

Learning which
shows fall in the
average



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Learning curve may be defined as the curve which shows fall in the average lower cost or rise in the productivity by some percentage with increase in the experience of the operator. It indicates the improvement or progress in performance of a person due to increase in his efficiency or skill. Any one, who repeatedly performs a task, knows that in general the time required repeating the task is less than the time required to perform it originally. " As a worker learns from experience and as a result of his increased knowledge, labour requirement per unit of output falls. This enables a company to achieve greater cost effectiveness.

" — K. J. Arrow" Learning curve may be defined as the ability of persons, under certain circumstances, to increase their efficiency or skill by a constant rate as the cumulative production quantity increases geometrically i.

e., increase in doubling." — F. P. Kollaritch and R. B. Jordan In other words, it can be said that the concept of learning curve is that the cumulative average unit costs decline by some constant percentage whenever the total quantity of production is doubled.

Anyone who has repeatedly performed some specific task or operation knows that in general, the time required repeating the task is appreciably less than the time required to perform it originally. Implications of Learning Curve: Learning curve leads to following improvements: 1. More skilful movements of workers.

2. Improvements in machine and tooling. 3. Less rejection and rework. 4. Improved management control.

5. Less time required to instruct workers. 6. Better operation sequences, machine feeds speeds. 7.

Less set up time due to larger lots. Rate of Learning: The rate of learning is not the same in all manufacturing applications. Learning occurs at a higher rate in some applications than others and is reflected by a more rapid descent of the curve. By convention, the learning rate is specified as a percentage. A 90 percent curve, for example, means that each time cumulative output doubles; the most recent unit of output requires 90 percent of the labour input of the reference unit, if unit 1 requires 100 labour hours or 81 hours, and so on. Labour hours required for 70, 80 and 90 percent curves are shown in fig. 29.

1 for various levels of cumulative output, assuming 100 labour hours are required for the first unit. Uses of Learning Curve: The learning curve is used for the following purposes besides as a technique of cost reduction. These are: (a) Work scheduling (b) Material requirement planning (c) Training programme (d) Cost estimation (e) Capital requirement planning.

(a) Work scheduling:

Proper scheduling of work is essential to meet delivery schedule. Timely procurement of needed materials and manpower is essential for work scheduling. Learning curve influences the labour required, quantity produced and timing of deliveries.

Late deliveries by suppliers may result in interruptions in production and unlearning.

(b) Material requirement planning:

When employees become more efficient due to learning effect, the rate of production increases and more materials are required. The rate of work in progress and inventory turnover also increases.

(c) Training programme:

Learning curve can be used to measure the effectiveness of a training programme.

If the employees after training satisfy the normal learning curve pattern, training is considered successful.

(d) Cost estimation:

The learning curve is a technique of cost projection. It is widely used for forecasting the rate at which costs are likely to fall as new plants are commissioned.

(e) Capital requirement planning:

The learning curve is useful in planning working capital requirements. If the unit price is based on cumulative average unit cost, the revenues from the first few units may not cover the actual expenditures.

Funds must be arranged to cover such expenses.