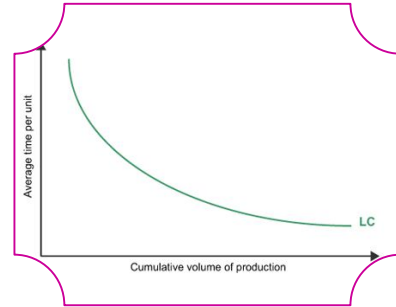




## LEARNING CURVE: EFFECT THAT TO CONSIDERED IN COST ACCOUNTING

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### ABSTRACT

Learning is the procedure by which an individual gains expertise, information and capacity. At the point when another item or procedure is begun, execution of specialist isn't getting it done and learning marvel happens. As the experience is picked up, the presentation of laborer improves, time taken per unit diminishes and in this way his efficiency goes up. This improvement in efficiency of laborers is because of learning impact. Cost forecasts particularly those identifying with direct work must take into consideration the impact of learning process. This method is a scientific procedure. It is a graphical strategy utilized generally to anticipate cost.

**KEYWORDS:** information and capacity, learning process.

### INTRODUCTION

Expectation to absorb information is a geometrical movement, which uncovers that there is consistently diminishing expense for the achievement of a given dreary activity, as the indistinguishable activity is progressively rehashed. The measure of diminishing will be less and less with each progressive unit delivered. The slant of the choice curve is communicated as a rate. Different names given to expectation to absorb information are Experience curve, Improvement curve and Progress curve. It is basically a proportion of the experience picked up underway of an article by an association. As more units are created, individuals engaged with generation become more productive than previously. Each extra unit sets aside less effort to deliver. The measure of progress or experience picked up is reflected in a lessening in worker hours or cost. The use of expectation to absorb information can be reached out to business and modern exercises just as guard generation.

### MEANING OF LEARNING CURVE

The learning impact exists during a specialist's beginning up or acquaintance period on a specific activity. After the breaking points of trial learning are come to, profitability will in general settle and no further improvement is conceivable. The rate at which learning happens is affected by numerous variables including the overall newness of laborers with the assignment, the relative oddity and uniqueness of the activity, the multifaceted nature of the procedure, the effect of motivating force plans, supervision, and so forth.

### Distinct features of learning curve in manufacturing environment

T.P. Wright of Curtiss—Wright, Buffalo, U.S.A. presented the hypothesis of expectation to absorb information. At the point when the creation amount of a given thing is multiplied, the expense of that thing

decline at a consistent rate. Hypothesis of expectation to absorb information has been planned based on this wonder. It is essential to take note of that as the amount created copies, the total measure of cost increment will be progressively lesser however the pace of abatement will stay steady.

**Highlights of expectation to absorb information can be abridged as beneath:**

- Better tooling strategies are produced and connected;
- Designed bugs are found and corrected;
- Better configuration is accomplished through structure building for decreasing material and work cost.
- Rejections and improve will in general lessen.

**The Learning Curve Rate**

In the beginning of production of a new product , the effect of learning curve is so regular and accurate. So we can estimate the total number of hours to produce required number of units of a product. In short we can estimate labour cost well in advance. The gradual reduction in the labour cost due to learning curve effect can be found out by learning curve rate as under.

$$\text{Average labour cost for first } 2N \text{ units}$$

$$\text{Learning curve rate} = \frac{\text{Average labour cost for first } 2N \text{ units}}{\text{Average labour cost for first } N \text{ units}}$$

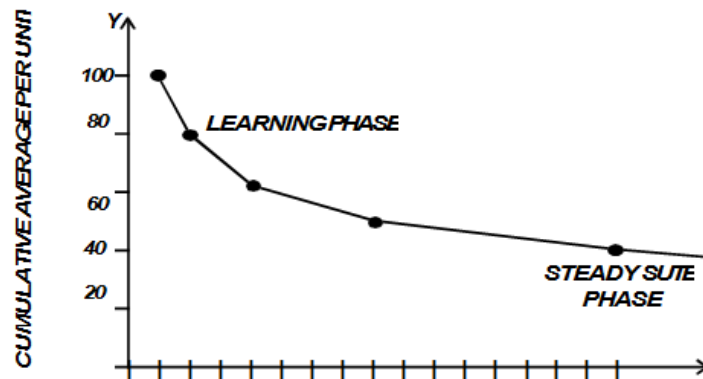
For example, if average labour cost for first 1000 units of a product is 50 and average labour cost for first 2000 units of a product is 40, then in this case, learning curve ratio is,

$$\text{Learning curve ratio} = \frac{50}{40} \times 100 = 80\%$$

This 80% shows that, at every time, output doubles, the average labour cost is decrease by 80% of previous labour cost. Since the amount of average labour cost is 2000 unit is 40, average labour cost for first 4000 units is likely to be 80% of 40, i.e 32 per unit. The amount of production improvement in the manufacturing of an article will determine the percentage of the learning curve.

The units chosen in the progression must always have a ratio of two (Unit 2 to unit 1, unit 50 to unit 25, unit 300 to unit 150, etc.).This can also be denoted by graphical presentation as follow. An 80% learning curve drew using following data.

Incremental quantity	Cumulative quantity	Workings of average time	Average time per unit	Cumulative time taken
(1)	(2)	(3)	(4)	(5)
1	1	-	100	100
1	2	100 x 80%	80	160
2	4	80 x 80%	64	256
4	8	64 x 80%	51	408
8	16	51 x 80%	41	656



### CUMULATIVE OUTPUT

Columns (2) and (4) have been used for drawing the learning curve. Last column is not used in drawing the 80 per cent learning curve. This column shows how the cumulative time consumption will increase with decrease in cumulative average per unit. Cumulative quantity is plotted on X-axis and cumulative average time consumption per unit is plotted on Y-axis. After the learning effect phase is over, steady-state phase will start. Learning effect advantage will not be there in steady-state phase, when the product or the process gets well stable.

### Uses/ Application of Learning Curve

The knowledge of learning curve can be useful in many cost related decisions. It can be useful for both planning and control purpose. Standard cost for new operations should be revised frequently to reflect the anticipated learning pattern. The uses of learning curve are summarized as follow.

- Learning curve helps in analysis of Cost-Volume-Profit (CVP) analysis for cost related decisions.
- Learning curve helps in budgeting and profit planning.
- Learning curve helps pricing related decisions.
- Learning curve helps in setting a standards for benchmark.
- Learning curve helps in estimating efficiency of workers.
- Learning curve helps to government in negotiation in contacts.
- Learning curve helps in decision making for cost reduction and cost control programs.

### Limitations of learning curve theory

- It is very difficult to get valid data to compute learning curve ratio.
- Indeed, even slight change in conditions rapidly renders the expectation to absorb information out of date. While the consistency of customary expectations to absorb information can be addressed, it is inappropriate to disregard learning impact inside and out in foreseeing future expenses for choice purposes.
- It is correct that learning effect does take place and average time taken is likely to reduce. But in practice it is highly unlikely that there will be a regular consistent rate of decrease, as exemplified earlier. Therefore any cost predictions based on cover national learning curves should be viewed with caution.
- In some situations, learning curve is not applicable. These situations are as under.
  - When production process is highly automatic and not labour intensive.
  - When labour is experienced or skilled.
  - When company changes the material used frequently.
  - When stabilizing phase is achieved.

**Practical example on learning curve**

AB Ltd makes and sales an labour intensive product. Its labour force has learning rate of 80%, applicable only to direct labour. The cost per unit for first product is as follow.

	Rs.
Direct material	10,000
Direct Labour (@Rs 4 per hour)	8,000
Variable overheads	2,000
<b>Total Variable cost</b>	<b>20,000</b>

AB Ltd gets an order from p ltd for 4 units of a product. Another customer Q Ltd is also placing order for 4 units of a product. AB Ltd has capacity to fulfill both orders. Q Ltd is offer Rs.17,200 per unit to AB Ltd for purchase. But P gives two option to AB Ltd to choose.

**Option 1:** A price of Rs.16,500 per unit for the product.

**Option 2:** Supply P's idle force to AB Ltd for 4 units production, with AB Ltd having to pay Rs. 1per labour hour to P's Labour. P's workers will be withdrawn with production of 4 units of P. AB Ltd is not require to use it's labour for production of 4 units. P's labour is having learning rate of 80%. In this situation P offers only Rs.14000 per unit to AB Ltd.

P and Q does not know about each others offer. In this case we have to advice to management that which option should be selected.

**Solution:**

Here average time taken for unit =  $8000 / Rs\ 4 = 2000$  hours for one unit  
Applying learning curve's Concept,

Units	Average Hrs per unit
1	2,000
2	1,600
4	1,280
8	1.024

**Variable cost excluding labour cost:**

Direct material = 10,000  
Variable Overheads = 2,000  
=12,000

**Option: 1**

If both orders are received simultaneously, then 8 units can be made with a average time of 1024 hours per unit.

Cost to AB Ltd:

Variable cost excluding labour = 12,000  
Direct labour (1,024 hrs , Rs.4 per hr) = 4,096  
= 16,096

In this case,

Particulars	Q	P	Total
Selling price per unit(Rs)	17,200	16,500	33,700
Variable cost per unit (Rs)	16,096	16,096	32,192
Contribution per unit (Rs)	1,104	404	1,058
No of Units	4	4	
Contribution (Rs)	4,416	1,616	6,032

**Option: 2**

If P supplies its labour, 80% learning curve is apply to 4 units each. Hence average time will be 1280 hrs per unit.

Particulars	Q	P	Total
Selling price per unit(Rs)	17,200	14,000	31,200
Variable cost per unit Excluding labour (Rs)	12,000	12,000	24,000
Labour Cost per unit (Rs)			
1280 x 4	5,120	-	5,120
1280 x 1	-	1280	1,280
Contribution(Rs)	17,120	13,280	30,400
Contribution per unit (Rs)	80	720	800
No of Units	4	4	
Contribution (Rs)	320	2,880	3,200

**Decision:**

AB should not take labor from P. It should select option 1, as total contribution in option 1 is more than option .

**CONCLUSION:**

Learning Curve Effect applies only to direct labour costs and those variable overheads, which are direct function of labour hours of input. It does not apply to material costs, non-variable costs or items which vary with output. Incremental hours cannot be directly determined from the learning curve graph or formula, as the results are expressed in terms of cumulative average hours. The concept Learning curve is too useful for cost accounting purpose, mainly in decision related to cost control and cost reduction.