



**Logistics Management Consultants**

**THE TRANSPARENT COST MODEL**

**Newsletter No. 150**

September 2005  
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In recent years many leading manufacturers, retailers and sales/marketing organisations have placed the assembly, warehousing and delivery of their products in the hands of third party contractors. The reasons for this include the need to create additional space on site to expand manufacturing facilities, to obtain the benefits of centralised warehousing, with improved national coverage and reduced lead times, and to liberate management time to concentrate on the core business. Distribution is now seen as a specialist area, and it makes commercial sense for organisations to delegate this operation to the distribution professionals.

One method of payment, preferred by many contractors, is to charge for services on a “cost plus” basis, whereby the actual costs incurred are passed on to the client in full, with an additional percentage added (normally in the region of 10%) as a management fee. The possible limitation here is that there may be little incentive for the contractor to maintain high productivity levels, or look for ways of reducing unit costs, throughout the duration of the contract.

A relatively new approach to charging, which protects the interests of both parties concerned, is to base payment upon a “transparent cost model” which specifies the physical requirements of the warehousing operation in terms of space requirements, labour requirements, mechanical handling equipment requirements, etc., and then costs these factors at agreed rates.

For multi-user sites, the first consideration when drawing up the transparent cost model is the amount of warehousing space required for the operation, as this will then determine the cost for rent, rates, heating, lighting and other space related items of expenditure. To determine space requirements, the annual case throughput for the products to be warehoused are firstly converted to annual pallet throughputs by use of pallet factor conversion ratios. For example, if total annual sales are 2.4M cases, and on average there are 100 cases per pallet stored, then 24,000 pallets will be handled by the warehouse annually. Pallet stockholding requirements are then determined based upon projected stockholding levels. If the warehouse needs to contain two months stock, for example, then total pallet stockholding would be 4000 pallets.

The square footage requirements can then be determined, based upon the type of racking installation that is to be used. For a conventional 5 pallet high installation a conversion factor of 9.6 square feet per pallet stored would apply, which allows for some 15% empty spaces in the racking for the movement of pallets in and out. The total racking area would therefore be 38,400 sq. ft., which would be uplifted by 25% to allow for goods-in, despatch, and office areas, giving a total requirement of 48,000 sq. ft. warehousing space. This would then be costed at the agreed rate per sq. ft., as shown in the example below.

Transparent Cost Model - Space Requirements

	Basis	Total	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Weeks/Month		52	5	4	4	5	4	4	5	4	4	5	4	4
Seasonality		100.0%	9.62%	7.69%	7.69%	9.62%	7.69%	7.69%	9.62%	7.69%	7.69%	9.62%	7.69%	7.69%
Volume Throughput	Cases	2,400,000	230,880	184,560	184,560	230,880	184,560	184,560	230,880	184,560	184,560	230,880	184,560	184,560
	Pallets	24,000	2,309	1,846	1,846	2,309	1,846	1,846	2,309	1,846	1,846	2,309	1,846	1,846
Stockholding	Pallets	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000
Space	Sq. Ft.	48,000	48,000	48,000	48,000	48,000	48,000	48,000	48,000	48,000	48,000	48,000	48,000	48,000
Space Costs	€ 27.12	1,301,760	125,229	100,105	100,105	125,229	100,105	100,105	125,229	100,105	100,105	125,229	100,105	100,105

The staffing requirements for the warehousing operation are next determined by applying agreed work output rates to the monthly volumes of the warehouse. The output rates would be set in line with those achieved by similar warehousing operations.

For example, for the Goods Inwards operation, pallet throughput would be divided by a work rate of 30 pallets handled per man-hour to determine vehicle off-loading requirements. For Put Away and Picking Fixture Replenishment the pallet

throughput would be divided by 8 pallets per man-hour, assuming that full pallet assembly accounts for 10% of throughput.

For Order Assembly, the picking rates will depend on the equipment used and the ratio of bulk order picking to individual customer order picking. If case scanning systems are used then picking rates will be slower than for conventional picking using picking lists, but accuracy levels will be significantly improved. Typical output rates for a conventional grocery warehouse would be; full pallet assembly – 15 pallets per man-hour, bulk picking – 300 cases per man hour and individual customer order picking – 180 cases per man hour.

For the despatch operation, the projected number of pallets despatched would be divided by a work rate of 25 pallets handled per man-hour to determine vehicle-loading requirements. The number of pallets despatched would be calculated by uplifting projected pallet throughputs by a percentage to allow for reduced utilisation of assembled pallets, due to stacking configurations.

Once the warehouse man-hour requirements have been determined, payroll costs can be calculated by applying the agreed hourly payment rates for warehouse operatives, and these rates would also include such factors as holiday pay, sick pay, pensions and other employer costs. An example is shown below.

Transparent Cost Model - Warehouse Staffing Requirements

	Basis	Total	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Volume Throughput	Cases	2,400,000	230,880	184,560	184,560	230,880	184,560	184,560	230,880	184,560	184,560	230,880	184,560	184,560
	Pallets	24,000	2,309	1,846	1,846	2,309	1,846	1,846	2,309	1,846	1,846	2,309	1,846	1,846
Goods In	30	800.13	76.97	61.53	61.53	76.97	61.53	61.53	76.97	61.53	61.53	76.97	61.53	61.53
Put-Away / Replen	8	3,000.50	288.63	230.75	230.75	288.63	230.75	230.75	288.63	230.75	230.75	288.63	230.75	230.75
Full Pallet Pick	15	160.03	15.39	12.31	12.31	15.39	12.31	12.31	15.39	12.31	12.31	15.39	12.31	12.31
Bulk Pick	300	3,600.00	346.32	276.84	276.84	346.32	276.84	276.84	346.32	276.84	276.84	346.32	276.84	276.84
Pick by Order	180	6,000.00	577.20	461.40	461.40	577.20	461.40	461.40	577.20	461.40	461.40	577.20	461.40	461.40
Despatch	25	1,152.19	110.83	88.61	88.61	110.83	88.61	88.61	110.83	88.61	88.61	110.83	88.61	88.61
Misc. Work per Wk	20	1,040.00	100.00	80.00	80.00	100.00	80.00	80.00	100.00	80.00	80.00	100.00	80.00	80.00
Total Hours		15,752.85	1,515.34	1,211.44	1,211.44	1,515.34	1,211.44	1,211.44	1,515.34	1,211.44	1,211.44	1,515.34	1,211.44	1,211.44
Payroll Costs	€ 16.66	262,443	25,246	20,183	20,183	25,246	20,183	20,183	25,246	20,183	20,183	25,246	20,183	20,183

The staffing level calculations would also indicate how many forklift trucks, order picking trucks and other items of mechanical handling equipment are needed for the operation, and contract hire costs can then be included, accordingly. Pallet hire costs would also be determined in line with pallet stockholding levels.

The Transparent Cost Model has therefore identified for the organisation concerned the costs associated with every aspect of the third party warehousing operation, and also provides the means for adjusting the total charges in line with the monthly volumes achieved. The onus is therefore very much on the contractor to achieve the agreed output rates and to contain costs generally to the agreed levels, but he is also safeguarded in the event of throughput volumes altering significantly.

Perhaps this represents the basis for a good working relationship!

dma2000 are staging a half day seminar on the subject of Cost Control in the Supply Chain on Tuesday 7<sup>th</sup> March 2006 in Dublin. The seminar will be based on dma2000 consultants' experience of working with a wide range of wholesale and retail multiples, on projects designed to improve staff effectiveness, control of operating costs and enhancement of customer service levels.

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