. As well as the transport flow and volume information, the tender document should include information on transit times. Forcing bidders to provide full details can give a company an edge in negotiating rates and is a step towards commoditising the transport service. On this basis full comparison between bidders can be made, maximising purchasing power. Consolidation of transport volumes to a limited number of LSPs is also key in making the most of the purchasing power available. Table 2 shows a suggested format for a tender document.

Table 2 – Tender Format

Box	From	To	Annual volume	Transit time	Rate
20	Hong	Esse	50	40	\$XXXX

GP	Kong	x, UK			
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As the impact of transport is more than rates alone, it is vital at this stage to consider the cost of inventory in-transit. A simple spreadsheet model should be developed that compares the bidders on both these aspects. The model should include the following parameters:

- The shipper's Internal Rate of Return (IRR), for example 20%.
- Average shipment value in terms of sales price, for example \$100,000.
- Expected volume for each trade lane.

With this information a cost model can be built that easily compares each bidder. The model could look something like Table 3 (using IRR and average shipment value as above):

Table 3 – Cost Model

	A	B	C	D	E	F
Trade lane	Annual volume	Transport rate	Transit time	Rate cost	Inv cost	Trade lane cost
1	50	4,000	25	200,000	69,444	269,444
2	20	5,000	20	100,000	22,222	122,222
3	80	3,500	18	280,000	80,000	360,000
Total cost for bidder 1:						751,667

(Column D (rate cost) = A*B), (Column E (inv cost) = \$100,000*20%/360*C*A),
 (Column F (trade lane cost) = D+E)

Once calculated for all the bidders, the total for each can be compared and the lowest cost found. This approach aims towards finding the cheapest single LSP. Most likely there will be bidders who have certain trade lanes that are cheaper than the competition, although in total they are not the cheapest option. In those situations it is possible to adopt a multi-sourcing approach where the shipper picks the best combination of rates and transit times from a range of LSPs. There is a trade-off between the diversification of providers and volume leverage. Ideally the full volume could be concentrated on a single supplier, thus providing leverage on the rates. By splitting the volumes between multiple suppliers, each supplier will gradually place less importance on your account. A good compromise could be to adopt a dual sourcing approach where both LSPs are given substantial volumes and the shipper has the choice to pick the cheapest option.

These techniques only consider two of the five cost elements of transport so far. They give a starting point for the purchasing process, but to obtain truly effective transport solutions it is necessary to also manage the relationship on an on-going basis.

Standard Operating Procedure (SOP)

It is quite common for manufacturers not to explicitly specify service requirements to the LSP. Service requirements are passed on as and when people come to think about it, typically after a service failure. The LSP is expected to automatically understand the shipper's priorities. However, the LSP cannot always be expected to

understand what constitutes a service failure or what is perceived to be particularly good service. When LSPs want to spend face-to-face time with their customers, this is the understanding they are looking for. It is often coined “to understand your business” because too often expectations are left tacit where they should be explicit. This understanding takes time to build and favours long term relationships. The switching costs could be prohibitive as new LSPs will need to climb the same learning curve as their predecessor.

The shipper should make all expectations explicit and communicate them to the LSPs. There are many stakeholders to consider within a manufacturing company. Gathering information from these sources can be an enlightening experience for the logistics manager as well as the LSP. Once the information is gathered and recorded in the SOP, the LSP can then commit to the service requirements. It is important that the LSP is invited to participate in the process of writing the SOP so that they are able to commit fully and that the process is considered fair by all parties. The SOP is subject to change as the business evolves and is continually updated as a working document. The LSP should be regularly invited to suggest changes or revisions. The SOP should include all information relevant to serve the shipper. It is important to note that it is a standard document applied equally across the range of LSPs, only then can service be measured equally across the transport supplier base. The SOP from one company included the following headings reflecting the wide range of issues addressed:

1. PURPOSE OF THE SOP
2. EXPECTATIONS OF CARRIER SERVICE
3. CONTRACTUAL ISSUES
4. DESCRIPTION OF GOODS
5. POINTS OF CONTACT
6. CUSTOMS PROCEDURES
7. COLLECTION AND DELIVERY
8. VISIBILITY
9. RATES
10. PROVIDING EQUIPMENT
11. TRANSIT TIMES
12. INVOICING
13. KPI MEASUREMENT

The SOP constitutes a standard to which you can measure performance. Any service failure can be handled in relation to the SOP. Disputes are dealt with more effectively and the interfaces between the shipper and the carrier should experience fewer problems. The SOP does not have to be a legally binding document. Failure to comply will simply lead to severing the relationship with the LSP.

Key Performance Indicators (KPIs)

With the SOP as a baseline, it is possible to create a KPI that measures performance to the agreed standard. The KPI allows the LSP to focus their efforts on resolving specific problems and thus improve performance. The SOP is the first step in achieving reductions in shipper management, production and customer service costs through effective on-going transport management.

The KPI specifies a set of conditions. Each condition is a specific service failure as specified by the shipper through the SOP. Normally it should be easy to specify what

shouldn't happen; in fact it is easier than specifying what good service is constituted by. A condition can be any unwanted behaviour that is deemed to impact the shipper negatively. If a specified condition does occur, it should be logged as part of the daily transport management. The KPI will count the frequency of their occurrence at regular intervals. A score can then be calculated for a specific measurement period.

To each failure condition, there is a corresponding success condition. This is a good educational tool to communicate requirements to the LSP. Table 4 shows an example of conditions. Each condition can also be given a priority to help identify which behaviour to target.

Table 4 – Examples of KPI conditions

Category	Failure conditions	Success conditions	Priority
Delivery / collection	Late delivery	Delivery on time as per appointment	High
Appointment	Appointment changed within week	Appointment kept as agreed the week before	Critical

Manufacturers should also consider a KPI specifically measuring the LSPs' performance on transit times. As seen in the tendering template, the transit time is a vital part of any quote. It is important that the LSPs honour their commitment. Unfortunately, global logistics is prone to delays with some LSPs performing better than others. A shipper might be willing to pay a higher transport rate for a quicker transit time, in which case a delay would counteract any intended benefit.

The SOP establishes the transit time as an integral part of the quote and that the carriers' performance against quoted transit times will be measured. With an agreed transit time it is also possible to determine which date the shipment should be delivered, which is vital information for the receiving customer. Our recommended approach is to total all delivered shipments during a month and compare the actual transit time with the agreed transit time. A total score should be calculated showing:

- a) The percentage of on-time deliveries.
- b) The average length of delay for the shipments that were delayed.

It is important to note that in most cases the shipper and the carrier will have to share a certain degree of risk. Not all delays are the fault of the carrier; some are uncontrollable and should thus not be considered for this KPI. This concession is necessary to obtain the LSP's commitment to the process and for the KPI to be perceived as fair by all parties. Examples of uncontrollable events could be:

- Container delayed by random customs exam
- Dock strikes
- Delays due to adverse weather

Table 5 shows an example of how this KPI can be executed. All deliveries made in a certain month are listed (in this case four). The pre-agreed transit time and the actual transit times are compared. In the first two deliveries they were on-time to pre-agreed delivery dates. The third delivery was seven days late. The final delivery was nine days late, however four of those days were due to an uncontrollable event (Ext event) which took 4 days. This event could not account for the full delay, so the

shipment is in the end considered to be five days late. Table 5 provides an example of how this KPI might be executed.

Table 5 –Transit Time (TT) KPI

From	To	Agreed TT	Actual TT	Ext event	Delay
A	B	20	20		0
C	D	22	20		0
E	F	18	25		7
G	H	15	24	4	5

It is now possible to apply the two suggested KPI metrics. In this case only 50% of the shipments were on time (2 out of 4). The average delay for the late deliveries was 6 days (average of 5 and 7). Together these metrics provide an accurate picture of any carrier's delivery performance. The next step will be to use this information in future sourcing decisions. In the single LSP scenario, acceptable levels of delay should be agreed. If these levels are consistently exceeded, the shipper should consider replacing the carrier. In the dual/multi-sourcing scenario this information can be added onto each carrier's quoted transit time as a safety buffer. For two carriers, A and B, the calculation could be:

- a) Quoted transit time 20 days + safety buffer of 5 days = 25 days
- b) Quoted transit time 22 days + safety buffer of 1 day = 23 days

In summary a short quoted transit time can easily be outweighed by actual LSP performance. This adds a new dimension to the combined costing of rates and transit times.

Interaction with the carriers has been upheld throughout this paper, as well as the importance of obtaining their commitment. In particular there are three concepts the carriers should understand and commit to fully: The SOP and the two KPIs. To achieve this it is necessary to interact on a regular basis. An agenda for a performance review meeting could be:

1. Review of SOP to make sure all expectations are properly communicated, that the carrier is able to commit and that the carrier's views are heard.
2. Review of KPI conditions to target improvement areas and set targets for future periods.
3. Review of Transit Time KPI.

Quantifying impact on production and customer service

So far this paper has considered the impact of transport on freight charges and inventory in-transit. The SOP can help alleviate the internal management effort by making expectations explicit and gathering all relevant information in one place. This paper will also suggest approaches for quantifying the impact of transport on production and customer service to draw a complete picture of transport management. We are now reaching quite advanced levels of transport management and the authors have not tested following suggestions, they remain conceptual. However, we believe that there is considerable potential for manufacturers to improve by obtaining a complete grasp of transport cost.

We suggest that the impact of transport on production planning can be quantified through the KPI in Table 4. For each condition listed, it is possible to specify a cost. For example, a late inbound delivery by 2 hours would cost £300. The cost would probably vary each time. Sometimes there would be no cost, while other times it could be the late delivery of a critical part, bringing production to a halt. It can be difficult to obtain reliable figures so we recommend using an average figure, or even a nominal guesstimate. It is more important to have a figure than to have the exact figure.

By costing each condition it would be possible at the end of the month to assess the impact and performance of each carrier in real figures. Only now is it possible to make trade-offs between service quality and rates (also not forgetting transit times). If management is reasonably confident in the figures used to cost the conditions, finding the right LSP should be easy.

Similarly it is possible to cost the impact on customer service. The starting point for this exercise is the two transit time metrics (% on time and average delay). These figures give a useful guideline to expected future deliveries and serve as a useful basis for scenario planning. The shipper should ask: What would happen if the delivery is 2 days late? The customer's reaction could range from financial penalties, late payment and loss of future business to no reaction at all. The cost and likelihood of each reaction should be evaluated to arrive at a representative cost.

5. The LSP's point of view

The LSPs are involved in the process every step of the way. The carrier is likely to learn as much as the shipper through this process. In one case, the shipper reorganised its staff resources to the benefit of all as a consequence of the proposed approach. Although the LSP is involved, there is only a very low degree of partnership as the LSP can easily be replaced. The SOP secures that all expectations are explicit and is an excellent educational tool. New LSPs should be able to quickly step in if required thus enhancing purchasing power.

Moving from order taker to order maker implies a shift in the power balance between shipper and carrier. Our experience is that the suggested approach was greatly appreciated by the LSP. The approach provides clarity of expectations which help guide their efforts where before there was uncertainty and confusion. The following statement by one of the LSPs highlights their perception of the process:

"The implementation of transport purchasing and management processes has benefited our business as a carrier. Our customer has transformed the way they approach logistics by formalising the purchasing and KPI measurement processes. While this places challenges on our company to perform to new levels of expectation, we have benefited from the exercise through improved clarity of expectations. Although the new processes pose greater demands on our management resources, we have gained a better understanding of the customer's needs, increasing transport efficiency. The introduction of a formalised SOP to specify service expectations was essential to this outcome."

6. From 'Order Taker' to 'Order Maker'

Using the solutions described in this paper it should be possible for a manufacturer to change from an order taker to an order maker within a reasonably short period of time. Improving transport management can be considered relatively 'low fruit' for logistics managers. The suggested approach does not require much investment, only dedication to rearrange the power balance between shipper and carrier. A full implementation should be possible within three months. The biggest challenge facing the logistics manager is in quantifying the savings obtained from the range of transport cost areas, which is vital to judge the effectiveness of the approach. The suggested approach can be applied on its own or within existing SCM programmes and is thus very flexible.

For this approach to work, it will for many manufacturers be necessary to allocate dedicated staff resources to managing transport. There needs to be ownership and the daily management can be somewhat more time consuming than previous practices. The investment in resources will be far outweighed by financial benefits from the various cost areas. Figure 1 summarises the suggested approach.

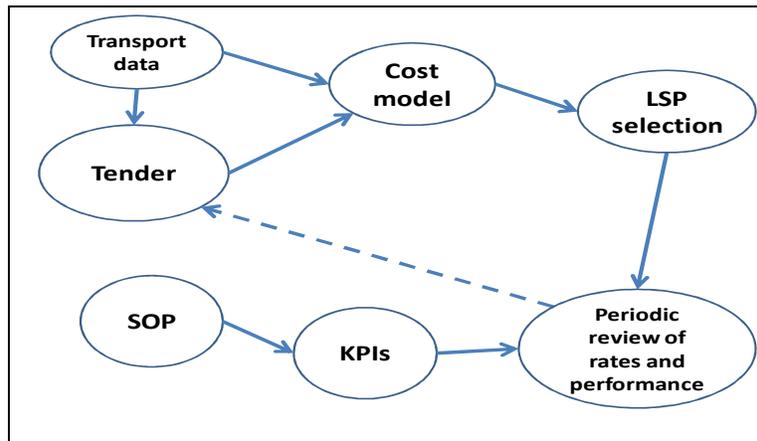


Figure 1 – A framework for transport purchasing and management

With the increased transport management capability there are savings to be achieved by the manufacturer of taking charge of inbound transport as well as outbound. Rather than suppliers managing this process and passing on the cost, the manufacturer can bring these benefits to themselves as well as its supplier. This will also boost transport volumes which should translate to lower overall rates from the purchasing leverage.

In one case it was found that this approach provided a useful foundation for more comprehensive SCM approaches, aiming to coordinate not only transport but also inventory, production and demand planning. Comprehensive SCM programmes had not been pursued, however the transformation from order taker to order maker enabled and inspired the SCM objective.