

## Productivity Measurement Solved Problem # 1

Collins Title wants to evaluate its labor and multi-factor productivity with a new computerized title search system. The company has a staff of four, each working eight hours per day ( for a payroll cost of \$640 / day ) and overhead expenses of \$400 per day. Collins processes and closes on 8 titles each day. The new computerized title search system will allow the processing of 14 titles per day. Although the staff, their work hours, and pay are the same, the overhead expenses are now \$800 per day. Calculate the change in productivity.

### ***Solution :***

First, we will check the labor productivity with the old and new system.

Labor productivity with old system: Output/input

Output with old system = 8 titles per day

Input with old system = no. of labors \* labor hour = 32 labor hour

Hence , Labor productivity with old system =  $8 / 32 = .25$  titles per labor hour

Labor productivity with the new system: Output/input

Output with new system = 14 titles per day

Input with new system = no. of labors \* labor hour = 32 labor hour ( staff is kept constant as given )

Now we will calculate multi-factor productivity with both old and new systems.

Multi factor productivity with old system : output / more than one input

Output = 8 title per day

Input = Payroll cost + overhead expenses = \$ (640+400)

Hence , Multi factor productivity with old system :  $8 \text{ title per day} / \$ (640+400) = 0.0077$  titles per dollar

Multi factor productivity with new system : output / more than one input

Output = 14 title per day

Input = Payroll cost + overhead expenses = \$ (640+800)

Hence , Multi factor productivity with new system : 14 title per day / \$ (640+800) = 0.0097 titles per dollar

Results :

With the installation of new system, labor productivity has increased from 0.25 to .4375 is  $(.4375 - .25) / .25$  i.e .75 . The percentage change in labor productivity is 75 % . The Multifactor productivity has also increased from .0077 to .0097 titles per dollar. The change is  $(0.0097 - 0.0077) / 0.0077 = .26$  or we can say the change is 26% .

In this case, the single factor, as well as multifactor productivity measures, shows an increase in productivity. However, the better picture regarding any changes is shown by multifactor productivity, the reason being that it includes all the factors and costs connected with an increase in output.