Measures of product attractiveness in retail operations

Shelf space limits the quantity and variety of products offered by a retail operation. The visibility of a particular stock-keeping unit (SKU) and probability of a stock-out are related to the space allocated to the SKU. Total contribution for the retail operation is influenced by how shelf space is allocated to the SKUs. For retailers, shelf space ‘is their life blood – and it’s very limited and expensive’. Shelf space, accordingly, can be treated as a constraint in retailing operations. The most attractive SKU is the SKU that generates the greatest contribution per unit of space (square foot or cubic foot). To calculate contribution, all incremental expenses are deducted from incremental revenue. Incremental revenues include retail price and other direct revenue such as deals, allowances, forward-buy and prompt-payment discounts. Incremental expenses include any money paid out as a result of selling one unit of a particular item. Included in the incremental expenses would be the invoice unit cost and other invoiced amounts (shipping charges, for example) that can be traced directly to the sale of the particular item. Incremental revenues and expenses are found by dividing case values by the number of units per case.

If capacity is not changed, then the relevant costs are the incremental costs rather than full costs. The choice of low direct product cost items (i.e. a full product cost including a share of the fixed warehouse, transport and storage costs) over high direct product cost items is essentially a choice to use less of the capacity that has already been paid for. If the costs of capacity are fixed, then using less capacity will not save money. Like the product mix problem, the answer to the space management problem is how to allocate existing capacity so that profit is maximized. To maximize profits where profits are constrained by space limitations, capacity should be allocated on the basis of the SKU that generates the greatest contribution per unit of space.

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**Throughput accounting: The Garrett Automotive experience**

Garrett Automotive Ltd (GAL) is a UK subsidiary of an American parent company that manufactures turbochargers for the automotive industry. Because of pressure from major customers for price reductions GAL investigated the impact of a small percentage change in total revenues and different categories of costs on profits. The conclusions from the analysis were that selling price, sales volume and material cost had by far the most dramatic effect on company profitability. There was a need for the management accounting system to highlight these aspects of the business.

GAL decided to begin its profit improvement programme by examining its factory throughput. Throughput was defined as the rate at which raw materials were turned into sales. In other words, throughput was defined as sales less material costs per period of time. All operating costs, other than direct materials were considered to be fixed in the short run. In conjunction with its new OPT scheduling system factory bottlenecks, defined as an activity within the organization where demand for the resource outstrips the capacity to supply, were identified. The bottlenecks became certain machines in the factory. The mechanism to improve profitability was to maximize throughput contribution by optimizing the use of bottleneck resources.

Management sought to alleviate the bottlenecks by making additional investments to improve bottleneck capacity and by shifting some of the operations from bottleneck to non-bottleneck machines. New investments to improve efficiency at non-bottleneck machines were rejected because this greater efficiency did nothing to improve throughput contribution. Priority was given to investments in bottlenecks. To motivate the employees to increase throughput the performance reporting system was changed. Less emphasis was given to labour efficiency and schedule adherence was introduced as a key performance measure. Employees at non-bottleneck operations were requested not to produce more than the scheduled quantity and use any surplus time on training and TQM initiatives.

GAL has found throughput accounting to be extremely helpful in its particular situation. By concentrating on managing its bottlenecks, GAL has been able to increase its production to meet its sales demand of many different types of turbochargers in relatively small batch sizes. During the two year period of operating throughput accounting, GAL has also seen a dramatic halving in its inventory.