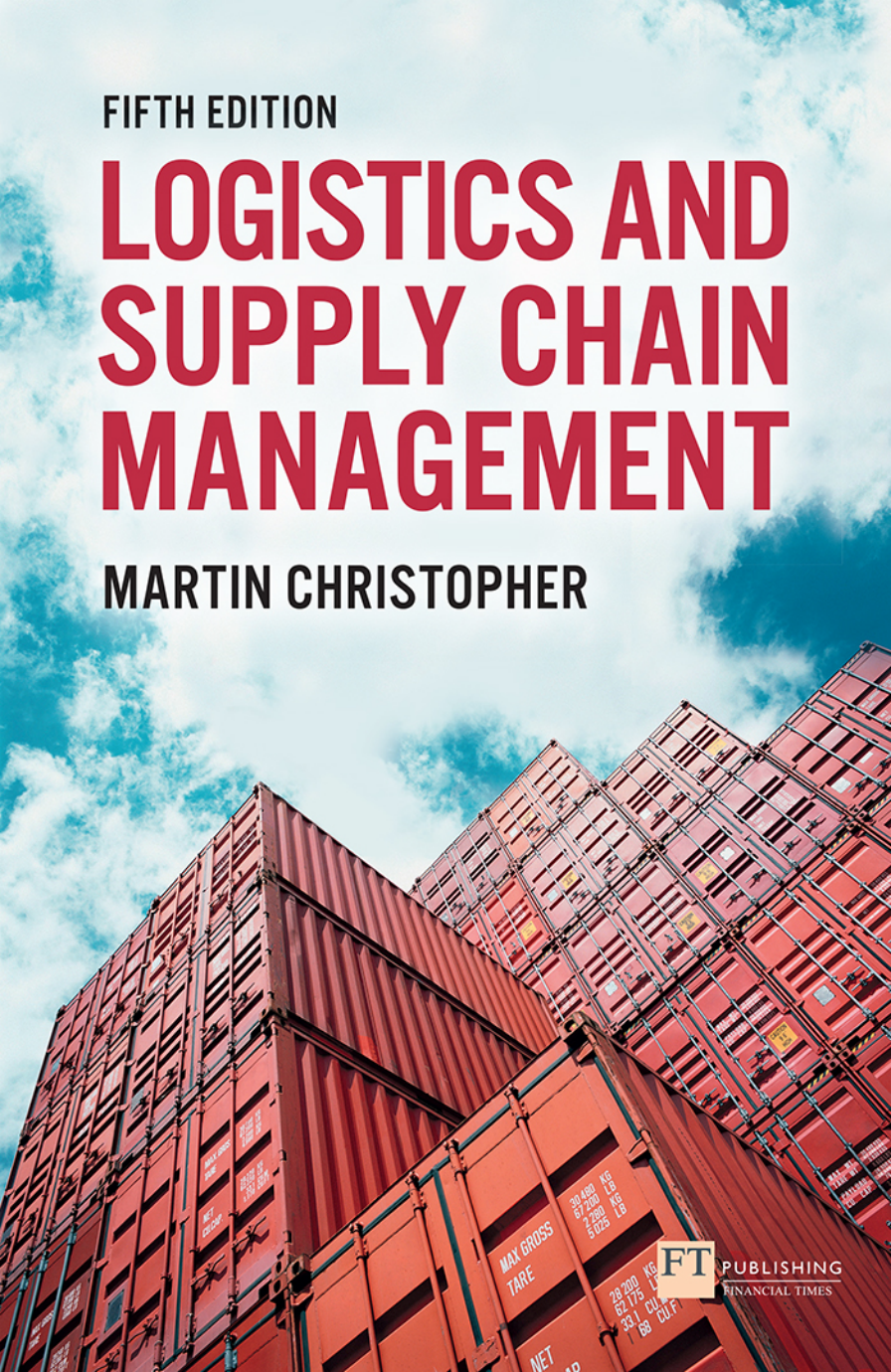
FIFTH EDITION

LOGISTICS AND SUPPLY CHAIN MANAGEMENT

MARTIN CHRISTOPHER



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Praise for *Logistics & Supply Chain Management*

'A definitive text from a true authority. The fifth edition of *Logistics & Supply Chain Management* is a strategic treatment of the field. It provides both the student and the professional with ideas, processes and tools to deliver sustainable competitive advantage to their organisation. It also equips the reader with the tools for their own professional success.'

Dr. Yossi Sheffi, Elisha Gray II Professor of Engineering and Director, MIT Center for Transportation & Logistics

'This has been the definitive book on logistics and supply chain management, and the fifth edition just got better. It describes the opportunities and challenges for managers in the area accessibly, concisely and comprehensively – essential reading and reference.'

Alan Braithwaite, Chairman, LCP Consulting and Visiting Professor, Cranfield Centre for Logistics and Supply Chain Management

'A powerful book which provides the fundamental tools, examples and insights to develop your supply chain to the next level. It's well worth reading.'

Bo-Inge Stensson, Senior Vice President, Global Purchasing, SKF Group

'While the need to manage the supply chain is obvious, how to actually make it happen is not. Linking theory and practice in an accessible way, *Logistics & Supply Chain Management* provides executives with a comprehensive overview of the latest thinking in supply chain management. It is essential reading for anyone seeking to understand how to derive competitive advantage from managing their supply chain.'

Professor Matthias Holweg, Saïd Business School, University of Oxford

'For many years now, Martin Christopher's book has been my default recommendation to anyone seeking to acquire a quick yet comprehensive grasp of supply chain issues and management. Whether you are a recent entrant to the field or a seasoned practioner looking for inspiration, this is the book for you!'

Bjorn Van Jensen, Vice President, Global Logistics, Electrolux

'You must read this book for his assessment of the challenges that lie ahead.'

Dr John Gattorna, supply chain 'thought leader' and author of *Dynamic Supply Chains*

'A powerful book for executives and practioners. It emphasises the "end to end" view of supply chains, focusing on both cost efficiency and value creation. The principles and concepts are illustrated with practical examples and applications. It is a great contribution.'

Professor Hau Lee, Stanford Graduate School of Business, USA

Figure 4.8 Horizontal flows that cut across functional boundaries

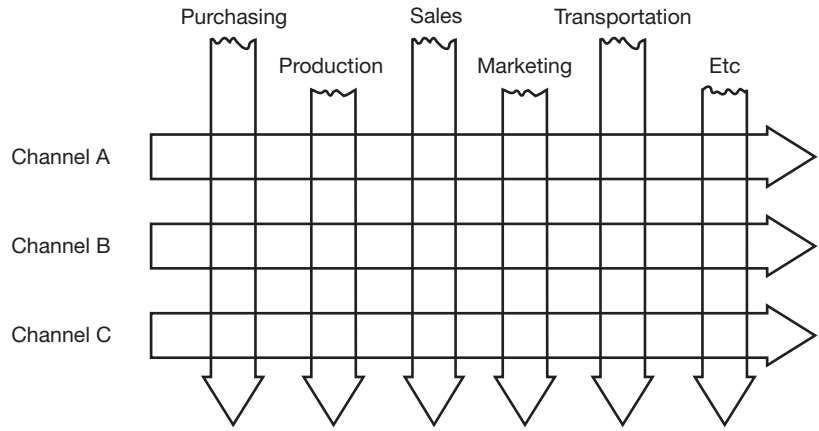


Figure 4.9 The programme budget (£'000)

	Functional area 1	Functional area 2	Functional area 3	Functional area 4	Total channel cost
Channel A	100	90	20	80	290
Channel B	50	70	200	20	340
Channel C	70	30	50	70	220
Functional budgets	220	190	270	170	850

of traditional techniques: under this scheme a functional budget is determined now by the demands of the channels it serves. Thus in Figure 4.9 the cost per channel is identified horizontally and from this the functional budgets may be determined by summing vertically.

Given that the logic of channel costing is sound, how might it be made to work in practice? This approach requires firstly that the activity centres associated with a particular distribution channel be identified, e.g. transport, warehousing, inventory,

etc., and secondly that the incremental costs for each activity centre incurred as a result of serving that channel must be isolated. Incremental costs are used because it is important not to take into account 'sunk' costs or costs that would still be incurred even if the channel were abandoned. We can make use of the idea of 'attributable costs'[8] to operationalise the concept:

> *Attributable cost is a cost per unit that could be avoided if a product or function were discontinued entirely without changing the supporting organisation structure.*

In determining the costs of an activity centre, e.g. transport, attributable to a specific channel, the question 'What costs would we avoid if this channel were no longer serviced?' should be asked. These avoidable costs are the true incremental costs of servicing the channel. As well as using this approach to understand the cost-to-serve by channel the same principles can be applied to analysing customer profitability.

Customer profitability analysis

One of the basic questions that conventional accounting procedures have difficulty answering is: 'How profitable is this customer compared to another?' Usually customer profitability is only calculated at the level of gross profit – in other words the net sales revenue generated by the customer in a period, less the cost of goods sold for the actual product mix purchased. However, there are still many other costs to take into account before the real profitability of an individual customer can be exposed. The same is true if we seek to identify the relative profitability of different market segments or distribution channels.

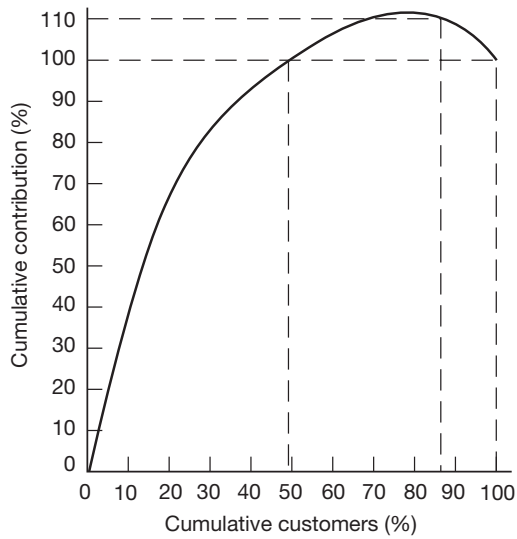
The significance of these costs that occur as a result of servicing customers can be profound in terms of how logistics strategies should be developed. Firstly, customer profitability analysis will often reveal a proportion of customers who make a negative contribution, as in Figure 4.10. The reason for this is very simply that the costs of servicing a customer can vary considerably – even between two customers who may make equivalent purchases from us.

If we think of all the costs that a company incurs from when it captures an order from a customer to when it collects the payment, is will be apparent that the total figure could be quite high. It will also very likely be the case that there will be significant differences in these costs customer by customer. At the same time, different customers will order a different mix of products so the gross margin that they generate will differ.

As Table 4.1 highlights, there are many costs that need to be identified if customer profitability is to be accurately measured.

The best measure of customer profitability is to ask the question: 'What costs would I avoid and what revenues would I lose if I lost this customer?' This is the concept of 'avoidable' costs referred to earlier and incremental revenue. Using this principle helps circumvent the problems that arise when fixed costs are allocated against individual customers.

Figure 4.10 Customer profitability analysis



Source: Hill, G.V., *Logistics – The Battleground of the 1990s*, A.T. Kearney., Inc.

Table 4.1 The customer profit and loss account

Revenues	• Net sales value
Less	
Costs (attributable costs only)	• Cost of sales (actual product mix) • Commissions • Sales calls • Key account management time • Trade bonuses and special discount • Order processing costs • Promotional costs (visible and hidden) • Merchandising costs • Non-standard packaging/unitisation • Dedicated inventory holding costs • Dedicated warehouse space • Materials handling costs • Transport costs • Documentation/communications costs • Returns/refusals • Trade credit (actual payment period)

The average customer A study by the consulting company A.T. Kearney suggested that the significance of customer-oriented costs is not their average value, but specifically how they vary by customer, by order size, by type of order and other key factors. Whilst the average cost per customer may be easily calculated, there may be no customer that incurs the average cost-to-serve. The priority is to be aware of the customers at the extremes of the cost range because, on the one hand, profits may be eroded by serving them and, on the other, although high profit is being generated, the business is vulnerable to competitive price-cutting. The table below shows an example of the range of values of some customer-oriented costs expressed as a percentage of net sales. This illustrates how misleading the use of averages can be.

Customer costs as a % of net sales

	Low	*Average*	*High*
Order processing	0.2	2.6	7.4
Inventory carrying	1.1	2.6	10.2
Picking and shipping	0.3	0.7	2.5
Outbound freight	2.8	7.1	14.1
Commissions	2.4	3.1	4.4

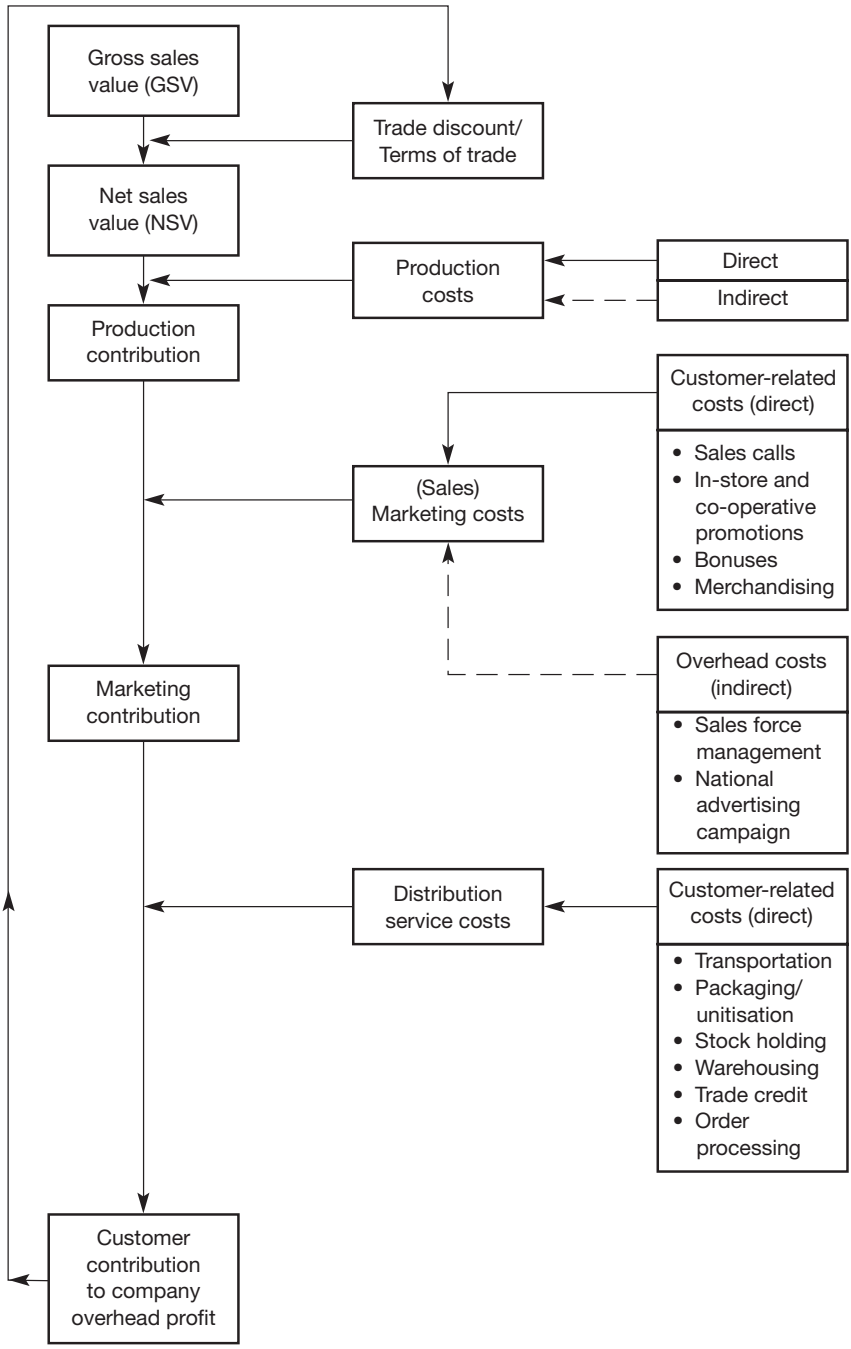
Source: Hill, G.V. and Harland, D.V., 'The customer profit centre', *Focus* 2(2), Institute of Logistics and Distribution Management, 1983

What sort of costs should be taken into account in this type of analysis? Figure 4.11 presents a basic model that seeks to identify only those customer-related costs that are avoidable (i.e. if the customer did not exist, these costs would not be incurred).

The starting point is the gross sales value of the order from which is then subtracted the discounts that are given on that order to the customer. This leaves the net sales value from which must be taken the direct production costs or cost of goods sold. Indirect costs are not allocated unless they are fully attributable to that customer. The same principle applies to sales and marketing costs as attempts to allocate indirect costs, such as national advertising, can only be done on an arbitrary and usually misleading basis. The attributable distribution costs can then be assigned to give customer gross contribution. Finally, any other customer-related costs, such as trade credit, returns, etc., are subtracted to give a net contribution to overheads and profit. Often the figure that emerges as the 'bottom line' can be revealing as shown, in Table 4.2.

In this case a gross contribution of £70,000 becomes a net contribution of £56,400 as soon as the costs unique to this customer are taken into account. If the analysis were to be extended by attempting to allocate overheads (a step not to be advised because of the problems usually associated with such allocation), what might at first seem to be a profitable customer could be deemed to be the reverse.

Figure 4.11 **Customer profitability analysis: a basic model**



Source: Gattorna, J.L. and Walters, D.W., *Managing the Supply Chain: A Strategic Perspective* (Palgrave Macmillan, 1996), reproduced with permission of Palgrave Macmillan

Table 4.2 Analysis of revenue and cost for a specific customer

	£	£
Gross sales value		100,000
Less discount	10,000	
Net sales value		90,000
Less direct cost of goods sold	20,000	
Gross contribution		70,000
Less sales and marketing costs:		
Sales calls	3,000	
Co-operative promotions	1,000	
Merchandising	3,000	
	7,000	
		63,000
Less distribution costs:		
Order processing	500	
Storage and handling	600	
Inventory financing	700	
Transport	2,000	
Packaging	300	
Refusals	500	
	4,600	
Customer gross contribution		58,400
Less other customer-related costs:		
Credit financing	1,500	
Returns	500	
	2,000	
Customer net contribution		56,400

However, as long as the net contribution is positive and there is no 'opportunity cost' in servicing that customer the company would be better off with the business than without it.

The value of this type of exercise can be substantial. The information could be used, firstly, when the next sales contract is negotiated and, secondly, as the basis