Supply Chain Secrets

The No. 1 Guide to Saving Your Business Millions

Rob O’Byrne
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I dedicate this book to all who work in the fascinating field of Supply Chain and Logistics, who make the impossible possible for businesses and organisations all over the world.

We all know who really makes things happen!

Rob O’Byrne
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It has been an honour and privilege to write this book. As with any major project, there are a number of very special people who contributed to making this book happen. So, I’d like to take this opportunity to say “THANK YOU”.

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As a thank you for buying this book, I’d like to provide you with some great free information.

I’ve been working in Supply Chain now since 1975. And since 1995, I’ve been consulting to top 500 companies all around the World. So you’d think over that time I might have accumulated some knowledge and tips that might be useful to you?

Sure I have. And I’d like to share some of that knowledge and some of those tips with you, as a thank you for buying this book.

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Rob O’Byrne
Chapter 1

Supply Chain Strategy

Making it Real
INTRODUCTION

With supply chain effectiveness and efficiency so tightly bound to the success of a company, it’s surprising that so many companies have no defined Supply Chain Strategy. However, defining a strategy is just the first step. The Supply Chain Strategy has to be right and it has to be followed by the right actions.

One company’s strategy is unlikely to be the same as another company’s, even if they have overlapping business goals. The strategy has to be defined both in terms of the market that the company wants to address and the business strategy that it has formulated as a function of its business objectives.

The indispensable starting point is what the customer values. This in turn drives the company’s business objectives. Different market segments may be focused on offerings that are continually being renewed, on service and quality, or on low prices. The retailing market abounds with examples. Fashion retailers such as Zara and H&M have focused their business strategy on short life cycle products. Their Supply Chain Strategy has to fit with this as well as with their corporate objectives. Supermarket chains like Tesco and Wal-Mart need very low cost and efficient supply chains to compete effectively. Solutions focused retailers
such as Home Depot will have a focus on elements such as buying well, maintaining high availability and good range management.

Supply Chain Strategy is just one part of a company’s overall business strategy, albeit a key part. What often confuses companies is that whereas an overall Supply Chain Strategy must be defined and linked to the business strategy, it often also needs to be adapted to individual divisions within the company.

**Focusing on the End Game – the Results Required**

Successful businesses are centered on what their customers want. Their Supply Chain Strategy follows the same rule. There’s an extra twist, however, because supplying customers with what they want is also dependent on what value they expect and where they are located. A company like Tesco has its points of presence in towns and similar metro areas. Their customers come to these points of presence, meaning the Tesco stores. The company focus is on availability, price and range. Compare that with another company serving the mining sector with products and services as diverse as explosives, surveys and drilling, and customers remotely and widely dispersed. In this case service is critical, but cost may not be so sensitive. And somewhere between them are
pharmaceutical retailers, like Boots, where cost is still a factor but where the products can absorb a little more of the cost and customers value a higher level of service.

Examples of “end game” parameters for different companies include:

**Healthcare:**
Service assurance, best compliance, best range.

**Building Products:**
Delivery where you want, all your products in one place, price is never an issue.

**3PL (3rd Party Logistics):**
Best service reliability, best sector knowledge, no unhappy customers.
Mass Retailer:
Always in stock, lowest prices, quality products.

Supply chains often encompass a broad range of business and customer needs. Yet companies need to be able to see beyond the complexity to identify the things that really matter. This is what then determines the key functions and processes to be focused on. At the customer end, what often matters is service and availability. Within the business itself, the cost of goods sold is the key parameter.

The operational decisions come afterwards as a result of how the Supply Chain Strategy has been defined. Specific IT systems and decisions about whether to outsource are the “how” in the process and must necessarily be preceded by the “what”. Good Supply Chain Strategy focuses on the end game; good operational management takes care of the details.

There are still trade-offs to be made, even within the context of maintaining the overall strategic direction for the supply chain. Strategic thinking has to be continually present, or trade-offs can lead to isolationist (“silod”) thinking and suboptimal implementations. Getting the trade-offs wrong in a physical distribution network, for example in terms of the number of stocking locations, the products to be held and
the service to be provided to customers, can account for as much as 15% of distribution costs.

When strategic imperatives are clearly defined and respected, your company is protected against the muddled thinking that can occur where, for example, distribution centers (DCs) are outsourced as a matter of policy (without considering what suits the business best) or where transport assets are kept in-house regardless of supply chain effectiveness and cost.

The value streams associated with the supply chain give another useful perspective and a way of ensuring that the supply chain, when implemented, will fit with business strategy and customer expectations. The diverse range of customers and products that exist in the healthcare sector makes a good example. We can categorise as follows: continuity products with a year round pull; non-continuity products with a dynamic pipeline pull; and seasonal products with push, pull and exit. Then if, for example, our strategic imperative is low cost to the end customer, supply chain costs have to be minimised. This starts with buying, not only the starting point for the supply chain, but also typically one of its highest costs.
Getting Buy-In Across the Business

Managing all these functions and processes effectively needs good information visibility, good cross functional communications and everyone knowing what the end game is. We now have our strategic imperatives and they drive our tactics, our plans, our resourcing and ultimately our results. But we need to constantly balance and adjust our tactics to keep targeting these imperatives.

Establishing the strategic imperatives for your business is a critical stage in developing an effective Supply Chain Strategy or, where one already exists, in ensuring it’s effective. The strategic imperatives relate directly to the overall business objectives and for this reason must be developed at the highest level of the organisation. Optimally, this means senior management participants from all key areas of the business and most importantly the CEO. It need not be a lengthy or time consuming process, but this level of engagement is essential. The senior management team needs to be actively involved in the process of translating the business objectives to supply chain objectives, because the Supply Chain Strategy, once developed, will impact them all.
The objective here is to get all department heads on the same page in terms of what the supply chain is trying to do. Depending on the level of supply chain understanding in the business, this may require some education regarding the cost benefit implications in terms of key supply decisions. To assist the process, it’s best to demonstrate the benefits of various supply chain objectives to other functions within the business. For example:

**Sales:** Highlight how the strategy will focus on improved availability and sales.

**Merchandising:** Highlight how the strategy will focus on reduced markdowns, improved sell through and improved overall margins.

All key functions in the business need to understand the WIIFM (What’s In It For Me), in terms of the business overall and all key functional areas. Once the senior management team is engaged and has agreed the Supply Chain Strategy at a conceptual level, work can begin on greater levels of detail and engaging lower levels of management in the business.

It’s still vitally important that at all levels of the business, the strategic imperatives are embraced, as they should shape the plans and actions of all within the supply chain. The strategy must also be seen to be driven from the top. We need to be
conscious however, that as we work at the lower levels of the organisation, priorities and viewpoints will change. This is largely driven by the managers’ areas of responsibility and reward structure.

In most cases, it will be necessary to adapt and build on the strategy, to give it a more tactical and operational interpretation. It’s then also important to start changing key performance indicators (KPIs) and reward structures, where these may be in conflict with the strategy. It’s also important, at all levels of the organisation, that the Supply Chain Strategy and, in particular, the strategic imperatives are seen as the end game. They are the overall objectives that must be constantly strived for. The means to the ends, the various tactics and operational plans may change over time. In fact they usually will, as the shape and needs of the business change. The trick is to ensure that the tactical and operational plans do not become end games in themselves.

**Measuring Results Effectively**

At the top level, measure the end game. At lower levels, measure the operational effectiveness. Measurements are made using KPIs. For example, top level goals concerning cost and service will then cascade down to level 2 and level 3 KPIs. Cost may be expressed as supply chain dollars as a
percentage of sales. From this we could have DC dollars as a percentage of sales and then DC direct dollars per unit and DC total dollars per unit. Naturally, the specific KPIs to be used will be heavily influenced by the specific industry and business under consideration. Like the strategic imperatives, ample opportunity must be allowed for key stakeholders to engage in the process of developing the KPI matrix.

The key to measuring supply chain results is that KPIs have to be directly linked to the supply chain strategic imperatives. If not, people will be motivated to achieve the wrong things. So establish the strategic imperatives first and then determine the KPIs that will have the greatest impact on supporting them. At lower levels in the organisation additional operational KPIs will appear, and this is fair and reasonable to allow managers to measure the performance of key functional areas, but they must not be in conflict with the strategic imperatives.
Perils and Pitfalls That You Can Avoid

In the light of what we have discussed so far, it’s not hard to see where supply chain strategies might possibly go wrong. Typical issues include:

- Failure to appreciate the end game. This occurs when the Supply Chain Strategy is developed in isolation and does not take into account the strategic objectives of the business.
- Failure to understand customer needs. This can result in under or over servicing with a negative impact on service and costs.
- Over-estimating competencies. Sometimes the competencies of existing staff and systems can create major hurdles for strategy success. If in doubt, simplify down the strategy and take basic steps first.
- Failure to get senior management commitment. This is probably the major cause for failure and will occur if the senior management team has not been engaged in developing the strategy. If it has not been involved, the strategy may also simply be wrong.
- Failure to get employee commitment. Any new strategy needs to be seen to be driven from the top. It also needs to be translated into the tactical and operational language of others within the business.
• Poor change management. Many companies will try to impose a strategy on employees, whereas the greatest chance of success is supported by a high degree of engagement, communication and training at all levels of the organisation.

• Poor communication. Poor communication not only occurs internally within businesses, but changes in strategy need to be well communicated with suppliers and customers alike.

Companies That Get It Right

Nokia India – significant success in India

Mobile phone manufacturer Nokia has used its supply chain to forge significant success in India, with an effective and innovative Supply Chain Strategy developed to support aggressive business targets. They have manufacturing in Chennai, with R&D in Bangalore, Hyderabad and Mumbai. India has very high mobile phone usage, probably due to the fact that mobile tariffs are some of the lowest in the world. Mobile phone usage increased from about 1% - 8% in about five years. The rural market potential in India is huge, with a telephone density as little as one tenth of that of urban areas.
In India, Nokia has invested heavily at the lower end of the market, even specifically designing much cheaper phones. In India most phones are sold by retailers, not the mobile phone companies, and there are about 100,000 retail outlets. Nokia has used the services of HCL as their distribution partner to reach all the small towns nationally. HCL already had a significant distribution network for their own products. Nokia even uses a mobile van marketing program to take the mobile phone message to the small country villages.

**H&M – fashion at reasonable prices**

H&M is the world’s third largest retailer, with 1,600 stores in 33 countries. Their focus is fashion at reasonable prices. They have 20 production offices in Asia and Europe, and have about 800 suppliers. Their key to success is a well integrated supply chain. The Stockholm HQ designs the clothes, which are then made in Asia and Europe; Europe for the faster turnaround products and Asia for the longer lead time products. Store replenishment is a very strong focus to ensure high levels of availability. The supply chain is managed from the HQ, and H&M acts as importer, wholesaler and retailer. H&M manage the stock with a DC in each country, but transport is outsourced. This is a good example of a well developed Supply Chain Strategy effectively supporting the business goals.
A Simple Roadmap for Developing or Re-Aligning a Supply Chain Strategy

We can certainly learn a lot from some of these best in class companies, but we must be careful not to just overlay their strategies on our own companies. We need to examine and select the appropriate elements and adapt those for our own use. What is appropriate for one continent may not be for another one. Australia, for example, has a similar surface area to Europe. However, marked differences exist for physical distribution in terms of customer density, sales density, replenishment times and sourcing points, just to name a few. Adopting supply chain strategies without adaptation is unwise, but it’s certainly possible to learn from them.
CONCLUSION

By following these simple steps, we can end up with a Supply Chain Strategy that:

1. Supports business strategy.
2. Is understood and supported.
3. Is focused on the required outcomes.
4. Can be tracked and adjusted.
“I don’t know what the hell this ‘logistics’ is that Marshall is always talking about, but I want some of it.”

Fleet Admiral E. J. King: To a staff officer. (1942)
Chapter 2

Customer Service
It All Starts Here
It really does all start here – with the customer, and the service that is provided to them. And, it ends here as well since successful organisations have one central focus – customer service excellence. Many preach this mantra that ‘the customer is king’ or other similar themes but, in the words of Shakespeare, this touted focus is ‘more honoured in the breach than the observance’.

This chapter will address an approach to customer service based on the supply chain’s pivotal and critical role in delivering and assisting the business with delivering:

a) Customer Service Excellence, and

b) Customer Loyalty.

While intrinsically linked, each of these will be dealt with separately since, from a supply chain and indeed whole of business perspective, the measurement systems used for each are, or ought to be, different.

CUSTOMER SERVICE EXCELLENCE

There are many views about customer service excellence, what a customer expects, what is valued by customers and what is not, the role of the supply chain and what kind of
measurement systems best capture this information in a timely way to permit organisations to respond quickly. Since the operation of and service delivered by the supply chain in a business has such an important part to play in the overall customer experience, it is appropriate to ask the question, “Is there an ultimate measure of customer service?”

One measurement approach increasingly adopted by more and more businesses is the Perfect Order. The ultimate measure of customer service is the Perfect, or Error Free, Order. This measure requires that there are no mistakes across all six key functional areas of the supply chain that interact to provide the customer with what they expect:

- The Right Product.
- At the Right Time.
- In the Right Place.
- In the Right Quantity.
- At the Right Price.

The six components referred to are outlined as follows and are presented in chronological sequence from the point of order receipt and capture to a satisfied delivery.
1. Order Entry Accuracy
Order entry accuracy or order capture is dependent on two factors. These are:

a) Capturing the customer’s first request.

The first request is sometimes known as an unconstrained order, or in other words, what the customer wanted in the first instance without any constraints being placed on the order – for example insufficient stock. This is a vital component of delivering customer service excellence yet is only adopted by a few organisations. Those that do are typically operating Best in Class supply chains. Why is capturing this so important? The answer lies in using this data point as a basis of forecasting future demand. In most organisations demand planning is based on historical sales – actual sales. In a very simplistic case to illustrate the point, if 100 units of an item were purchased of an SKU for each of the last 3 months, it is likely that 100 per month will be ordered for future months. Yet if, in addition to the actual consumption of 100 units per month, over the preceding months there was an unfulfilled demand of another 100 units, then not only would the forecast not take this into account, but there would always be insufficient stock to meet real or unconstrained
demand. In this instance, the customer’s perception, if this were perpetual, is that the supplying company could only ever supply 50% of what the customer really wanted. And this would continue, unbroken based on this process, unless something dramatic changed.

This scenario too is premised on not being able to fill orders to the quantity required. The impact of product substitution has a far worse compounding effect on the level of service, cost of holding inventory and product obsolescence. This example might demonstrate the point. If 10 units of Product A constituted the customer’s first request, but insufficient stock was available at the time of order placement, yet a negotiated order resulted in an equivalent number of units of Product B ordered instead as a substitute, then, unless corrected, forward demand planning would be based on consumption of 10 units of Product B. In the following month, 10 units of Product B would be procured to meet a supposed demand that was in fact fictitious. If the same customer called in the subsequent month and again wanted to place an order for 10 units of Product A, the result would be:

- No stock of Product A that the customer wanted.
- An equivalent number of items of Product B for which there were no orders.
• Inflated inventory of Product B.
• Missed sales for Product A.
• Potential for product obsolescence of Product B.
• Poor forecast accuracy for both of these Store-Keeping Units (SKUs).

Delivering a Perfect or Error Free Order therefore depends, in the first instance, on having appropriate procedures in place to capture and utilise a customer’s first request. For each order transmittal method – phone, fax and electronic – different processes are required to properly capture an unconstrained order.

b) On the basis that the above is in place, the next sequential step in delivering a Perfect Order is accurate order entry, i.e. no data keying errors, no transpositional errors, etc. In an age of e-business and electronic transfer of orders, errors in this component of delivering a Perfect Order have been significantly reduced.

2. Inventory Availability
If a customer’s order is captured based on their first request and accurately entered, to this point, the order remains in a perfect or error free state.
The next requirement of a supply chain is to have sufficient stock to meet the captured demand. This is dependent on 2 factors:

a) A level of forecast accuracy that predicted the demand ahead of time. A good forecasting system and process, perhaps including CPFR (Collaborative Planning Forecasting and Replenishment), can assist in delivering this outcome.

b) Secondly, even if the forecast is accurate, the stock must physically be received into stock and be ‘available for sale’. This metric then is also linked to supplier performance to ensure that the inventory is available at the time of order receipt. If the inventory is available then, again, to this point in the delivery of a Perfect Order, the process is without error and likely to deliver customer service excellence.

3. Warehouse Performance
Ostensibly a warehouse or DC, in order to maintain the Perfect Order chain, needs to achieve the following:

• Pick the order without error, i.e. pick errors.
• Not sustain any damage to the product during the process.
• Complete all warehousing functions in time to meet the
required despatch time that is linked to the customer lead time for delivery according to that which is promised.

4. Carrier Delivery On Time and In Full
Once the warehouse has completed all its functions, the onus to maintain an Error Free status passes to a nominated transport company in most cases. If they are able to deliver 100 percent on time and in full then the order retains its Perfect Order status.

5. Customer Acceptance of Order
If all of the above steps have been completed without failure or defect, and the delivery is completed not only on time, without shortages or loss and also without damage, then a customer might be reasonably expected to sign to acknowledge acceptance.

6. Invoice Accuracy
Given the above, if all have been completed then the physical delivery is perfect, and so what remains to complete the process, complete the order and conclude the transaction, is payment by the customer based on not only there being no service defects, but the invoice details are correct also. For example, the right price is applied, the invoice matches the goods delivered, correct product codes, etc.

So, based on the above, what is the probability of an order being perfect? The following benchmarking reporting
format developed by Benchmarking Success demonstrates the calculated probability of a Perfect or Error Free Order for a sample and typical organisation.

For this case study, the probability of a Perfect Order was 64%, compared with the average for the comparative group of 68%. But what is even more revealing is that the best in the group was achieving 93%. For this organisation this became the customer service ‘high bar’ that they set about achieving. And this became a ‘whole of business’ focus. A monthly reporting cycle was established to measure the probability of a Perfect Order across the whole business and
this was used as the ultimate customer service excellence KPI in the executive dashboard of the business.

CUSTOMER LOYALTY

The previous section focused on Customer Service Excellence. Understanding why customer service excellence is important relies on understanding the ‘Value Exchange Model’.

![The Value Exchange Model](image)
The Value Exchange Model relies on four interrelated values:

- Understanding Customer Value.
- Creating Customer Value.
- Communicating Customer Value.
- Delivering Customer Value.

“...is a difference between a repeat purchase customer and one that is loyal. The difference is commitment.”

Of all the benchmarks used to measure quality, customer satisfaction is still one of the single strongest predictors of customer retention. It’s considerably more expensive to attract new customers than it is to keep old ones happy. In a climate of decreasing brand loyalties, understanding customer service and measuring customer satisfaction are crucial. We need to know what expectations customers have of our services and products, the effectiveness of our marketing strategies, the strength of our company’s image, as well as the key elements that most heavily influence customer retention for our business. Or, put diagrammatically:
Customer Value is linked to customer loyalty in that there is a difference between a repeat purchase customer and one that is loyal. The difference is commitment. Customer service result is sustainable revenue because it leads to customer loyalty, rather than just repeat purchases, and Customer Value relies on customer service.

The difference in behaviour of a loyal customer compared to a repeat purchase customer includes:

- A committed, loyal customer is likely to be more tolerant of mistakes and to see the benefits of a long term relationship with the organisation.
• A repeat purchase customer is likely to change organisations when a better offer is made from a competitor.

Long term customers are a vital source of profitability because:

• They purchase more because they trust you.
• You get to know them and can service their needs more efficiently – and cheaply.
• They provide free advertising through word of mouth.

As well as the above, attracting new customers costs money. This is through such things as:

• Advertising costs.
• Set up costs for new accounts.
• Learning the customer’s requirements.

Each year that the customer stays amortises these costs over a longer period of time.

Organisations with loyal, long term customers can outperform companies with lower unit costs and higher market share but
with a higher customer churn. For example, a 10% reduction in unit costs may be financially equivalent to a 2% decrease in the customer defection rate. Low defection strategies can outperform low cost strategies because most businesses have a defection rate of between 10-20%.

So how can customer defects be reduced? Some practices to tackle this include:

a) **Watch the door.**

   Track customer purchases over time, noting changes in behaviour in the total order or the product mix purchased.

b) **Know what defectors are telling you.**

   Customers who leave can provide a view of the business that is not available to those on the ‘inside’. Unlike market research about customer satisfaction levels, feedback from defecting customers tends to be concrete and specific. Customers are usually able to articulate their reasons and skilful probing can get to their base concerns. It can also highlight areas where improvements will increase customer retention and help decide where investments in improvements are likely to show the greatest return.
c) Know the cost of acquiring new accounts.

All staff should be aware of the real costs of acquiring new customers and financial statements should show these costs clearly.

d) Crafting a zero defections strategy requires an organisation to teach all employees:

• The lifetime value of a customer.

• How to gather information, who to share it with and what actions to take.

• A zero defection strategy also applies to staff defections.

e) Other Considerations.

The Service Value Chain also requires organisations to recognise that there are internal as well as external customers and that external and internal customer service is dependent on employee retention and employee productivity and that low employee turnover is closely linked to high customer satisfaction.
In summary then, Best in Class customer service begins with the customer- measuring performance against their expectations. The supply chain functions in any business are pivotal in delivering to expectations and this can be done in conjunction with an ‘all of business’ approach that uses a Perfect or Error Free Order measurement system. There is a difference though between customer service excellence and customer loyalty. Measuring customer loyalty will be the subject of a future discussion but, finally, here are some keys to great customer service:

- In the eyes of the customer you are the organisation.
- Remember your own experiences as a customer.
- Behave as if they are your only customer.
- Give customers a way to back down without losing face.
- Remember that it is often the little things that are the difference between competitors.
- Take responsibility for the actions of the company.
- Check that what you are doing is what customers want you to do.
- Good customer service results from continual improvement not sporadic redefinitions of business priorities.
• Remember that customers don’t know (or care) what your customer satisfaction rating is – only how you react to them today.
“Every unit that is not supported is a defeated unit.”

Maurice de Saxe, Mes Reveries, XIII, 1732
Chapter 3

Supply Chain Network Design

Understanding the critical bookends
INTRODUCTION

The supply chain network is a critical dimension of the supply chain. As a major component at the operational level, it has a significant impact on overall profitability for the organization concerned. Getting the supply chain network design right can yield improvements in areas such as:

- Customer allocations to supply points
- Sales territory planning
- Sourcing strategies

The design has to be driven by the strategic imperatives of the supply chain, which are in turn linked back to the business objectives of the company. At the same time, it must allow for optimisation of the Cost To Serve the end customers. This applies to both new and existing networks. A simplified model that is often useful to keep in mind is that of two bookends to the supply chain network: at one end there is the customer or market to be served; and at the other end is the supplier.

Focusing on network design may also be motivated by signs of any of the following problems:
1. Too many stock locations
2. Poor Distribution Centre utilization
3. Multiple handling
4. High distribution costs
5. Poor customer service
6. Excessive co-location of offices and warehouses

It’s important to make sure that the overall design objective is the best one. For instance, businesses sometimes turn to the design or the selection of the location of a new Distribution Center, because of existing facilities reaching capacity. However, there is a whole range of measures and changes that can be adopted within the supply chain to reduce requirements for, or make better use of, DC capacity. In this case, adding more facilities to the network is not necessarily the best solution.

**Modeling the Supply Chain Network**

Before a network design in particular is implemented, modeling is done to understand the potential advantages or impacts of putting new parts of a network in place. Network modeling can be used to assess a broad range of future
alternatives. It’s important at the early stages of considering a network modeling project, to clearly articulate and agree the key modeling outcomes required, in terms of what they are and also in terms of their breadth and depth.

These outcomes are often best expressed as “what questions do we want to answer?” or “what different possibilities do we want to test?” Different scenarios that can be explored include:

- Distribution centers (DCs). Number, size and location
- Service levels. Impact of changes
- Transport. Changes to vehicle types or rates
- Customers. Changes to demand
- Customers. Sales territory allocations
- Supply. Impact of changes to supply points and supply volumes

Network modeling can be conducted at different levels of detail depending on the need. A modeling project typically follows these broad stages
1. Scenario Concepts

- Develop preferred and logical future scenarios
- Agree what is constrained and unconstrained
- Also agree on clean sheet scenario approach

2. Base Case Model

- Provides a baseline for comparison of options.
- Provides important cost functions for the modeling.
- Gives insights in the performance of the “As Is” network

3. Scenario Models

- Run agreed scenario models.
- Review results.
- Re run models as required.
- Run sub scenarios based on results.
- Review outcomes.

4. Business Case

- Agree best scenario.
- Develop scenario into comprehensive business case.
- Costs, benefits, risks,
For a viable model and output from the process that truly benefits the business, stakeholder engagement and review at critical stages is vital.

5. Variables and information required

A broad range of variables can be tested within a network modeling approach:

Customers:
Location, Volume ordered, Service needs

Domestic Transport:
Mode, Carrier type, Carrier rates, Service levels

Secondary (Local) Storage:
Location, Storage type, SKUs stored, Volume stored, Capital costs, Operating costs, Maintenance

Domestic Transport:
Mode, Carrier type, Carrier rates, Service levels

Primary Storage:
Location, Storage Type, SKUs stored, Volume stored, Capital costs, Operating costs, Maintenance

Domestic Transport:
Mode, Carrier type, Carrier rates, Service levels
Port of Entry: Location, Volumes, Process, Transport Mode, Costs
Supplier/Plants: Location, Volumes, Process, Transport Mode, Lead Times, Availability, Performance
Overall: Flow of Products and Services, Flow of Information and Cash, Performance and KPIs (Key Performance Indicators)

Typical information requirements are based on the list below, which shows how different information components generate different master data files. Some components appear in more than one master. If any of this data is not available, alternative approaches can be developed.

Customer Master: Code, description and location details including geo-coding, Demand History
Material Master: Demand History, Inter Facility Transfers, Supply History
Facility Master: Transport Rate Cards, Staffing Levels, Operating Costs, Material Handling Equipment,
Demand History, Inventory Snapshot Code, description and location details including geo-coding

Supplier Master: Supply History, Code, description and location details including geo-coding.

Assembling this information provides a baseline for the comparison of options and also provides important cost functions for the network modeling. This in turn gives insights into the performance of the existing network.

6. Generating solutions

Solutions can be developed as a logical process based on modeling skills, and sound business and industry experience. Stakeholder engagement and review at critical stages is vital.

1. Customer base analysis

• Where they are
• What they use (demand)
• Specific constraints/needs
2. **Understand the Service offer**
   - Service needs
   - Service performance
   - Service costs

These parameters form a key driver of the overall ‘shape’ and size of the network. They correspond to the first ‘bookend’ (the customer base).

3. **Supplier base analysis**
   - Where they are
   - What they supply
   - Specific constraints/needs

4. **Understand supplier lead times**
   - Service performance
   - Service and cost trade offs
   - Freight terms

Sections 3 and 4 in this list form the 2nd *bookend* (the supplier base). This drives inbound costs and operating principle such as storage requirements and cross docking.
5. **Solution options development**

- Known options
- Logical options
- Intuitive options
- Experiential options

From this, conceptual network options are developed and discussed.

6. **Model the solutions**

- Against a known base case
- Sensitivity analysis
- Additional what if sub-options

A quantitative assessment is made for each option.

7. **Challenge and refine the solutions**

- Pressure test the options
- Refine the options
Company teams need to challenge and review the options. A preferred option is then selected and a comprehensive business case is built.

**Network Modeling Tools**

Specialist optimisation tools are often preferable as it provides a good audit trail, a sound structure to work within and advanced optimisation algorithms.

A tool like this is typically a software application that:

- Tests many different distribution strategies in a relatively short time.
- Provide detailed performance and cost reporting on each option.
- Provide powerful information on customer location and market segmentation.

It takes account of many variables such as:

- Service levels
- Customer profitability
- Stock sourcing from suppliers
- Distribution centre location
- Centralized compared to decentralized stock holding
- Facility Rationalisation
- Modes of transport.

The full spectrum of supply chain dimensions can be modeled, including for example sample vehicle and depot properties. The supply chain model from this should then accurately represent the costs of moving material through the supply chain to allow option and sensitivity modeling.

Early base model outputs include the mapping of the demand density. This gives valuable insights into demand from a geographic perspective. Further ‘drill downs’ by division, customer group or product group will give further detailed interpretation. Often poor customer/supply allocations show up here.

Base case model costs are calibrated to within two to five per cent of actual costs so that future scenario models accurately represent likely costs. Base model outputs also give a clear view of how product is currently flowing through the network.
Scenario Modeling

Following Base Model calibration, a broad range of scenarios can then be run to test change in supply points, DCs, customer service, transport type and the like.

Again, all models are supported by detailed analysis of cost and service. To categorise them in detail, costs are first broken down into broad categories such as:

- Warehousing fixed & Variable
- Inbound freight
- Outbound freight

Network design trade-offs

Within the different options available, the choice of the “best” one may simply be a matter of deciding which trade-off is the most acceptable. For example, more stocking points typically means more cubic meters of storage underroof. Some of the implications of this for a company may be:

- Higher lease or facility rental costs
- Greater complexity in operational management
- Being closer to the customer for faster service
- Replenishment can become more onerous
Trade-offs as the number of inventory points in a network increases are typically between the following:

- The cost of storage rises, due to the increase in facility numbers and fixed costs
- Inventory holding cost (cost of capital) increases as more inventory is required (due to increased safety stock requirements with more locations)
- Primary transport, or line haul cost increases, as more tonnes/kms are being travelled
- Customer delivery cost (secondary transport) decreases, as with more facilities, the distance to the customer reduces
- DC systems costs increase, as more licenses, interfaces and hardware may be required.

Inventory holding costs can increase significantly as additional nodes are added into a network. A possible alternative for a company may be to pool inventory in fewer locations thereby lowering the total system inventory. As nodes are changed, the company may also need to pay particular attention to slow moving or obsolete stock to ensure that if they continue to be held, it’s part of a deliberate, thought-out plan to do so. The extent to which a company can engage suppliers to deliver directly to line stations or DC’s may be an important consideration.
While service levels can be significantly increased by adding stocking points, the company must ensure that a balance is struck so that they are not ‘over servicing’ their customer base and adding in unnecessary costs. The right systems capabilities can make a significant difference to overall supply chain performance.

**Moving towards design optimisation**

Optimisation of a supply chain network can differ considerably according to the business concerned. However, the underlying principle is always to pick the lowest total cost points. It’s also critical that the network supports the company’s overall supply chain strategy.

The secret to an efficient distribution network is to minimize the amount of product handling. It’s a good exercise for any company to think about its own distribution networks and to try to count the number of *touches* a product receives between the point of supply and the customer. Each touch not only incurs cost, but also increases the risk of error and damage.

The objective within any distribution network is to find the optimum number of facilities that will reduce the total cost
curve, whilst still maintaining appropriate levels of customer service. We need to understand what drives, or should drive businesses to select certain locations over others. In fact, the cost driver that frequently has the least impact on the total cost of selecting a given location is land and building cost. This is due to the fact that inbound and outbound transport, as well as labor costs are a far higher proportion of the total costs of a distribution network.

The customer base and the service offer provided to customers have a direct bearing on where a company needs to hold stock to service them. Likewise, the location of the company’s suppliers has a similar impact. The further away the supplier base, and the more unreliable the supplier service, so the more stock needs to held in the network to ensure service continuity. The signs of a problem in a supply chain network are many, but not always obvious. For example, many businesses co-locate sales branches with warehouses. This is rarely necessary and may just lead to a network with too many branches, too much stock and high distribution costs.

A company needs to look for multiple paths from source to customer. It’s important to understand that the traditional path, through a company’s own stock holding facilities might
not always be the most effective from a cost and service perspective. For example, direct delivery from supplier to customer can be appropriate where the lead times, order size and transport efficiency make sense – the fewer times a product is *touched* through the supply chain, the less cost is incurred.

**Examples of supply chain improvements through network design**

A company in Thailand was distributing products nationally using a large network of warehouses to service customers in up country areas. The customers were ordering in small quantities and the distribution costs were very high with many orders being expedited at a high cost directly from Bangkok. A simple change to the network involved closing the *up country* warehouses and using distributors in these areas. Products were then shipped up country in bulk, by the truck load and the distributors serviced the small local customers. The price reduction to the distributors was more than offset by the reduced transport and warehouse costs. The new network operated well, savings were higher than forecasted and sales increased as well.
An FMCG company in Australia had grown over time to have a network of over 40 warehouses. This number was thought to be required to provide a high level of service to customers. In fact with careful network modeling using specialist tools, it was possible to prove that a network of 20 warehouses located in the appropriate locations could offer just as high service levels but with much lower operating and inventory costs. That network operated as expected after this rationalization and the cost savings were significant.

CONCLUSION

The action steps required for supply chain network modeling and design begin with the focus on the two bookends of the customer base and the supplier base. The customer service offer, in terms of delivery lead time, will dictate how close to the customers we have to hold stock. The supplier locations and lead times also have a similar impact on the other end of our supply chain.
Whatever the final design choice that is made, an accurate picture of the existing network’s cost and service performance is required. This is an essential step to assess the network’s ability to meet cost and service goals, but also provides an insight into the potential opportunities for improvement and specifically where in the network performance issues are to be found.
“Gentlemen, the officer who doesn’t know his communications and supply as well as his tactics is totally useless.”

General George S. Patton, USA
Chapter 4

Is there a Doctor in the Warehouse? There Should Be!
PROLOGUE

“Come on! Get out from behind your desk! Leave your e-mails – they can wait! Let’s go for a wander through your warehouse. I know you’d like to do this more often but there always seems to be something that crops up to keep you tied to your desk. Customer complaints, supplier problems, demands for budget information from Finance, inventory inaccuracy, labour problems, lack of storage space, a proposed visit from City analysts hosted by the CEO are all conspiring to keep you from doing what you are paid to do: managing your warehouse in the most effective and efficient way.

“OK, here we are at the receiving bay. Every dock has a vehicle either being unloaded, waiting for someone to start the process or to complete the paperwork. Look outside, over to the gatehouse, and you can see there is a queue of trucks waiting to come into the yard, but they can’t enter because the vehicle waiting area is choc-full. This happens every day, about this time, but is usually clear by half-way through the evening shift.

“On the floor in the receiving area, there are wall-to-wall pallets waiting to be put to bed. The fork-lift operators are having a problem identifying and collecting their next load
because of the clutter. This is slowing them down and the backlog is building. What’s that? You have put in a request for another two forklifts to cope with the peak put-away but it has been turned down by those cretins in Finance? Mmmm…. well, let’s look at that later.

“Let’s take a walk through the pallet storage area. Looking up and along the line of the racking, we can see the occasional badly located pallet protruding out from the beam. The pallet is being supported, not by the corner block as intended, but by the weaker stringer boards. This is a safety issue; a weak or cracked stringer is in danger of giving way and a pallet load of product falling from the fifth level of racking can easily ruin someone’s entire day.

“There are pallets of stock in the aisles waiting to be located, either in storage locations or in a ground level pick-face location. Look at that forklift operator trying to access an upper level location to perform a full-pallet pick for an urgent order. She has had to move that obstructing pallet on the ground to make the play.

“We are now near the end of an aisle nearest the marshalling area. These are the prime pick-face locations where picking activity should be at its highest. Hang on; this full pallet of stock appears to have a thick layer of dust on its stretch-wrapped surface. It obviously hasn’t been picked from for a very long time. I’ve been watching that picker just over
there. He is using a fork lift rather than a ground level order picker to drop the pallet from the upper levels, pick the cases and then replace the pallet. Why is he doing that? Shouldn’t that fork lift be operating in the receiving area to tackle the put-away backlog?

“Over in the corner, on the floor against the wall, are about twenty or thirty pallets holding a miscellany of some three hundred or so items in varying conditional states. Around this collection of apparent misfits is a cordon formed by tape, not unlike that used by the police to cordon off a crime scene. Perhaps this is an apt simile because there are handwritten placards warning passers-by: ‘Not on account – do not inventory’!

“How is the order picking going? All today’s orders have been picked apart from a few that need to be completed because there was no stock in the pick face location at the time of picking. It was a light day for orders, was it? Where have all the pickers disappeared to?

“Now we cross to the marshalling area where the loads are being assembled in order of drop and checked before being loaded. With all the orders picked, the floor is full – covered in pallets and roll cages waiting to be processed for despatch when the vehicles eventually arrive. Because of the overcrowding, the demarcation spaces between loads have all but disappeared and there is a danger of stock migrating
from one checked load to another.

“**OK, I have a good idea about** what is going on. Let’s head back to the office. By the way, I didn’t see your supervisors on the floor. Ah, there they are: in the supervisors’ office, *working through their e-mails!*”

These vignettes are taken from reality. I have seen them all several times as a consultant and as a DC manager, singly and in multiples. They are all symptoms of a malaise that might originate in the warehouse, but equally might be due to external causes.

**TREAT THE SYMPTOMS OR ATTACK THE DISEASE?**

Most mothers instinctively know about symptoms and their relationship with root cause. The first thing a mother will do if a child complains of feeling unwell is to feel their forehead. If she feels a high temperature, she knows it indicates a problem elsewhere – it is highly unlikely that the heat source is on the surface of the forehead – and will start searching for the reason. If there are no other obvious symptoms she might leave it overnight, ease the discomfort of the patient with a cooling towel or proprietary medicine and wait to see what develops. If there is no improvement, or more significant signs emerge, such as a rash, she will then seek the help of a professional in the form of a doctor.
A warehouse is the place where many of the symptoms of a problematic supply chain come to the surface. You could say it is the forehead of the supply chain. The causes may well come from within the facility or its operation, but quite often they are rooted elsewhere. The “Complete Warehouse Manager” gets into the habit of looking for the indicators on a daily basis, tackling the immediate effects of the symptom, but then delving deeper to find and rectify the root cause. In a large operation, the supervisors should take on the role of “Mother” looking for and reducing the impact of the symptoms, and reporting to the Warehouse Manager/“Doctor” to follow up with a deeper diagnosis. If the Doctor can’t follow the trail to and rectify the cause then he will refer the case to a “Specialist” also known as – surprise – a Consultant!

**CASE STUDY – TIME TRAVELLING LOGISTICS!**

A classic case of trying to cure a disease by treating symptoms only, instead of tackling the cause, was to be found when I arrived in Thailand as the newly-appointed Group Logistics Director of an international trading group whose Thailand operation, at the time, had about four warehouses in and around Bangkok and seven transshipment facilities scattered throughout the country. The flagship distribution centre had only just been completed and commissioned six months earlier. The aim was to close down the smaller warehouses
and consolidate their operations into the new Central DC. This should have already happened, but the commissioning of the new facility had not gone well. The operation was, in effect, falling over. The Thai General Manager of the facility had literally suffered a nervous breakdown and moved elsewhere, so I was doing his job as well.

The DC had a 3PL (3rd Party Logistics) role mostly for internal Group Business Units (BU) and some external customers. The biggest complaint was that target dates for delivery to the end-user customers were being missed by as much as seven days or more for about 65% of the orders received. The proof was in the computer-generated reports, which the Managing Director of one of the BUs showed me with great alacrity at the Group Operational Board Meeting held on my second day in post.

The report he showed me was a Tunguska Report, named after the region of Siberia where a meteoroid or comet exploded in 1908, devastating 2,150 square kilometers of virgin forest. Producing it must have had the same impact on the environment. It covered every order going back to the first day of operation six months ago, and indeed showed that the majority of target dates had been missed. I had the slightly intuitive feeling that he was trying to make a point; or I was being set up – or both.

A review of a report subsequently pulled from the WMS
showed that the vast majority of the errant orders were passed through to the DC after the target date had passed. Investigation showed that orders were often put on hold by the sales staff for customer credit checks, lack of stock to meet the order or other administrative reasons – some valid, some not so valid and some downright nefarious. However, the target date was not amended to reflect the delay. In other words, in many cases, the target dates were missed even before the order was received by the DC. H.G. Wells! Where are you when I need your time machine?

The effect on what should have been the successful operation of this brand new, multi-million dollar investment was devastating. Management and staff were trying, as a priority, to fulfill orders that were the subject of outraged customer complaints and at the same time meet the new orders that were coming down the pipeline every day. The small fires of crisis were joining together and turning into a conflagration that was being fought with mere buckets of water, albeit with considerable honest endeavour and personal sacrifice on the part of the DC staff, particularly on the part of the General Manager.

The solution? Ensure that the target date was amended on the sales system to incorporate any delay in the sales process. All outstanding orders that had been recorded as missed were cancelled and resubmitted if they were still valid and
required by the customer. A wall-to-wall, blind stock count was held to set a base line of accurate stock levels which had also been in chaos for six months. In other words, rain stopped play in the first over with no runs scored. C’mon boys, let’s start the game again!

Within two months, the DC was delivering 85% of its orders nationwide within 24 hours and 98% within 48 hours, against a target for all orders of 95% within 48 hours of the order being passed to the DC. Just as importantly, the cost of overtime was slashed by 90%. This had been running at the same level as, or greater than, salaries for normal operations.

This improvement was not all down to the target date issue, but the reduction in pressure about missed delivery target dates in the system meant that the management team could then spend time looking into and solving the other issues that typically plague a newly commissioned logistics facility.

**SYMPTOMS OR CAUSES?**

In the same way that a cardiologist not only has detailed knowledge of the heart, but also has excellent knowledge of the rest of the body systems, so should warehouse managers have a good working knowledge of the other elements of the supply chain they are supporting as well as an intimate knowledge of their own operations. This will enable them to conduct relevant self- criticism, whilst at the same time
looking upstream and downstream for the other possible causes of their problems. Sometimes a single symptom might be generated concurrently by internal and external issues.

Let’s take a look at the examples in the Prologue and perform a diagnosis of the possible root causes.

Firstly, the chaos in the yard and the receiving bay could be caused by:

- No booking in system for deliveries, or if there is, it is not being adhered to. If deliveries are booked in and controlled, the workload is spread evenly across the normal shift allowing resources to be optimised. Overtime can then be used for genuine problems.

- Some companies allow suppliers to make their own delivery schedules, leaving the warehouse to cope with the resultant chaos in the yard and in the receiving bay itself. I believe the sales department should allocate the week in arrangement with the supplier; the day and time within that week should be set by the warehouse.

Wall-to-wall pallets in the receiving area waiting for put-away:

- This could be a direct result of the lack of control of deliveries as described above. Also, to what degree are the quality checks being conducted and are they necessary?
A system of vendor rating linked with the level of QC relevant to that rating could speed up the putting away of stock. Remember, stock is generally not available for issue until it has been put into location.

- There might be a FLT (Fork Lift Truck) resource issue, but increasing the number should be very much the last resort and only if a full check of the fleet utilisation has been conducted. If a truck is being used for case-level order picking, as observed in our Prologue, then it is being used to cover for an inefficient pick face layout at the expense of putting stock away.

The location of pallets on racking is a good indicator of two issues:

- How skillful your FLT operators are and whether they have a pride in their performance and how effective your supervisors are. Are they too busy fighting fires to check on safety and housekeeping issues, or do they have a poor attitude to the leadership and discipline required to run a high-quality warehouse operation?

Pick faces should be considered dynamic and not static. If dead or slow-moving stock is in a prime pick-face location, then the whole pick trail should be reviewed. Dust on stock is a great yardstick that indicates the popularity – or lack of it – of stock. If too many examples are found, then dive in
deeper with stock movement reports.

Items not on account should not be tolerated in a warehouse, except under extreme circumstances. Everything should be accounted for in some way and consequently liable for stock-count action. Product designated as not to be inventoried is promoting and encouraging fraud and theft.

The absence of pickers working on the shop floor, or the completion of the pick workload too early in the day suggests that the picking teams are not being managed. Preplanning the pick and allocating the right number of pickers to complete the pick requirement in line with the despatch schedule within the shift times will release resources to carry out the numerous other tasks that are forgotten about when the pressure is on, such as housekeeping, stock counts, stock relocation and pick face maintenance.

This is also linked with how orders are released for picking. Order release should be linked to the time to process the order, which should be linked to the departure time, linked in turn to the travelling time finally linked to the delivery time. Work backwards down that chain and group the orders together that need to be despatched together from the warehouse. Orders should not be sitting on the despatch bay floor for hours on end. Think of how you plan journey by rail or air. You start with when and where you want to arrive at your destination, and work back from there. So should it be
with planning the picking operation.

Above all, get your supervisors away from their computers and onto the shop floor doing what they should be doing: supervising and looking for symptoms!
“My logisticians are a humourless lot ... they know if my campaign fails, they are the first ones I will slay.”

Alexander
Chapter 5

Transport
The Four Biggest Mistakes Businesses Make When Buying Transport Services.
TRANSPORT – THE FOUR BIGGEST MISTAKES BUSINESSES MAKE WHEN BUYING TRANSPORT SERVICES.

What makes these mistakes the biggest? The fact that they are so fundamentally got wrong!

Would you commit to paying thousands of dollars for a suit without knowing what size it was? Would you drive aimlessly around town looking for a tailor to make it? Would you stop at every repair and alteration shop you saw, just in case they could do the job? When you happened to find a tailor, would you leave the fabric choice up to him? When he gave you the bill, would you accept the proposition that, if you can’t make a suit and didn’t see the tailor make it, you have little hope of understanding why it costs what it does?

No? Then why, every day, do companies buying transport services make the same mistakes of:

1. Not understanding the needs of their customers.
2. Not having an effective tendering strategy.
3. Not talking with the right companies.
4. **Not understanding the cost drivers.**

In this chapter, we’ll examine why and also see how, in most instances, the mistakes can be easily avoided.

**One: Not Understanding What Your Customer Needs**

Where distribution is concerned, it’s often the case that companies look at their customers as a single group with a single service requirement. Of course there are always the few squeaky wheels whose demands are accommodated, but in general the result is an undifferentiated service standard.

It is also often the case that companies set their service standards, not by what they know their customers need, but by what their competitors are doing. This is particularly prevalent in time-critical industries. There is a presumption that the service standard that evolves from competitors trying to “out-service” each other is driven by the industry they supply. In fact, companies are responding to a perceived competitive advantage and not their customers, some of whom may end up being over-serviced.

Companies that adopt either of these approaches to setting service standards are spending too much and not necessarily
Realising that your customers don’t all share the same characteristics and needs, then identifying the differences, can save you money. Even within highly time-sensitive industries, such as spare parts and medical equipment distribution, there are differences in service requirements. A few simple examples illustrate this:

1. In the healthcare field, expensive “on loan” medical devices need to be flown to interstate hospitals on a “next flight” basis. However, the inexpensive consumables that the devices use can be sent to the central store of the hospital by road. Both services satisfy the customer’s needs.

2. In the distribution of spare parts, orders can be designated according to their level of urgency, allowing a consolidation of non-urgent or replenishment orders to be transported on a cheaper and slower basis. Again, both services satisfy the customer’s needs.

Typically, companies that have a poor understanding of their
customers’ needs have another failing in common; either they don’t have a business strategy that encompasses their supply chain, or their supply chain strategy is misaligned. In the context of understanding customer needs, the most pertinent point to make is that with a properly aligned supply chain strategy, customer needs would be well-profiled.

This doesn’t mean that you can’t get better alignment between customer needs and service standards unless you develop a supply chain strategy. You simply need to recognise that customers are not all the same and that neither are your products. Translate this into the context of your distribution service standards and you will save money.

**Two: Not Having an Effective Tendering Strategy**

Many companies have poor strategies for engaging the carrier market; some have none at all. This situation often arises from a reluctance to develop a strategy, based on the misconception that a detailed knowledge of the carrier market is required. Without a strategy, Distribution or Transport Managers will typically:

1. Appoint too many carriers, breaking up the work and losing the potential for price leveraging.
2. Find themselves forced to award some work on the basis
that there’s only one option in the mix.
3. Create a larger than necessary administrative and performance management task.
4. Create a larger than necessary range of service cultures.

No matter how large or small your company’s distribution spend, having a strategy for engaging the market will achieve three things: it will allow you to leverage better rates, it will simplify dealings with carriers and it will promote consistency of service.

“No matter how large or small your company’s distribution spend, having a strategy for engaging the market will achieve three things: it will allow you to leverage better rates, it will simplify dealings with carriers and it will promote consistency of service.”

By applying three key principles, you can develop an effective strategy regardless of your knowledge of the market players. At this stage, you’re only interested in how you approach the market, not who you approach.

The key principals are:
1. **Aim for the smallest field of tenderers necessary to meet your service goals.**
2. **Always provide yourself with several options for each segment of work.**

3. **Bundle the work into the largest possible segments.**

The first two principles rely on getting the right combination of reach and service mix. In this regard, carriers can be characterised as:

- Having a broad range of service offerings.
- Having a national footprint.
- Being a service specialist.
- Being a regional specialist.

By including a small number of companies that have the first two characteristics, you can minimise the need to include companies that have the latter two, while maintaining multiple options. An example of this would be to include a national carrier that has local distribution capability in every capital city, as well as a specialist local distribution company for each capital.

The result of successfully applying these two principles is to optimise your ability to effectively manage service performance by reducing the contact points. The effect of the third principle is to maximise your ability to achieve the best available rates through volume leveraging. When bundling the work, it is also necessary to ensure each segment is commercially viable. This will allow you to award stand-
alone segments if necessary, while still being able to leverage the remainder to best effect.

**Three: Talking with the Wrong Companies**

One of the easiest mistakes to make when buying transport services is to engage with the wrong companies, often accompanied by the mistake of talking with too many companies. This can be enormously time-consuming, frustrating, costly and damaging to your company’s reputation. It will expose you to poor choices that will disrupt your distribution services and almost inevitably lead you to repeat the process within one to two years, firmly believing it was the carrier’s fault.

“*One of the easiest mistakes to make when buying transport services is to engage with the wrong companies, often accompanied by the mistake of talking with too many companies.*”
Talking with the wrong or too many companies can have negative repercussions, even with those carriers that aren’t awarded work. You will almost certainly have a substantial over-run with your tendering timetable, due to underestimating the lengthy evaluation process required. You will also struggle to manage communication of the process in a professional way. Perhaps most importantly, you will be labelled as ignorant of the market when many of the invited tenderers realise they are a poor match for your service requirements and that you have wasted their time.

Engaging with the wrong people can result from quite divergent approaches. You may have wanted to limit yourself to what you’re familiar with. This seems reasonable, but may simply confirm that your experience of the market is too narrow.

Have you addressed the issue of who to invite into a tender using one or both of the following tactics:
1. Automatically including all of the incumbent carriers.
2. Automatically including the tier one, national brands.
3. If you have, you’re sticking to your comfort zone.

Alternately, you may have wanted to “cast a wide net”. Accordingly, you may have applied the above tactics, as well as one or several of the following:
1. Dragged out all the business cards and rate offers from carriers who have knocked on your door in the past few years.
2. Canvassed colleagues, competitors and friends about who they use for transport.
3. Trawled the Internet by geographic region.
4. In very few circumstances would this have been a sound approach, more often than not it would simply have meant that you were being indiscriminate.

The most effective way to avoid the mistake of engaging the wrong companies is to build a basic understanding of the carrier market. This can be done with little effort, when you consider it’s simply a matter of accumulating information in an effective way.

There are three elements to building an understanding of the market that will allow you to target the most suitable carriers when the need arises. These are:

1. **Develop a service specification and capability statement.**
   This is the most time-consuming, but also the most critical element. The service specification will tell a prospective carrier enough about your products, network, customers and distribution needs to be able to complete a specified capability statement.
2. **Issue the service specification and capability statement to carriers.**

Once you have developed the documents, you will be more attuned to the compatibility between your company and carriers that come knocking. Those that pass scrutiny as well as those that you have identified through research should receive the documents.

3. **Evaluate the capability statements and identify the pre-qualified companies.**

By pre-qualifying carriers in this way, you can establish a smaller field of tenderers, all of which can meet your service standards. Pre-qualification may also help with confirming the quality and availability of certain carrier types in the market. This will be useful in determining your strategy for going to tender.

> “Having a basic understanding of your carriers’ cost drivers will allow you to negotiate better rates and modify your distribution operations to reduce transport costs. Many companies lack this understanding.”
Four: Not Understanding the Cost Drivers

Having a basic understanding of your carriers’ cost drivers will allow you to negotiate better rates and modify your distribution operations to reduce transport costs. Many companies lack this understanding.

The simple reason for this is that, historically, carriers have closely guarded this information. In the past, carriers almost universally held the view that the benefits of greater operational efficiency, engineering improvements and other technological improvements to their businesses were theirs’ alone. This has meant that they were reluctant to discuss their operations in terms of cost drivers and what they saw as competitive advantage.

This is no longer the prevailing view, although many carriers are still not proactive in discussing ways to help their customers save money. It’s also the case that many transport service users are not aware of this shift in attitude. Consequently, there are Distribution Managers that still refrain from asking what goes on once the truck pulls away from the back door and who lack an understanding of how they can influence this.
This lack of understanding is potentially costing them money in two ways. Firstly, they may accept a more expensive and inappropriate rate structure. The following examples illustrate this.

1. A company distributing FMCG products despatches pallets of varying heights that will bear double-stacking. On average, the pallets are less than 1.0 metre high. The Distribution Manager negotiates a pallet rate with his carrier, which entails his company paying for the entire space, from floor to ceiling. If he understood that the carrier’s aim was to return a yield for every pallet space and also understood the physical dimensions of the space, he could negotiate to standardise his pallets to 0.8 meters high and be charged a half pallet rate. The carrier could then charge either the same customer or another for use of the other half pallet space. If he did not understand this dynamic, he would be paying to transport air!

2. A company distributing food products despatches pallets of varying heights above 1.5 metres that will bear double-stacking. The Distribution Manager has two quotes; one a pallet rate from a pallet specialist and the other a per kilogram rate from a bulk and loose freight consolidator. If the Distribution Manager understood the load characteristics of each carrier’s operation, he would realise that the consolidator could improve his yield for the pallet space on offer with someone else’s
loose freight, whereas, because of the height constraint, the pallet specialist could not double stack. Assuming both carriers were trying to achieve the same yield per pallet space, the kilogram rate will always be the most cost-effective. The wrong rate choice through a failure to understand this dynamic will result in a significant cost penalty. It will also expose the service user to greater cost inefficiency if the average weight per pallet decreases.

Having a poor understanding of the carriers’ cost drivers can also impact through the service user’s distribution practices. In this case, there is the potential for saving rather than the potential for greater cost. This is illustrated by the following example.

A manufacturer uses road freight services to supply its customers nationally. The freight for all states except Western Australia is ready for despatch by 2:00pm. Due to the time difference, order close-off for Western Australia is two hours later and the freight is ready for despatch at 4:00pm. All of the freight is picked up in the same vehicle at 4:30pm.

What the Distribution Manager is unaware of, and the carrier has not been proactive in discussing, is that it would reduce the carrier’s costs by getting its line-haul away earlier if more freight could be sorted earlier in the day. If the Distribution
Manager was aware of this, he could arrange a 2:00pm despatch and negotiate a rate reduction for the relevant freight. If he is unaware of this fact, he is effectively paying for his freight to sit in his warehouse.

By understanding a few basic dynamics you will be able to identify opportunities that will reduce your costs:

1. **Carriers quote their rates in a range of charge units to standardise the revenue yield per load. The aim is for you to pay for any empty space.**
   The best charge unit is the one that most closely equates to reality. Rates for pallets, skids and cartons are based on nominal dimensions – you pay the same regardless of variations in actual dimensions. Kilogram rates are based on a physical fact – you pay for what you use.

2. **The more a carrier can contract its depot operating time, the lower its costs.**
   If you can take advantage of under-utilised freight handlers during the early afternoon, you will contribute to the line-haul vehicles departing sooner and the depot closing earlier. You should negotiate a rate on this basis.

3. **In the Express Freight market, line-haul revenue yield is driven by the mix of freight density.**
   Very dense freight, when correctly blended with less dense freight, can significantly increase revenue yield. As freight of this type is attractive to carriers, but far
less common than lighter, bulkier freight, rates can be negotiated at a discount.
Chapter 6

Inventory Blow Outs
*How to Avoid Them*
INVENTORY BLOW OUTS – HOW TO AVOID THEM

We’ve all heard stories of customers complaining because goods weren’t delivered on time, or sometimes (often?) not at all. Yet, at the same time, the warehouses are full and the CFO is on our backs about lousy inventory turnover, increasing working capital and decreasing return on investment. Meanwhile, the sales team are telling us to order more, and our manufacturing plants and suppliers are struggling to keep up. So here we are, lots of inventory sitting stationary in warehouses or on shelves, and angry customers wanting their deliveries.

In summary, we have lots of some items but not enough of other items and there is chaos all around us.

So where do we go from here? The answer probably shouldn’t come as a surprise, and the academics might remind us that all we need to do is balance (or synchronise) our demand and supply sides to create a steady flow of inventory through our supply chain.
Answer given. Chapter closed! However, before we close chapter, you probably want some further details. At least you might want to know what the answer means in practical terms and also to have a look at some of the things that you should consider in your supply chain.

Three Causes of Inventory Blow Out

Managers spend a lot of their time trying to make customers happy and getting rid of excess inventory. Despite their efforts, the improvements are often short lived and it isn’t too long before the customers are again unhappy, and inventory levels are again on the rise. The reason is that the managers are trying to deal with symptoms, and not the cause of those symptoms.

Causes of inventory blow out are many and varied, but they will fall into one of three categories:

- Supply chain inefficiency.
- Uncertainty.
- Poor management.
Supply Chain Inefficiency

The starting proposition might be that all supply chains are inefficient and that this is just a fact of life. But what does it mean to be inefficient, and how does this cause inventory blow outs?

In practical terms, one view of supply chain efficiency is related to the concept of steady flow of product through the supply chain. In this context, an inefficient supply chain will have disruptions to the steady flow of product and, wherever such disruptions occur, we will see inventory build ups and delays in movement of inventory.

Inventory build-ups do not necessarily mean inventory blow outs, and there are some legitimate reasons why supply chains need inventory.

One example is the seasonal supply of agricultural products that might be grown in some geographical location for only a part of the year. The produce is taken from the farm gate and stored until it is required by customers, perhaps as a steady demand over the whole year. In this case, the observer will see a build up of inventory at the end of the harvest, with a decline over the year until the next harvest season. The supply chain will be in perfect balance (or synchronised) if the last item of produce is taken out of storage as the first
item from the new harvest arrives.

This is an example of “good” inventory where inventory is used to compensate for a mismatch in supply versus demand. On the other hand, if customer demand doesn’t clear the stored produce before the next year’s harvest, then there is an excess in supply leading to inventory blow-out.

Another example is where parts and sub-assemblies from expensive capital equipment (such trains, aircraft, manufacturing equipment and mining equipment) break down. It is often cheaper to repair the broken parts and sub-assemblies rather than buy replacements. The broken parts are typically sent away to specialist maintenance facilities for repair. Since it takes a finite amount time to transport the broken items to the repair venues and more time to conduct the repair itself, then it is usual for the operators of capital equipment to have a range of spares on standby to replace broken items in the parent capital equipment. In this way, capital equipment is returned to productive service in minimum time, while the broken part is repaired. The challenge is to know which range of spares to have on standby, and how many of these spares should be held. It is very easy to have the wrong items on standby, and getting it wrong is a very expensive example of inventory blow out.
Mathematicians also have a definition for inefficiency. They will tell us that inefficiency is a measure of the amount of output as a ratio to the input. In supply chain terms, this could be applied to the amount of effort exerted for productive gain, and in this context becomes a productivity measure. We could spend a lot of time having all sorts of theoretical discussions about this interpretation of efficiency. The simple approach is to accept that inefficiency from a productivity perspective has the general effect that it normally takes longer to do things. In supply chain terms, this means longer supplier lead times which is often compensated by increases in inventory. We will look at this in more detail later.

**Supply Chain Uncertainty**

Those of us involved in supply chain operations will agree that they are complex and involve the interaction of a lot of dependent and related variables. The degree of complexity will vary according to the scale and scope of the supply chain, and with complexity comes uncertainty. The more complex the supply chain, the more uncertainty there will be.

Uncertainty simply relates to how well we know something, or in other words, how well we can predict something with a high degree of accuracy.
Consider the following examples from a customer perspective:

- When will the customer place an order?
- How much will the customer order? Will it be for the same amount as last time?
- Where do they want it delivered?
- How much time will they give us to satisfy the order?
- Can we deliver on time?

Consider the following examples from a supplier perspective:

- Will the supplier deliver on time?
- What is the delivery lead time? How long will it take to deliver the order?
- Is the lead time stable? Or does it vary every time I make an order?

Consider the following examples from the perspective of your own business:
• Will my workers be available to process customer orders, or will they be off sick?
• Will my systems be working, or will there be some outages?
• Will there be delays to the transport for delivering goods to the customer?
• Will the goods pass the quality checks or will we have to do some rework?

The above questions should give you a flavour of supply chain uncertainty, causing concern for the supply chain manager and prompting questions like:

• Will we lose sales?
• Will our reputation be damaged if we can’t deliver?

A typical response is to increase inventory as insurance against the level of uncertainty, where the increased inventory becomes an insurance to protect us from the effects of uncertainty.

The use of so-called insurance inventory is an entirely
appropriate response. But it is not the only response and, indeed, might not be appropriate in all cases (especially if there is the risk that you won’t be able to sell it). We should therefore ask ourselves the following questions:

• How much insurance inventory is appropriate?
• How much is too much?
• Is there an alternate to insurance inventory?

You should be aware that stockpiles of inventory to cover uncertainty is the greatest source of inventory blow out in your supply chain.

**Poor Management**

The third cause of inventory blow out is just bad management and covers a range of sins. It includes:

• Incompetence.
• Poor judgement.
• Lack of skills.
• Apathy.
• Failure to act.
• Not taking responsibility

You would think (or hope) that something can be done about poor management. Unfortunately, poor management of varying degree seems to be here to stay, and will affect us in all sorts of ways, often at the worst possible time (Murphy’s Law in action!). Poor management comes from all sources, including our customers, our suppliers and even our own organisation.

From an inventory blow out perspective, we can treat poor management as another source of supply chain uncertainty. That is, if we are continually being troubled by unpredictable poor management, then we are more likely to compensate by increasing our inventory (more insurance).

**Avoiding Inventory Blow Outs**

The prudent supply chain manager will want to avoid inventory blow outs, if only to keep the CFO and warehouse manager happy. From the preceding discussion, we know that:

1. Supply chains can be inefficient, unpredictable and poorly managed.
2. Some level of inventory is often required in order to protect us from the effects of inefficiency, uncertainty, and poor management.

3. The challenge is to work out how much inventory is required and whether or not there are better means of achieving the protection.

It’s ok to have a lot of inventory. The challenge is to know which items, when and how much. Getting this wrong will lead to inventory blow outs.

“It’s ok to have a lot of inventory. The challenge is to know which items, when and how much. Getting this wrong will lead to inventory blow outs.”

There are three secrets to meeting this challenge:

• Knowledge.

• Communications.

• Managing for success.
Knowledge – Know Your ABC’s

The first element of success is knowledge. But what knowledge? Firstly, you need to know your ABC’s.

In simple terms, the ABC’s is a term used to describe segmentation of items of interest. Figure 1 illustrates ABC analysis as it might apply to sales volume of items sold. There will be a small group of items (A class items) that represent most of the sales volume for the company. A large group of items (C class items) represent only a small proportion of the total sales volume.

For example, a typical ABC pattern for items sold by a company might be:
• 80% of sales volume is derived from 20% of items.
• 15% of sales volume is derived from 30% of items.
• 5% of sales volume is derived from 50% of items.

ABC analysis can also be applied to customers:
• 80% of sales volume is derived from 20% of customers.
• 15% of sales volume is derived from 30% of customers.
• 5% of sales volume is derived from 50% of customers.

Variations might include net profit, rather than sales. This variation takes into account the cost to service a customer or the cost of supplying an item.

Based on an ABC analysis of customers, the natural response will be to ensure orders received from A class customers are satisfied to a higher percentage (the customer service level) than for orders from C class customers – you don’t want to upset A class customers and risk them taking their business elsewhere. Therefore, in cases where there is evidence of supply chain inefficiency, uncertainty, or poor management, the prudent manager will tend towards having more stock on hand.
Knowledge – Know Your Profiles

Knowledge of the ABCs will help you to identify those items which are candidates for increased stock holdings, but it doesn’t help for understanding how much stock should be held. For this, we need to know the profiles. Specifically, we need the profiles for both the demand (customer orders) and supply sides of our supply chain.

Figure 2 shows a case of constant sales volume over time for a particular item. In this case, there is no uncertainty in sales volume, and future sales can be predicted with (almost) absolute certainty, with the sales volume for the next period being the same as for the current period. Of course, in reality, there will never be absolute certainty.

Assuming the supply side is also constant, there is no need to hold any stock for this item. Rather, you just need to set up a routine order from suppliers that arrives just as you need to make the delivery to the customers. This is the balanced (or synchronised) supply chain concept introduced at the beginning of the chapter.
Now consider Figure 3 which shows a sales volume which is increasing over time. This profile can also be predicted with absolute certainty and, again assuming a reliable supply side, we can set up a synchronised flow of product and there is no need to hold stock.

A more complex demand profile is illustrated in Figure 4. In this case, demand is fluctuating over time, and there is uncertainty in the level of sales for the next period.
The level of inventory required for the next period could be calculated using one of the many forecasting tools. These tools give accurate predictions of sales value, but can be misused, especially when a forecast for several items is based on a common forecasting algorithm (say 3 month moving average or exponential smoothing) and using the same parameters in the forecasting algorithm.

But knowing the sales forecast for the next period does not mean this is the quantity of inventory to hold in stock. The same principles hold as before. That is, you only need to hold sufficient inventory to protect against uncertainty, inefficiency, and poor management.

The fluctuating demand profile in Figure 4 has a constant trend component, on top of which sits the fluctuating component. As in Figure 3, again assuming a reliable supply
side, in principle you can set up a steady flow of items from the suppliers to the customers for the predictable component. A reduced quantity of inventory is held in stock against the uncertainty of the fluctuating component that sits above the trend component.

Good forecasting tools will also attempt to predict the fluctuating component, and will identify a quantity of inventory that should be held in stock based on any error that occurs between the predicted value and the actual value. This error in forecast is a measure of the uncertainty that exists in the demand and becomes the basis of the recommended quantity of inventory to be held.

The discussions above have concentrated on the demand side. It is also important to consider uncertainty on the supply side as well. The supply side is normally described in terms of supply lead times, and uncertainty in supply is normally captured as variability in supplier lead time. The same principles apply to variability in supplier lead times as for uncertainty in customer demand. That is, the greater the level of variability in supplier lead times, then the greater will be the level of inventory held in stock.
Let’s Talk

As discussed above, knowing your ABCs and product profiles will help you to identify what items of inventory are candidates for holding in stock and also to help in working out the quantity of items to hold. However, a lot more knowledge can be obtained by simply communicating with your trading partners. It is amazing the number of companies who don’t communicate with their trading partners, many out of fear of revealing some problem they might be having with their supply chain. In most cases, trading partners will welcome your dialog on where problems exist, and early advice can help them take timely alternate actions.

More fundamentally, from an inventory blow out perspective, simple communications with customers and suppliers can help remove, or at least minimise, the uncertainty in customer demands and supply lead times. Removal of uncertainty will reduce the need for unnecessary inventory to be held in stock and will reduce inventory blow out.

Consider your approach to holding inventory for the item with the demand profile shown in Figure 5a. This profile shows that the customer orders a large quantity of stock, but the amount is uncertain, and the time at which the order is placed is uncertain. It is assumed that more orders are
likely sometime in the future, but these aren’t shown on the diagram.

Assuming a reliable supply side, and also assuming an A class customer where we want a high customer service level to minimise stock outs, then we may choose to hold a large quantity of inventory in stock in preparation for the order, as indicated by the dotted line in Figure 5b. This level of stock is held at high risk to us, especially if the order doesn’t come and we are left holding the inventory, or where the inventory has a shelf life and is at risk of expiring.

We can identify alternate strategies to minimise inventory blow outs by communication with the customer. For example, we could agree to hold zero inventory in stock, and only take action when we receive an order from our customer. Of course, this strategy assumes the item isn’t critical for any reason and the customer can afford to wait. This isn’t always true, as in the case of stockpiles of vaccines. Alternatively, we may be able to agree on a reduced quantity of inventory to be held in stock for immediate delivery on receipt of the order, with the remainder actioned after the order has been received.

Some forecasting tools also have algorithms which are useful for predicting the so-called “lumpy demand” profile
in Figure 5b. However, these will typically require some historical data on which the forecast is based.

Manage for Success

Just as it is important to communicate with customers and suppliers, we often overlook the value of communication within our own organisations. As with the supply chains in which we operate, our organisations are complex and involve different and often geographically distant departments operating in isolation and for different purposes.
Best practice supply chain organisations manage for success by using a Sales and Operations Planning (S&OP) process for integrating and synchronising the critical functions of the business. This will typically include sales, inventory, and procurement functions in regular meetings to plan operations over a predetermined planning horizon. Where an organisation has a manufacturing capability, then inclusion of the production function is essential for successful S&OP. The inclusion of the manufacturing function introduces more complexity in that new classes of inventory need to be considered for manufacturing. These include finished goods, work in progress and raw materials. Additionally, suppliers to manufacturers will typically supply components and raw materials rather than just finished goods.

Proper application of the S&OP process will consider all of the issues discussed in this chapter in making decisions on:

- What to order (or make).
- When to order (or make).
- How many to order (or make).

The goal is to achieve a synchronised flow of materials from supplier (or supplier and manufacturer) through to the customer, utilising inventory only where it is necessary to
do so as protection for supply chain inefficiency, uncertainty and poor management.

**Key Points**

- Inventory blow outs can be avoided when the demand and supply sides are balanced (or synchronised) and there is a steady flow of product through the supply chain.
- We often have situations where there is plenty of inventory, but customers are still complaining because of poor delivery.
- It’s ok to hold a lot of inventory. But the challenge is to know which items, when and how much. Getting this wrong will lead to inventory blow outs.
- Three causes of inventory blow out: supply chain inefficiency, uncertainty and poor management.

Three secrets of success:

1. Knowledge: ABCs and profiles.
2. Communications with customers and suppliers.
Chapter 7

Successful Outsourcing
*Why, How, Who?*
INTRODUCTION

Most, if not all, readers of this book will have been born in the 20th century. It was a period of unprecedented change, flowing from the industrial revolution and two world wars. Together with incredible technological innovation, the post war years yielded a mountain of demand for products. This led to increased levels of trade to distant locations, which were facilitated by more efficient and cost effective use of commercial air, sea, road and rail assets. Consequently, logistics management became a prominent business practice, with organisations privately investing in their own transport fleets and warehouse assets and employing staff to run them.

Driven by stable demand, it was not uncommon for dedicated logistics staff to stay with companies for 30-40 years. However, during the 70s and 80s, when post war demand for goods and services became volatile, profits thinned and long term employment gave way to a new era of demand variation. Employee redundancy became common place as companies found they could not sustain their burgeoning cost base against fluctuating revenues. So the concept of life time employment with a single company largely disappeared. In the meantime companies still had to deliver goods to their customers despite variations in demand and labour supply. How have the coped?
Outsourcing! The new supply chain remedy born during the 1970s and 80s and refined over the years as globalisation has materialised.

Outsourcing is defined as the contracting out of services. In this chapter, outsourcing will refer specifically to transport and warehousing functions. Its content includes reasons why companies outsource, how to choose a third party logistics organisation (3PLO), who the main players are, and how to be successful in working with a 3PLO.

WHY DO ORGANISATIONS OUTSOURCE LOGISTICS OPERATIONS?

There are many reasons why companies outsource, but there are four principal reasons:

Warehousing and distribution management is not a core skill

Peters and Waterman in their best seller, *In Search for Excellence* identify one of the eight factors of organisational success as “sticking to the knitting”. They warned that companies, which stray from their core business, risk distraction of their employees’ attention. This loss of focus can result in under performance and revenue reduction.
Many enterprises have taken heed, and determined that inbound and outbound transport and warehousing are consequential processes of their business rather than fundamental or core processes. This has fuelled growth of the third party logistics industry and expansion of thousands of 3PLOs.

While many logistics service providers commenced as domestic carriers or international freight forwarders they have diversified over the last 30 years. They now engage, in contract warehousing logistics, plus many other value adding services. In effect, the expanding new breed of 3PLOs have plied their trade and honed and grown their skills so that there are now oodles of experienced providers to choose from.

**Performance is Sub Optimal**

Related to the core skill issue, often organisations which have a strategic focus, other than in transport or warehousing, cannot attain the desired performance levels and KPIs required by their customers. For example, companies who have their own in-house vehicle fleets often struggle to deliver products on time. In competitive terms, a service ratio of less than 98% of deliveries delivered on time is a major issue for modern consumers who are fickle enough to change supplier if this ratio is unmet. For enterprises that run their own fleets,
merely dealing with the complexity of transport networks, contractors, inventories, industrial unions and cost control is tough enough, so achieving 98% on time performance is, for many, just a dream.

On the warehousing front, checking performance against just a few industry KPIs can quickly help managers determine how effective their operations are. Telling signs are low levels of inventory accuracy, low stock turns, and low order output ratios per labour hour, high levels of unexplainable losses or damage to goods, high operating costs, high customer performance complaints and high employee turnover. When these signs are evident firms often choose to outsource rather than waste time developing their own solutions.

**Reduction in Asset Capital**

Warehouses and vehicles are expensive to purchase or lease and can tie up millions of dollars that could otherwise be invested in the core business of the firm. Consequently there is a trend for firms to remove warehouse assets from the balance sheet and re-direct capital gained from sale of assets to working capital and / core asset investments. In choosing to outsource, firms can therefore transfer all of the costs of distribution to their profit and loss account. Such divestment strategies by manufacturers have become a blessing for third party logistics providers who have won large amounts of
new business for this reason alone.

**Flexibility and Scalability**

With the advent of the internet, E-commerce, increasing globalisation and rationalisation of industries, today’s market place demands fast, flexible and efficient supply chains. Coupled with shorter strategic planning horizons, use of 3PLOs gives organisations flexibility to expand or change their method to market and volumes handled with almost immediate effect. So the long term 3PLO agreements have succumbed to the trend for shorter terms of one to five years. There are exceptions of course, but they tend to be very large scale manufacturers where the investment horizon is from 5 to 15 years. The point remains that it is simply not possible to respond quickly to market changes if there is a fully owned or leased network of warehouse and transportation assets in place. And, for many enterprises, flexibility and scalability are sacrosanct.

**IS OUTSOURCING WAREHOUSING RIGHT FOR YOUR COMPANY?**

Many companies struggle with the vexing question: is outsourcing warehousing the right strategy for me? To answer it effectively will take more than the pages in this
chapter. However, to assist, you may like to perform a quick self assessment.

Does your range of products exhibit low, medium or high uniformity in physical size? (Select high if your products are unit loads e.g. cartons, pallets, containers. Choose low if your products are variable in size and shape, heavy, fragile and damage easily.).

Choose one: Low, Medium, High.

Does your range of products require a low, medium or highly complex process to manage them? (Select low if the product supply process is simple e.g. receive order, pick and dispatch. Choose high if your process involves combining different types of goods, custom equipment preparation, assembly work, special preparation, decanting, re-packaging, checking, identification of parts, etc)

Choose one: Low, Medium, High.

Now if you plot your answers on the matrix below you can quickly assess if using a 3PLO is right for you.
Note that the assessment deals with risk. Think of risk in terms of quality of service, damage to goods, inventory control and losses, materials handling capability, cost containment and variation in supply volumes.

If the products are uniform, and the process is simple, outsourcing warehousing is straightforward and low risk. This is exemplified by the large number of 3PLO contracts servicing the fast moving consumer goods industries. However, where products have special attributes, low uniformity, and require complex processes to manage, the risk increases. Examples include special build products such
as plant and equipment, chemicals, large scale equipment, unusual hardware and spare parts. To assist your analysis, examples of industries are plotted on the matrix. These may help you to compare and decide if your company will benefit from outsourcing.

HOW TO SELECT A 3PLO?

The criteria for selecting the right 3PLO are numerous, but for most organisations there are two dominant attributes:

Scope of Services

Some 3PLOs are single service providers, e.g. any one of road, sea, air or rail transport, warehousing, freight forwarding (import and export), etc. Others provide many or all of these services in an integrated package for their customers, supported by advanced IT systems.

Geographical Location

Larger 3PLOs are typically spread across multiple locations nationally or internationally, whereas smaller 3PLOs tend to service local, state or national domains.

To understand how these factors interplay, consider the following model. There are four basic types of 3PLO.

National Specialist: 3PLOs that offer single or limited services
to customers within or near their locus of operations. The geographical location tends to be in the same city, state or within a country. Customers that use the National Specialist will substantially operate in their home city, state or country.

National Integrator: 3PLOs that offer multiple services to customers within or near their locus of operations. The location may be in the same city, state or within a country. Customers using the National Integrator generally seek a wider range of services aimed at national distribution and some export.

International Specialist: 3PLOs that offer single or limited services and conduct intercontinental operations to nearby or distant regions or countries, and/or across the world. Customers with international operations across the globe often seek international 3PLOs with similar coverage to handle their logistics. Specialist activities typically include freight forwarding and transport but may also extend to warehousing.

International Integrator: 3PLOs that offer multiple services and conduct intercontinental operations to nearby or distant regions or countries, and/or across the world. International companies with global warehouse and distribution networks tend to choose International Integrators as their preferred 3PLO. The reasons are that often multiple services are
needed for global networks, along with systems to support them. The International Integrator typically has the global management capability, scale, flexibility and financial stability to support truly international customers.

Who are the Key 3PLOs?

Now that you know what type of 3PLO to choose, who are the major contenders?
On a world scale there are thousands of providers offering third party services. However, there are only a handful of very large ones with the ability, network, systems and infrastructure needed for multinational and multi modal customers. The world top 50 3PLOs in terms of gross turnover appear below. Interestingly, there are only twelve with revenues over USD$5 billion. They are, in descending order: DHL Supply Chain and Global Forwarding, Kuehne and Nagel, DB Schenker, Nippon Express, Ceva Logistics, CH Robinson, UPS, DSV, SDV and Agility Panalpina and Toll. (Source: Armstrong and Associates Inc 2010). With the companies lower than USD$5billion, there are a huge number of small specialist players, with revenues well below the USD$0.5 billion mark.
For the top 50 larger 3PLOs, increased globalisation has triggered many recent rationalisations, mergers and acquisitions. The continuing rationalisation of the industry will see fewer large conglomerates competing for purchasing power over air, road, rail and sea shipping corridors. Why? In the past companies could pull adequate margins off freight handling alone. Now, with smaller margins, volatile fuel pricing and exchange rates, major 3PLOs have been pressured to vertically integrate and build networks of contract warehousing facilities to supplement their revenues.
WHAT ARE THE KEY DRIVERS FOR SUCCESS IN ESTABLISHING A GOOD CUSTOMER AND 3PLO RELATIONSHIP?

Once a 3PLO is chosen, what are the secrets to success? There are five to be mindful of:

**Strategic Alignment**

The outsourcing decision must align with the company’s strategic direction. This is a common sense proposition, but unfortunately not well practiced. Amazingly, many companies have suffered after outsourcing decisions were made at an operational level, without due regard to the board’s supply chain strategy. Alas, in some cases, there is no supply chain strategy to speak of. This can cause organisational stress and is a nightmare to remedy after contracts are established. These days, third party providers are aware that their clients may be deficient in strategy formulation, so they include clauses in contracts which enable them to change pricing and performance mechanisms if a change in company strategy or method to market occurs.
Attention to Detail

When seeking third party quotations and contracts, there is no room for intuition, or best guesses on order velocities, volumes, processes and service requirements. Very detailed specifications must be prepared by enterprises with full disclosure of all available data before a quotation from service providers is attained. There is rarely too much information that can be gathered. But where there is an absence of sensible interpretation of data, this can cause major issues in the outsourcing relationship. For instance, beware of basic pricing mechanisms such as Customer Cost of Goods Sold, Volume Sold or Percent of Revenue. On the surface these appear to be simple pricing gauges, but often they force one party, either the customer or logistics service provider, to prosper or lose unfairly. The supply chain interactions of physical movement and electronic information is complex and overly simple charging mechanisms deserve close scrutiny as they can lead to disputes if one or the other party decides that they are being ripped off.

Resource Wisely

Both during implementation and the ongoing partnership, a competent team is essential. Both the customer and the third party logistics company must create an open and trusting working relationship. Each company’s team should include
senior relationship managers from across the organisations who meet regularly to discuss and monitor progress and performance. Too often, once an agreement is signed, implementation is left to the stewardship of the logistics service provider. This is a mistake. It must be a joint exercise. The best implementations are those that have a key member of the customer on the team to lead, organise and develop the solution to full implementation with the provider. Such implementations are usually augmented by robust project management methods to ensure that all milestones are achieved.

**Raise Potential Issues Early**

Relationship or operational issues that are not dealt with proactively and in good time can fester into relationship breakers and end in disaster. So, both parties should take a long term perspective and be mature in their outlook and approach, always avoiding disrespectful behavior to the other party. It never helps if one party is kicking the other. During implementation planning phases, representatives from each company should meet weekly to discuss implementation tasks. Some may argue that this is too often, but the regularity maintains momentum and full attention to successful outcomes.

A common theme with aircraft accidents is that there is not
usually a single cause that brings a plane down. It is normally a series of related and unrelated events that culminate in catastrophe. This is the same for outsourcing contracts. Dealing with issues as they arise helps prevent and obviate relationship and performance disasters.

**Use Key Performance Indicators (KPIs) to Manage**

The contract and agreement should be subject to regular reviews of KPIs. Data speaks volumes in terms of performance. For both warehousing and transport, KPIs should be agreed at the outset. Typical measures include delivery in full on time, goods lost in transit, stock damage, ullage (unexplained loss or damage), inventory accuracy, time to receive goods, and time to dispatch goods.

As a rule of thumb, no more than six KPIs should be used. Make sure you choose the ones that are most meaningful to your business. In this way a focus on the facts can help remove emotionally charged opinions or feelings by either party.
CONCLUSION

This chapter has concentrated on the salient aspects of outsourcing logistics, commencing with a short history of how outsourcing developed in the late 20th century to become a modern and prominent 21st century industry. Then the most common reasons for outsourcing were described as: distribution is not a core skill, sub optimal performance, reduction in asset capital, flexibility and scalability.

The question of whether outsourcing is the right strategy for your company was tested with a strategic model to help you decide. Some tips were then proposed to help you select a 3PLO, including the two most important attributes for selection: geographical coverage and scope of services.
A short introduction to the 3PLO industry revealed thousands of providers with only a dozen large players at the top end. Finally, to assist your consideration of outsourcing, the key drivers for relationship success were outlined as: strategic alignment, attention to detail, resource wisely, raise potential issues early and use KPIs to manage.

By reading this chapter, you will have gained a general understanding of outsourcing and are now in a better position to think more seriously about your existing or future outsourcing potential and the vital drivers for success.
“You will not find it difficult to prove that battles, campaigns, and even wars have been won or lost primarily because of logistics.”

Gen Dwight D. Eisenhower
Chapter 8

Supply Chain Cost to Serve
INTRODUCTION

How can a business properly balance the two aspects of ensuring customer satisfaction and making a profit? The answer lies in first understanding how your customers need to be served. Different customers typically require different levels of service, which is why the one size fits all concept of service is often out of place. For companies that have not yet gone beyond this thinking, a large portion of orders placed by customers are often so small that after subtracting logistics costs there is typically no margin left. If they do not know which customer or which orders these are, the only choice is to try for global profitability and accept poor performance in certain areas. Yet by changing their approach to the problem and correctly applying Cost To Serve techniques, they could improve their EBIT (Earnings Before Interest and Taxes) performance by as much as 20%.

"...one size fits all ..."

Situations like this require a different approach, one that takes into account the variations within parameters such as size of customers or of orders, frequency of delivery and billing. This is the underlying principle in the Cost To Serve or CTS approach. You identify the different characteristics
of the customers that you serve. The parameters above can be a starting point. They may not all be applicable (perhaps your billing is simple in every case) and there may well be additional elements to take into account – for example, requirements on how you store products to be delivered, such as temperature-controlled storage. From this you can identify the profitability of serving each customer, and in particular which customers, products or services turn out to be low margin and which processes are high cost.

A good CTS approach will also take into account the changes in products and customers served. It will be able to evolve as a company’s business evolves, to constantly track individual margins and signal to the company the areas that need immediate attention. Examples of changes in business are numerous. In retailing, companies acquiring other companies are expanding their product range, varying their opening hours and setting up new channels to market such as web sales and customer self checkout. Large retailers are also moving to becoming shoppers themselves: they move their inbound transport in house and go “shopping” at their suppliers’ sites to pick out the products they want by themselves. Other companies using distribution centers are
rationalising their use of DCs and pushing to improve shelf availability.

There are two possibilities to apply Cost To Serve to analyze your profitability. The first is to use specialist CTS tools developed, for example, by consultancies working in this area. The second is to use simple datasheet and spreadsheet models that can already give useful results. This is particularly relevant in that most ERP (Enterprise Resource Planning) systems do not have the level of detail required to carry out CTS reporting.

**Importance of CTS**

CTS delivers capabilities to a company that allow it to:
- Improve customer profitability.
- Improve pricing methodology.
- Improve processes.

As a direct consequence, companies are better positioned to negotiate price increases with customers, because they have the CTS data and analysis to prove their cost structure. It also allows them to test alternative distribution modes/service. CTS often highlights issues at the first step of any major overhaul of a supply chain.
Defining Cost To Serve in Detail

Cost to Serve is a supply chain analytical approach, utilising activity based cost techniques that identify the costs of servicing specific customers, with specific products, by allocating costs to customers, products and channels. It is one of a group of three similar approaches, each destined to tackle a different aspect. The other two approaches are: Time to Serve - a supply chain analytical approach that identifies the lead time at various points in the supply chain in order to assess the total cost and service impact of lead time changes; and Service Differentiation - a supply chain management approach that aims to reduce costs by identifying customer service needs and ensuring that customers are not unnecessarily over serviced.

To show how CTS works as an approach, let’s start by looking at the different components of a typical supply chain operation. In delivering the promise that a company makes to its customers, the supply chain can be defined by three dimensions: asset performance (AP), supply chain network (SCN) and Planning (P). Each of these dimensions can in turn be broken down into more detail.

- Asset performance is defined by the organisation itself (structure, responsibilities, accountabilities, culture and
skills) and by performance (SOPs, KPIs).

- Supply chain network elements are the physical assets (facilities, storage equipment, vehicles and MHE – Material Handling Engineering).
- Planning concerns stock (how much and where, suppliers and local, regional and national variations), processes and systems, and optimisation (trade-offs between costs, fixed assets, working capital, availability, sales and customer retention.).

The issue at stake, whether at this level of detail or at another, is tracking the costs through these activities. In many cases, costs are simply aggregated and the important detail is lost. Cost To Serve is a critical enabler in identifying and driving improvement. CTS already gives us basic building blocks of the cost to deliver to the customer with their percentage contribution to total costs (as a percentage of sales): cost to make or buy (COGS) at 60%; inbound logistics at 8%; internal logistics at 5%; availability at 4%; and customer delivery at 5%. (the remainder being gross profit)

From this, we can examine the physical flows of how a product moves through the supply chain and the different stages. Businesses typically have a huge variety of customers. There will be different customers in relation to their size and the types of products they’re buying from you. They will differ
in terms of service requirements that they want from you. Some customers require same date delivery, others accept same week delivery. Geographic location of customers is another variable. Some may be in heavily populated urban areas, others in sparsely populated poor areas which are harder and more expensive to get to in terms of transport.

There are many paths through the supply chain from the point of supply to the customer. This is one of the key concepts to understand about Cost To Serve. Moving products through the supply chain through the various paths means very different costs. This is largely determined by the number of times a product is going to be touched or handled. In some parts through the network, the product may only be touched once or twice; in others, it may be five or six times. Every time that a product is touched or handled, the business incurs cost and multiplies the potential for damage and for error. This is why it is important to understand well the path through the supply chain for a various product toward a broad range of customers and how the costs are driven through those various paths.

**Cost To Serve Compared to Typical Accounting**

Cost To Serve needs to reflect the true cost across a diverse product and customer base. There are different ways of
looking at a company’s cost structure. One way is to segment by size/type of retailer. In this case, we might have: mass retailers, who may be easier to service with large volumes and full pallet loads; independent retailers, with perhaps smaller order sizes; and perhaps also high street retailers (also known as route trade), who often generate higher costs because of the need to use several smaller trucks making multiple deliveries. This point of view illustrates the traditional accounting view of looking at the supply chain. However, it lacks the insights into how the different products and different customers drive significant differences in your cost to serve.

The typical accounting view, or general ledger view, lists costs by functional areas: wages, rent, depreciation and similar. An Activity Base Costing view looks at specific activities within warehousing or distribution, where those costs might be allocated to order management, storage, picking and dispatch and similar. Naturally enough, this still adds up to the same total cost, except that it has been split differently. There is sometimes the mistaken impression that Cost To Serve is the same as Activity Base Costing. However, CTS goes further than ABC. In fact it includes ABC as part of, but not the whole of its process.

We start to see the difference when we start to calculate
costs, for example, by continuity fulfillment. Continuity products are products with similar demand at any time of the year – without seasonality or peaks or troughs. In the same way, we can also allocate costs to seasonal fulfillment such as providing Easter eggs at Easter. One other cost that often gets overlooked is promotional fulfillment. Many businesses are highly promotional, promoting certain products at certain times of the year, whether in bundles, at attractive discounts or as loss leaders. Promotional fulfillment is often characterised by marked peaks and troughs, and can drive significant excess cost into the supply chain.

What Benefits Does CTS Deliver?

Cost To Serve is really about understanding the total cost of servicing customers at a customer and product level so that the business can provide appropriate levels of service to
its customers to achieve its business goals. Ultimately, it’s about making all customers profitable or more profitable. Cost To Serve conducted well can bring major insights into the cost drivers for a business. It is not a matter of deleting products or customers, but of making all of them profitable.

A typical outcome is the identification of low margin customers. The low margin could result from customers spending only low amounts, making small orders, being very remote or having special service requirements. We can also identify low margin products. These might be products that have special handling requirements such as temperature control. They might require stock build up for certain periods of the year or maybe they have unpredictable supply of demand. Thirdly, it will help us identify high cost processes. For example, there might be particular packing requirements for some products or may for other products be a high level of returns.

One of the most important benefits is the possibility to negotiate terms with major suppliers. It also becomes easier to justify price increases, because of supply chain and logistics costs, when a Cost To Serve analysis has been done and the results can be backed up with data. It is also possible to test alternative distribution modes or services to make sure all the customers and products provide appropriate contributions to the business.
Cost To Serve is often used to highlight issues as the first step of any major overhaul of the supply chain. As an example, a consumer goods company with 25,000 stock keeping units undertook an initial Cost To Serve analysis. The findings were that 30% of the products were leaving the company’s distribution centers with no remaining margin once warehouse handling and dispatch costs were accounted for. When customer service and transport costs were taken into account, margin for these products became negative. The company’s reporting system had been unable to identify this sizeable problem. With Cost To Serve, the company had the chance to change the behaviors of customers to order slightly less frequently and in larger quantities to improve the situation.

Implementing CTS

The traditional Activity Base Costing approach goes through these steps: identifying and mapping activities; identifying cost and drivers; allocating those costs to activities; establishing the “as is” or current costs. It then identifies and maps the potential or future activities, costs and drivers; allocating costs to activities and then establishing the potential future costs. It generally takes a traditional accounting view of the supply chain. However, it does not take account of
how different customers and products drive different costs in the supply chain.

Activity Base Costing is an important element of determining Cost to Serve. However, it is only part of the picture. We need to understand how different customers and product characteristics drive different costs, and to use a realistic cost allocation method. So, first of all, before starting any Activity Base Costing, we need to identify the characteristics by different products and services and how they drive different costs. We then need to identify customer characteristics and possibly group those customers with similar characteristics together to better understand how they drive costs.

To plan a Cost To Serve study, there are certain elements to take into account:

• The level of detail or granularity. Starting at a product group or customer group level may let you identify any particular issues before descending to a more detailed level.
• A unit of measure for the analysis, depending on the products. Examples are the cost per ton, pallet or case or per dollar sale.
• Resources. Inputs are needed from the finance department for the cost structures and from IT for the transaction information.
The following step is to establish a customer and product matrix. For example, this might contain large customers who order a very large quantity once a month, small customers who order frequently, but in much smaller quantities, customers who have certain support requirements in terms of how invoicing is presented and so on. It is at this stage that a traditional activity base costing approach can now be used to give the information that can be used to change processes and customer behaviors.

The Cost to Serve analysis and reporting can then be repeated in a loop of continuous improvement, looking for the high cost areas and then trying to change processes and behaviors to reduce these costs. A simple example would be to identify customers, who order very frequently but in small volumes, and to transform their order quantities upwards and reduce the cost component as a percentage of each order.

Completing a simple Cost To Serve study might take three to four weeks. A complex one might take 3 - 4 months. CTS can be done periodically to monitor their cost of performance, for instance on a quarterly or an annual basis. It can also be done dynamically for companies that have automated real time reporting for Cost To Serve linked to their ERP and financial systems.
Avoiding Problems in CTS Implementation

Conducting and implementing Cost To Serve requires commitment in a business. Problems can be avoided if they are known about beforehand. Here is a summary of potential pitfalls to look out for:

• The data is not comprehensive. To avoid this problem, start by ensuring a close match with overall profit and loss data for the company.

• Data extraction is too difficult. A greater level of detail than normal reporting is required, so make sure that the time required for this is taken into account.

• Lack of “buy-in” across the business. If sales and marketing departments are reluctant to gather and analyze the data, their motivation can be significantly boosted by learning about the benefits for them.

• The process is too complicated. The process should be simple; complication should not arise and if it does, it should be resolved back down to simple process components.

• Lack of integration with the business strategy. The results of any CTS study that is done must be acted on and used to drive real improvement.

• Not done well the first time. CTS is sometimes attempted by accountants or finance departments that do not fully understand the implications of the supply chain and the
different cost drivers. Make sure the right people do the study.

• No visible early wins. Early wins get people engaged in the process because they can see the real benefits of supporting the strategy.

CONCLUSION

Supply chains are constantly changing. However, they continue to be significant differentiators in the market place. To be a leading business and to have the best service and cost structure in a sector, Cost To Serve analysis is essential.
The 8 Cost to Serve ‘Truths’

1. Most companies don’t know the service needs of most of their customers, but they assume they do.

2. Most companies don’t segment their customer base by these needs.

3. Not all customers want the same service!

4. Some customers are happy with what you might perceive as poor service.

5. Most companies do not have sufficient Supply Chain cost and performance visibility and hence under perform.

6. Not all your customers are happy. But they often won’t tell you.

7. All companies have non profitable customers.

8. All companies have non profitable products/services

Rob O’Byrne
Chapter 9

Measuring Performance
The Right Way.
Are there good ways to measure supply chain performance? Are there even better ways? What is the best practice approach to establishing appropriate measures of supply chain performance? Good, better and best. There are answers to all three of these questions, but we will focus here on the last question – a best practice approach.

We start with the premise that says:

“You can’t improve what you don’t measure.”

The question then is what should we be measuring? Intuitively we know that some measures are more important than others – hence the difference between KPIs (Key Performance Indicators) and mere PIs (Performance Indicators). It is therefore imperative to determine what the high level, indeed, vital measures are and to use these as the primary inputs from which management decisions can be made, and in a responsive manner.

So, before embarking on the journey to best practice measurement performance, what is the first step?

The first step is always to “Begin with the End in Mind”.

The first step is always to “Begin with the End in Mind”. Now that is obvious isn’t it? Yes, it is, yet this step is more often than not ignored and not completed. In fact it seldom is completed. Why would we commence a journey without knowing the destination? In a business sense, before embarking on any business objective it is essential to understand what the destination is – where am I going to end up, what is my target, what is the outcome? As Stephen Covey puts it in his book, *The Seven Habits of Highly Effective People*, Habit #2 is to “Begin with the end in mind”.

The following story is probably apocryphal but demonstrates this point:

There was a plane heading from Melbourne to Sydney that encountered a violent electrical storm en route. At one stage there was a deafening ‘crack’ as the cabin momentarily lit up. The lights went out and the cabin was in darkness before the dull emergency lights came on. After an uncomfortable period of silence the captain was heard over the public address system. He said, “Ladies and gentlemen, you may have surmised that our plane was hit by lightning a few moments ago. You are correct, we were hit by a lightning bolt and as a result there is both good news and bad news.

The bad news is that the lightning has disabled our radar, our tracking system is dead, our GPS is inoperable, we have no navigation ability, our entire communications system is out,
and our Ground Proximity Warning System has failed. In fact, our entire Airplane Management Information System is gone. As a result, we have no idea where we are, or where we are heading.

But the good news is that we have a fantastic tail wind, so wherever we are going, we are likely to make record time!”

The principle of this story is that without a predetermined destination in mind, we could end up anywhere!

When it comes to setting targets, and measuring performance against those targets, there are valuable lessons that we can learn from sports people of the past.

**Lesson 1: Glass ceilings are there to be broken.**

For over one thousand nine hundred and fifty four years of recorded modern history, no one had managed to run a mile in under 4 minutes. Then Roger Bannister was the first to run a mile in under 4 minutes on May 6, 1954. Roger Bannister broke the ‘glass ceiling’, and suddenly everyone became aware that the seemingly impossible, was now possible. As a result of this revelation, John Landy broke the record 6 weeks later on June 21, 1954. No one else broke the record until 1957 but there were 16 runners to break it by the end of 1957! Why did that occur? It took nearly two thousand years
for one man to run a mile in under 4 minutes, yet 16 others did it shortly afterwards. The answer is that once the ‘glass ceiling’ was broken, the reality changed. As a result, new targets were set, and the records continued to tumble.

**Lesson 2: If we want to be the best, what is the first thing that we have to know?**

Usain Bolt is currently the fastest man in the world, i.e. the fastest man in the world at running the 100M. His record is 9.58 seconds. If we wanted, as a goal, to be the fastest man in the world, what is the first thing that we would need to know? Answer: what time is required to be the best?

“If we want to be the best, what is the first thing that we have to know?”

You would need to know that 9.58 seconds is the current world record – the best. With this knowledge, all of the necessary planning, training, preparation and measurement would be aimed at beating that record time. This is measuring, or what is known as benchmarking, against best in class. If, however, you did not have this information, and were simply competing against yourself – looking inwards so to speak – you might be seeing improvement with training over time, but you would always be oblivious to, and very unlikely to
achieve, best in class performance. So it is with supply chain performance benchmarking.

**Lesson 3: The best today, but what about tomorrow?**

Johnny Weissmuller is perhaps most famous for his role as Tarzan in movies of the 1930s and 1940s. He became the sixth actor to portray Tarzan in films, a role he played in twelve motion pictures. Dozens of other actors also played Tarzan, but Weissmuller is by far the best known.

Prior to being a movie star though, Johnny Weissmuller was an American swimmer who was one of the world’s best swimmers in the 1920s. He won five Olympic medals and one bronze medal as well as fifty-two US National Championships and he set sixty-seven world records during his swimming career. He was the holder of every freestyle record from 100 yards to the half-mile. He could lay claim to being the world’s greatest ever swimmer based on this record of achievement alone, but when coupled with the fact that Johnny Weissmuller never lost a race and retired from his amateur swimming career undefeated makes that claim even more reasonable. Newspapers of the day said, ‘No one will ever swim faster than Johnny Weissmuller’. But, at the last Olympics, Weissmuller’s records were broken by 13 year old girls!
The moral of the story is that a truly effective performance measurement system needs to measure your own performance, that of your competitors and peers, and needs to be constantly updated to permit the organisation to ‘stay ahead of the pack’.

These examples from sporting achievement then beg the question; how good does our supply chain need to be to be the best? What is the 9.58 equivalent for supply chains, and do you measure service first, and then cost? Both together? Is there a relationship between the two?

The answer is that measuring customer service performance is the key. An analysis of the Benchmarking Success (BMS) database suggests that best in class supply chains operate at half of the cost of their peers – half the supply chain cost! This is represented in the chart below.
Benchmarking Success undertook an analysis of the relationship between Best Practice service and the associated total supply chain costs of those businesses performing at demonstrably best in class service levels to understand if there was a correlation between the two. The BMS database of over 800 supply chains was used as the dataset.

The criteria used were the following:

Those supply chains that were able to demonstrate that their service levels were in the top 10%, by industry sector, were selected. The total supply chain costs of these companies, as a percentage of sales, was compared to others with average service performance.

“So here is the counter intuitive truth about supply chains – the better the level of service provided, the lower the cost.”

The results unequivocally demonstrated the following:

Organisations with best in class supply chains - as measured by service level performance - are able to operate at about half of the cost of their peers with average service levels.
This correlation was found to be consistent across all six industry sector groupings. So here is the counter intuitive truth about supply chains – the better the level of service provided, the lower the cost. Counter intuitive because typically we associate higher cost with a better level of service – for example we pay more for a better level of service on airplanes, we pay more for an improved standard of service in selecting a hotel – but this is not the case for supply chains. Any supply chain performance measurement system then should involve a heavy bias to capturing and measuring the level of service that customers experience from that supply chain.

How can this be explained when higher service usually equates to higher cost? Three primary factors contributed to this as identified by those Best Practice companies identified above:

1. Get it right the first time, every time.

   “We don’t make many mistakes so there is less rework, less returns, less expediting, etc.”

2. Focus on the detail.

   “Costs become readily apparent when you have a passion for service excellence. You can’t look at one without unavoidably looking at the other.”

"Because our service is consistently superior and our customers know it and rely on it, we both increased our market share, and also could afford to charge more than our competitors."

This price/service relationship, how they are related and what it means be ‘the best’ is illustrated below.

Thus, at a very high level, only 2% of supply chains are able to match best in class service performance with best in class cost performance, and this based on measuring only four key metrics.
“...the key missing link is a measurement system that compares performance to other comparable supply chains, and, importantly, to best in class.

The next level of performance measurement might involve the use of Level 1 metrics using the SCOR methodology. The example below sets out how measuring performance internally is important, but the key missing link is a measurement system that compares performance to other comparable supply chains, and, importantly, to best in class.
These six key supply chain metrics, covering service and cost, are compared for the organisation in question to other organisations with a similar supply chain profile. This measurement system starts to then identify where the gaps are to best in class performance, and also starts to identify the delta to best practice, i.e. how far are we from best in class? The ‘traffic light’ reporting methodology clearly highlights performance that can be categorised into supply chains that are operating at a competitive disadvantage, those that operate in parity to the average range, and those that operate at a competitive advantage. The latter of course, in the words of Ken Blanchard and Sheldon Bowles, are the most likely to attract and retain customers that are ‘Raving Fans’. Quoting from the book of the same name, “Your customers are only satisfied because their expectations are so low and because no one else is doing better. Just having satisfied customers isn’t good enough anymore. If you really want a booming business, you have to create Raving Fans.”

Remember, delivering service that customers rave about, delivers the lowest overall supply chain cost. Service and cost therefore can be measured simultaneously, as demonstrated from the chart below, as a sample performance benchmarking report.
The Cost/Service Trade Off Chart is used to demonstrate how the two factors - service and cost - can be combined and compared to the other supply chains in a comparative group. The area shaded in the ‘cloud’ represents the responses from comparative supply chains, and an individual company’s performance is noted with the Co. X diamond. Given that the horizontal axis measures low to high service and the vertical axis measures high to low supply chain cost, note that those organisations that provide a superior service are also those in the upper quadrant when it comes to cost. There are no ‘high service/high cost’ results and this is typical of supply chain measurement reports of this kind.
In summary then:

1. There are best in class supply chain measurement systems.

2. These processes and systems focus on the level of customer service provided.

3. Organisations providing best in class service do it at half the cost of their competitors and peers.

4. Broad based, external benchmarking is an essential part of establishing appropriate performance metrics and the targets to be set for these measures.
Chapter 10

7 Ways to Supercharge Your Supply Chain
A Summary of Key Areas to Target
Profits for your company can rocket upwards from savings in your supply chain costs – if you just know where to look. Depending on the size of the company, annual savings of between 2 million and 10 million dollars are not uncommon.

There are seven areas that show up consistently as opportunities for supply chain savings for businesses of all sizes across all industries. This means that you can be systematic in your approach to improvement. This is important given the broad scope of the supply chain, extending beyond your company to include both suppliers and customers, with requirements often coming in all shapes and sizes. Big volume and small volume; large orders and small orders; frequent and less frequent deliveries; special handling needs; temperature control; city and country locations, and the list goes on.

Anybody who is in business to make a profit therefore needs to understand the Cost To Serve; the different types of customers concerned with all the different types of products and services to be provided to them. A few examples will show how this can vary for different businesses:

- **Cement Trucks:** delivery of building products, particularly to building sites, is complex. Very often delivery times must be precise as workers and equipment are booked to handle the delivery. So delivery time is critical.

- **Supermarkets:** constraints often exist not only for delivery
time, but also for the configuration of the product. Many supermarkets demand only one product per pallet.

- Home Delivery: distribution is potentially complex and costly. Not only because the order size (value) can be quite low and so the cost for distribution as a percentage of sales is high, but also the customer is often not home. This leads to re-delivery and even more cost.

It is paramount to first understand the dynamics of your customer base so that you can design your service offer to meet their needs at a sensible cost.

#1 Customer Service

Give customers what they really want, not just what you think they want.

The needs of your customers should shape your whole supply chain strategy. It’s a straightforward application of marketing: provide customers with what they need, and avoid adding in costs for things for which they see no value. The consequences are important. Same day service across a country may require several distribution centres, whereas product delivery within seven days may only require one such centre. The customer base and service offered therefore defines your whole supply chain focus and structure.
“All our customers get next day delivery.”

Although this sounds simple, real-life examples of companies that get it back-to-front are numerous:

**Example 1.** “All our customers get next day delivery.” But in this case, not every customer needed or wanted it. This company was wasting money on express transport by over servicing some of their accounts.

**Example 2.** “On Monday we deliver to the North, on Tuesday we deliver to the West, on Wednesday we deliver to the East, on Thursday we deliver to the South……..and on Friday we do emergency deliveries!” The auto products distributor in question had no customer service policy or discipline, and sacrificed customer satisfaction for its own ease of transport planning.

“On Monday we deliver to the North, on Tuesday we deliver to the West, on Wednesday we deliver to the East, on Thursday we deliver to the South……..and on Friday we do emergency deliveries!”
Example 3. To pacify customers calling in with complaints, a distributor gave away free delivery. The loss of revenue over a year for the distributor came to $500,000. Yet both the distributor and its customers would have been better off if the distributor had resolved the complaints so that they did not happen again.

It’s important to remember that when customers see value in a particular mode of delivery, they will expect to pay for it – and that they will be happy to pay for it when it helps them to run their own business better. Make sure the whole of your organisation understands this, so that the benefits of aligning customer service to customer requirements can be achieved: more sales, more profit and more customer loyalty.

#2 Supply Chain Strategy
Objectives drive strategy, strategy drives tactics – and not the reverse.

Understanding your customers’ needs is the first step to defining the right supply chain strategy. You’ll still need to focus on two things: achieving your business objectives and delivering your customer service promise. You’ll also need to communicate that focus across all the key functional areas in your organisation.
If you’re wondering whether your own company has taken the right approach, then ask yourself if any of the following problems have been occurring:

- You have no documented or generally understood supply chain strategy.
- Your supply chain is restricted to one or two functional departments, instead of involving your company in general.
- Internal and external customer dissatisfaction (costs and services).
- Many supply chain projects are managed in ‘silos’, meaning individual functional departments.

A supply chain strategy is a living thing. It needs to be adapted and changed to meet evolving business and customer needs and it needs to be flexible enough, or encourage flexibility, in driving the optimal tactical and operational decisions. Yet, whatever phase it is in, it also needs to be clear and precise. In that way you can immediately decide whether to take a particular action, by asking yourself, “Does this fit with our strategic imperatives?”
# 3 Sales & Operations Planning (S&OP)
*Get your process right first – define your systems after.*

Sales & Operations Planning is what follows good supply chain strategy definition. It is characterised by a major opportunity and a simple definition. S&OP is the ‘process’ that shares information and brings people together in a structured plan defined across the functional departments. People often confuse S&OP with complex and expensive software tools, but the process comes first, not the system. If you haven’t thought out your process properly, then even the most expensive system in the world won’t save you.

Signs that you might have a problem with your S&OP include:

- High levels of SLOB (“SLow moving OBsolete”) stock.
- Many frequent changes to your demand plan and master production schedule.
- Wild proliferation of SKUs (Stock-Keeping Units).
- Excessive stock outs.
- Poor forecast accuracy or no forecasting at all.
- Improving the situation can sometimes be surprisingly simple. For a car parts distributor, a small change in its forecasting algorithm turned out to be a major step
forward, even if it was still using a plethora of spreadsheets to predict demand for over 20,000 SKUs.

For other companies, the solution may start with developing longer term planning horizons, categorising products by sales volume and setting up ‘time fences’ for production (rolling deadlines to determine if changes can still be made to sales forecasts or if the purchasing and production plans can no longer be altered).

What can you expect when you achieve success in your S&OP? The benefits include: improved availability and stock turns; less fire-fighting and expediting; and, of course, improved sales and profits.

**#4 Supply Chain Network Design**

*Keep costs down and reliability up by minimising product handling.*

Think of the ‘shape’ of your physical supply chain network as being determined by two ‘book ends’: your customers and your suppliers. Your customer base and the service you provide dictates where you need to hold stock to service them, and so does the location of your suppliers. The further away the supplier base, and the more unreliable the service, the more stock needs to be held in your network to ensure service continuity.
But the secret to an efficient distribution network is to minimise the amount of product handling. Each ‘touch’ between the point of supply and the customer incurs cost and increases the risk of error and damage. Inadequate network design can lead to excessive multiple handling, too many stock locations and poor utilisation of your distribution centres. The results are high distribution costs and poor customer service.

The blueprint for achieving the right design can be summarised like this:

1. **Establish customer service offers (your first ‘book end’).**
   - Customer locations and lead time.
   - Service expectations.

2. **Establish supply points/lead times (your other ‘book end’).** Identify current network performance.
   - Facility costs.
   - Inventory costs.
   - Transport costs (inbound and outbound).
   - Service performance.

3. **Test and quantify alternatives for least cost networks.**

4. **Consider network transformation, if the benefit is large enough.**
The network modelling tools that we use at Logistics Bureau enable a vast range of cost and service options to be tested in this manner to ensure that optimal networks are used and that sensitivities such as demand increases, fuel cost increases, or changes to the customer service offer can be tested.

# 5 Outsourcing

Stick to what your customer needs, not just to what an outsourcer offers.

The trend toward outsourcing continues with 85% or more businesses outsourcing some part of their supply chain. The two functions that are outsourced most often are warehousing and transport. Common reasons for this are:

- The service being outsourced is non-core and a ‘distraction’ for management.
- Operations are rapidly expanding and outsourcing provides an effective means of quickly accessing more space, technology or other resources.
- The business requires a degree of flexibility in resourcing and a more variable cost, either in resource numbers or type.
• The business needs access to specialised skills, equipment or technology and does not want to invest in those assets directly.

• The organisation believes it will save money by outsourcing. This is not always the case of course, as cost saving will only come about if the service provider is far more efficient or skilled in performing the required services.

• The most important element to get right is the service specification. This initial step by itself is enough to avoid the majority of outsourcing issues, such as higher than expected costs, poor service or misaligned expectations.

• A successful outsourcing relationship is characterised by both parties getting what they want through a healthy and proactive partnership. As the customer, you get consistent service at a cost within expectations and your service provider makes expected profit margins.
# 6 Asset Utilisation

Get more productivity out of fewer assets.

As a general rule, the more assets can be used within any 24 hour period, the better. Under-utilised assets such as vehicle fleets, facilities or inventory, mean inefficiency and poor return on investment. Changing the way assets are used or whether they are owned or leased can resolve these issues, as the following examples show:

- Instead of only making early morning deliveries and leaving the fleet idle for the rest of the time, bread companies now try to use fewer trucks and spread the delivery workload through the day as much as possible. Supermarkets get top ups through the day, food service businesses can get deliveries later in the day and other customers may be willing to take deliveries into the evening.

- The delivery fleet for a major retailer was outsourced and provided delivery from the retailer’s distribution centres to their stores. The rate structure was a ‘truck rate’: for each vehicle that performed deliveries, a flat fee was paid, regardless of how full the truck was. This hardly encouraged the transport company to utilise the fleet well. Now the rate has been changed to a pallet rate.

- Beverage Manufacturer. This very large drinks company
has a traditional peak in business at Christmas time. To provide sufficient warehouse capacity to meet this peak within its own network would mean very low warehouse space utilisation at other times of the year. So during the build up to Christmas each year, it rents additional warehousing, just to cater for the peak.

#7 Performance Measurement

Measure what is strategically important so that you can manage and improve it.

What really matters to your business is your supply chain ‘end game’ objectives. That’s what you need to manage, regularly and consistently, so that you can set realistic targets for improvement. You then choose the corresponding key performance indicators (KPIs) that let you measure your performance compared to your targets. You also embed them in the culture of your organisation, with the clear understanding that they are there to serve your objectives, and not the reverse.

Different organisations will have different KPIs. What works well for one may not be relevant for another, so resist the temptation to copy. Go through the process of setting your own objectives and targets, and defining your own KPIs that give you the right measurement of your performance.
You’ll know if you have good supply chain KPIs when the following is true:

- KPIs are recognised in your organisation as ‘meaningful and relevant’
- KPIs are tracked and understood across functional departments.
- KPIs are used to focus on and drive performance improvement.
- And last but by no means least – supply chain performance is improving!
SUMMARY

Very often a focus on these specific areas of the supply chain can easily uncover significant cost savings; $2 million - $10 million is frequent, depending on company size.

Not all of these seven areas may need ‘fixing’ in your own business. However, two or three at least may be definitely worth investigating for potential improvement. Remember that basic principles also still apply: understanding customer needs, defining the right company objectives and strategy, executing on that strategy and measuring the results so as to be able to continually improve the whole process.
ABOUT THE AUTHOR

Rob O’Byrne

Rob was born in Jersey in the UK, was educated at Cranfield University in the UK and moved to Australia in 1993. He became a proud Australian citizen in 1997 (and yes, he cheers for Australia at the cricket).

He is married with four grown children.

Rob lives in Sydney and oversees the operations of Logistics Bureau, Logistics Bureau Asia and Benchmarking Success.

Since establishing Logistics Bureau in 1997, Rob has enjoyed overseeing over 1,200 client projects, based in 22 countries, across a broad range of industries.

His greatest satisfaction is in assisting customers improve their business and operational performance and over the years Rob has personally led projects that have delivered millions in bottom line savings and improved customer service levels.
Rob is the co-founder, owner and Group Managing Director of Logistics Bureau and has been working, teaching and consulting in the field of Logistics and Supply Chain since he was 17.

Along the way, Rob has picked up a few interesting ‘ticks in the box’, such as a Masters Degree in Logistics from Cranfield, a stint as a Nuclear Rocket Engineer and membership of Mensa (the high IQ society). So he probably qualifies as an entrant for Beauty and the Geek!

Outside work, Rob’s interests include boating, learning piano, singing and songwriting.
Colin Airdrie

Colin was born in Sutton, Coldfield in the UK. A 20 year long first career in UK military logistics gave him a deep working knowledge and practical experience of the foundations of logistics and supply chain management.

On leaving the Service, he moved into third party logistics in the UK market, but then circumstances contrived to offer Colin a role in 3PL (Third Party Logistics) in Thailand. It took him all of 30 seconds to accept, with the intention of staying for two years before returning to the UK. That was fifteen years ago. For nine of those fifteen years, he has held Director Level roles in 3PL and in-house logistics in Thailand and the People’s Republic of China.

In 2005, Colin joined Logistics Bureau as the Managing Director of Logistics Bureau (Asia) Limited (LBA), based in Bangkok, with responsibilities for developing business throughout Asia. LBA now has offices in Vietnam and Singapore.

Colin lives in Bangkok and is married to Ann, his Thai wife. They are in the process of planning a “retirement” home in Bang Sai, Ayutthaya, north of Bangkok.
As well as developing the LBA consultancy business, Colin has built up an excellent regional reputation for developing and delivering effective and practical training courses in supply chain management, inventory management and warehouse design and operations management.

Colin’s main hobby is playing golf and later he hopes to reacquaint himself with his love of painting landscapes in pastels and, perhaps, to start a third career in writing!
John Cole

John lives in Melbourne and, between work and having a family, spent a record-breaking 13 year stint being educated part-time at RMIT.

John is a key project manager at Logistics Bureau as well as the head of our Melbourne office. John has over 35 years in the Supply Chain and Logistics field and specialises mainly in the area of freight and transport.

Also known as the ‘man v wild’ of Logistics Bureau, John has pushed to the front of the queue to lead some of our more remote and far reaching projects based in countries like Argentina and Mongolia.

John’s consulting experience is extensive, as following 26 years in industry, he joined Dawson Consulting in 1998, and then Logistics Bureau in 2007 at the time Logistics Bureau acquired Dawson’s.

John is well known amongst Logistics Bureau clients as the man to ‘go to’ for anything related to transport outsourcing and contract negotiation as he has built a reputation as a highly professional and knowledgeable consultant in this field.
John also has a bit of an artistic ‘flair’ as one of his hobbies is Japanese gardens. He also collects signed first editions, has an interest in South American literature and will one day learn Spanish.
Mal Walker

Mal commenced his career in 1978 as a mechanical engineer at Colby Handling Systems (now Dematic) designing and building warehouse materials handling systems for retail, wholesale, automotive, fashion, appliance and industrial companies. After completing further studies in Business and Logistics, Mal joined Symonds Henderson as a senior logistics consultant leading dozens of projects in warehouse and distribution centre design and outsourcing.

After Symonds sold the company to Sinclair Knight Merz, Mal joined third party logistics provider, Exel/DHL Supply Chain, and worked in both solutions design and global account management capacities. Here he developed 3rd party contract clients through to full implementation. He also managed the Aristocrat global freight and logistics account and assisted them to set up contract logistics hubs in LA, Macau and Sydney.

At the 2007 Smart Conference in Sydney, Mal won a ‘yo-yo’ contest sponsored by Logistics Bureau (long story… you had to be there). After Rob presented him with a bottle of ‘Henschke; Hill of Grace’ as the prize, Mal thought Logistics Bureau was a pretty good outfit. So from 2008 he joined and became the resident warehouse and outsourcing whiz. Sadly, his yo-yo skills have become redundant.
Mal is a ‘Life Member’ of the Logistics Association of Australia having served three terms as NSW President and two as National President. He is also a past director of SMART Conferences Pty Ltd and was conference chair in 2007. Mal holds membership with Council of Supply Chain Management Professionals. He is married, has three grown up kids, and is a passionate musician who manages and plays drums for a 10 piece funk, soul and jazz band called ‘Transmission’. 
John Turner

John is a manager of consulting at Logistics Bureau and is part of the team in our Melbourne office. He first joined Logistics Bureau in 2003.

John has more than 25 years in engineering and logistics management, mainly in the areas of strategic planning, logistics engineering, inventory management, and channel design. He has particular interests in using simulation and optimisation tools for analysing supply chain operations and developing responses for improved performance at minimised costs, especially in terms of reduced inventory levels and for maintenance and repair of capital equipment.

John has Bachelor’s degrees in engineering (electrical) and economics (accounting and operations research) and has a Masters degree in science (logistics). He has learned even more from the school of practice by applying his skills across a broad range of industries in several countries and cultures, including South East Asia and the Pacific. He observes that it’s handy to carry a jar of Vegemite for exchange when someone offers you to try culinary delights such as steamed bullfrog or chocolate covered locusts!

John is married to Wendy, and has four adult children. His daughters, Casey and Natalie, are pursuing traditional careers. His eldest son, Ben, is an adventurer and is currently planning to raise $1,000,000 for cystic fibrosis by rowing
non-stop and unsupported across the Pacific Ocean from Peru to Australia – watch for his adventures during 2012. His youngest son, Andrew, has ambitions of being a successful musician (I suppose this means he will earn a living as a musician). Andrew is a member of A Sleepless Melody and will record his second EP in the USA during 2011.

When not working, John likes to read and spend time with his wife Wendy. Together, they enjoy travelling and sailing to new and exotic ports.
Steven Thacker

Steven has been involved in senior management roles in the Supply Chain industry for over 25 years. He has worked for such organisations as Linfox, TNT Logistics, Sigma Pharmaceuticals, Simplot and Ingram Micro as Director of Supply Chain.

His roles have involved living and working in Australia as well as being based overseas in the United States and Asia.

Steven is currently the Managing Director of Benchmarking Success, a division of Logistics Bureau specialising in benchmarking supply chain performance of businesses and then setting up and working with clients on a roadmap to Supply Chain excellence – which is his passion.

Along the way Steven also completed a Masters in Supply Chain from Monash University.

Aside from the time devoted to helping organisations achieve business excellence, Steven enjoys being physically fit and enjoying several sports and physical recreational activities such as week long hikes.
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