# VIVEKANANDA COLLEGE

# THAKURPUKUR

# KOLKATA-700063

**NAAC ACCREDITED 'A' GRADE**

**Topic: Employee Cost and Incentive Systems**

**Course Title: CC 2.1Ch**

**Paper: COST AND MANAGEMENT ACCOUNTING-I**

**Unit:02**

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**COST AND MANAGEMENT ACCOUNTING-I**
**CHAPTER-2[Employee Cost and Incentive Systems[10 MARKS/12 CLASSES ]**

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[**COVERAGE under CBCS:** Introduction, Recording labour cost: Attendance and payroll procedures (Time-keeping, Time-Booking, Payroll procedure, Payment of wages-Piece rate, differential piece rate, time rate); Idle time (causes and treatment in Cost Accounting), Overtime (its effect and treatment in Cost Accounting), Labour turnover (Causes, impact and methods of calculating labour turnover). • Main Principles for sound system of wage incentive schemes labour utilisation; System of Wage Payment and Incentives (Halsey, Halsey-weir, Rowan and Emerson • System of Incentive Schemes for Indirect Workers; Component of wages cost for costing purpose.]

Before closure of college, I started delivering lecture on this topic with section A, B and G and completed straight piece rate system, labour turnover. Later on, I will prove some practical problem with solution on these two types of problems.

Just before closure, I started individual incentive system with Halsey and Rowan scheme and solved one or two practical problems on this system.

Now for your clear understanding, I am writing again the formula for Halsey and Rowan scheme.

**Halsey premium plan method:**

F.A.Halsey of the U.S.A.introduced this scheme. Under this scheme, for performing a job, operation or task, a standard time is specified.
The hourly rate is fixed & the workers are guaranteed so that even if, within the standard time specified, the job is not completed by them, guaranteed time rate may be received by them. The worker becomes entitled to bonus, if he is in a position to complete the job in less than the specified time; bonus being equal to his time wage for 50% of the time saved in addition to the

time wage which he is entitled for the actual time worked.

The total earning is obtained by multiplying the sum of time allowed & time taken by half the hourlyrate.

*Advantages:*

(a) The scheme & the calculation of the remuneration are easily understandable by the worker.

(b) As time wage is guaranteed, penalty is not imposed on the slow workers; whereas rewards are provided to the slow workers for their efficiency.

(c) The workers are encouraged to save as much time as possible due to the bonus, because for the higher time saved bonus will be higher.

(d) Employers are enabled to obtain more output from the workers under the scheme, & as a result of that, per unit fixed overhead get diminished.

*Disadvantages:* (a) Since the employers & employees share the savings in time, this may not be liked by many employees' organizations & they argue that the workers should get the entire benefits as the savings is done by them.

(b) Compared to the other incentive plans, the workers are being offered less incentives under this scheme.

(c) Apart from the workers, savings in time also depends upon the tool's standards, materials, and machinery & working conditions. So the desired result cannot be expected unless the best of these are assured.

(d) Chances of more spoilage, wastage, defectives & breakdown of machinery are there under this scheme, as for the purpose of maximizing the bonus, the workers will try to save as much time as possible. As a result, greater supervision cost has to be involved.

Under Halsey premium plan method, standard time for doing each job or operation is fixed and the worker is given wages for the actual time he takes to complete the job or operation at the agreed rate per hour plus a bonus equal to (usually) one-half of the wages of the time saved.

**Total earnings=Time wages + Bonus for time saved**

**(Actual time taken X Time rate)+50% X Time saved X Time rate**

**Note:**

**Time saved=Time allowed-Time taken**

**Bonus=50% of((time allowed-time taken)**

**Rowan premium Plan method:**

Under Rowan Plan, the standard time for the completion of a job and the rate per hour is fixed. If the time taken by the worker is more than the standard time, then he is paid according to the time rate, i.e. time taken multiplied by the rate per hour.

*David Rowan* of Glasgow (U.S.A) introduced the scheme, under which time wage is guaranteed as in the case of Halsey scheme. For the performance of a job, standard time is fixed; otherwise operation or task is exactly in the same manner as in the case of Halsey scheme. For the hours of his actual work, the worker gets his time wage; on this point also it doesn't differ from the Halsey scheme. The bonus of the worker, who is able to finish the job in less than the allowed time, is equal to his time wage for that proportion of the time taken as the saved time bears to the time allowed. In other words, the ratio between the bonus & the time saved is equal to the ratio between the time taken & the time allowed.

**Total earnings=Time wages + Bonus for time saved**

**(Actual time taken X Time rate)+ $\frac{\text{TimeTaken}}{\text{TimeAllowed}}$ X Time saved X Time rate**

**Note:**

**Time saved=Time allowed-Time taken**

**i.e., Bonus = $\frac{\text{TimeTaken}}{\text{TimeAllowed}}$ X Time saved X Rate per hour**

*Advantages:*

(a) Because the premium is proportionate to the time saved, if the rate has been wrongly fixed,

the effect will be less serious. So Rowan scheme is safer than the Halsey scheme, as far as the point of view of employer is concerned.

(b) The worker is in the most advantageous position when 50% of the time allowed is saved by him, because otherwise his earning per hour will increase at a diminishing rate, if any more time is saved by him. As a result, the chances of wastage, defectives, breakdown etc. will be less as there is a limit to speed.

(c) Fixed overhead per unit will be lower as a result of higher output.

(d) Since both the employer & the employee enjoys the time saved; though proportion is not the same as in the case of the Halsey scheme, to some extent labour cost also diminishes.

(e) Better wage is earned by the employees; their improvement in efficiency is rewarded.

*Disadvantages:*

(a) The workers do not like the idea of sharing the savings by both employer & employee, since the time is saved by the workers.

(b) The bonus hours will not exceed the 25% of the time allowed in any case.

(c) Apart from workers efficiency, saving of time depends upon standard of tools, materials & implements & also upon the working conditions. No useful purpose will be served unless the best of these are assured.

**Problem-1:** Calculate the total earnings of a worker & the effectively rate of labour wages per hour where payment of bonus is under (a) the Halsey (50%) scheme & (b) the Rowan scheme from the below mentioned particulars:
Basic wage rate per hour – Rs.10.80, Time allowed for the job – 48 hours, Actual time taken – 36 hours.

***Solution:*** ***(a) Under Halsey (50%) Scheme:***

*Total wages = Normal time wage + 50% of (time saved*time rate)*

| | |
|---|---|
| Normal time wage = 36 hours @ Rs10.80 = | Rs 388.80 |
| Bonus = 50% of (Time saved*time rate) = 50% (12*10.80) | Rs 64.80 |
| Total Wages | Rs 453.60 |
| Effective hourly rate = Rs 453.60/36 = | Rs 12.60 |

***(b)UnderRowanScheme:***

*Total wages =* *Normal time wage + Time saved *Time taken* Time rate*
*Time allowed*

Rs .

Normal time wage = 36 hours @ Rs . 10.80 388.80

Bonus= Time saved *(Time taken* Time rate) = 12*(36*10.80)
Time allowed 48 97.20

*486.00*

Effective hourly rate = Rs 486.00/36 = Rs . 13.50

**Problem-2:** 40 hours is taken by a worker to do job for which time allowed is 50 hours. Rs. 1.25 per hour is his daily rate. Calculate the works cost of the job under the following methods of payment of wages: (i) Time rate; (ii) Piece rate; (iii) Halsey plan & (iv) Rowan plan. Additional information: (i) Material cost Rs.60; (ii) Factory overhead 125% of wages

***Solution****:* Calculation of wages under different methods: Rs.

*(i)Time Rate:* Wages for 40 hours (actual time taken) @ Rs. 1.25 50.00

*(ii)Piece Rate:* Wages for 50 hours (time allowed for the job) @ Rs. 1.25 Rs 62.50

*(iii) Halsey Plan:* Normal time wage = 40 hours @ Rs.1.25 Rs 50.00

Bonus=50% of (Time saved*Time rate) =50% of (10*1.25) Rs 6.25

Rs 56.25

*(iv) Rowan Plan:* Normal time wage = 40 hours @ Rs.1.25 Rs 50.00
Bonus=Timesaved/Timeallowed*(Timetaken*Timerate)
= 10/50*(40*1.25) Rs 10.00

Rs 60.00

## Statement of Comparative Works Cost

| Particulars | Time Rate(Rs) | Piece rate(Rs) | Halsey Plan (Rs) | Rowan Plan(Rs) |
|---|---|---|---|---|
| Material | 60 | 60 | 60 | 60 |
| Direct wages | 50 | 62.5 | 56.25 | 60 |
| *Prime cost* | 110 | 112.50 | 116.25 | 120 |

| | | | | |
|---|---|---|---|---|
| Factor Overhead(125% of direct wages) | 62.50 | 78.125 | 70.312 | 75 |
| Works cost | 172.50 | 200.625 | 186.562 | 195 |

**Why is Rowan Plan better than the Halsey plan? (4 Reasons)**

Read this following passage to learn about the four reasons for which Rowan Plan is better than the Halsey plan with formula and calculation of wages under the two methods.

Both Halsey and Rowan plans are criticized by workers on the ground that they do not get the full benefit of time saved by them as they are paid bonus for a proportion of the time saved. The Rowan Plan has another drawback that two workers, one very efficient and the other not so efficient, may get the same bonus. Suppose, standard time fixed for a job is 20 hours. A finishes the job in 8 hours and worker B in 12 hours and labour rate per hour is Rs 1.50.

The Rowan Plan is better than the Halsey Plan because of the following reasons:

1. Under the Halsey Plan, premium rate varies between 33⅓ % and 66 ½ % of the wages of the time saved whereas in the Rowan Plan, it is fixed and is calculated by applying the following formula:

$$\frac{S-T}{S} \times T \times R$$

Thus, the Rowan Plan protects employer and workers against loose premium rate setting.

2. In the Halsey Plan, bonus is usually set at 50% of the time saved. It does not serve as a strong incentive. On the other hand under the Rowan Plan, bonus is that proportion of the wages of the time taken which the time saved bears to the standard time. It serves as a strong incentive for increasing the efficiency.

3. In the Rowan Plan, the quality of work does not suffer much. The worker is not induced to rush through the work because bonus increases at a decreasing rate at higher levels of efficiency. In the Halsey Plan, a worker is induced to rush through the work because he gets extra wages for every 50% of the time saved.

4. The effective labour rate per hour in the Rowan Plan is higher upto 50% of the time saved and falls thereafter whereas in the Halsey Plan, the effective labour rate per hour is lower upto 50% of the time saved and can be doubled thereafter. Usually, workers are not able to save more than 50% of the time allowed, so workers prefer the Rowan Plan for earning more wages.

**Problem 1: Halsey&Rowan method compared**

The standard time allowed for the job is 30 hours. The hourly rate of guaranteed wages is Rs 1.50. Because of the saving in time, a worker X gets an hourly wage of Rs 1.80 under Rowan Premium Bonus System. For the same saving in time, calculate the hourly rate of wages a worker Y will get under Halsey Premium Bonus System.

**SOLUTION**

**Total wages under Rowan System :**

$$T \times R + \frac{S - T}{S} \times T \times R$$

Where T = Actual time taken not given (to be found out)
R = Rate per hour guaranteed = ₹ 1.50
S = Standard time = 30 hours

Total wages $= T \times ₹\ 1.50 + \frac{30 - T}{30} \times T \times ₹\ 1.50$

or $T \times$ Effective rate per hour $= T \times ₹\ 1.50 + \frac{30 - T}{30} \times T \times ₹\ 1.50$

(Because total wages are equal to actual time × effective rate)

or $$T \times ₹\ 1.80 = T \times ₹\ 1.50 + \frac{30 - T}{30} \times T \times ₹\ 1.50$$

$$T \times 1.80 = T \times \left(1.50 + \frac{30 - T}{30} \times 1.50\right)$$

$$1.80 = \left(1.50 + \frac{30 - T}{30} \times 1.50\right)$$

$$1.80 = \left(\frac{45 + 45 - 1.50T}{30}\right)$$

$$1.80 \times 30 = 90 - 1.50\,T$$

$$1.50\,T = 90 - 54 = 36$$

$$T = \frac{36}{1.50} = 24 \text{ hours}$$

**Therefore, actual time taken is 24 hours.**

**Wages of Worker Y under Halsey System**

$$T \times R + \frac{S - T}{2} \times R$$

Where T = Actual time taken = 24 hours

R = Rate per hour guaranteed = ₹ 1.50

S = Standard time = 30

$$\therefore \text{ Total wages} = 24 \times ₹\,1.50 + \frac{30 - 24}{2} \times ₹\,1.50$$

Wages for 24 hours = ₹ 36 + ₹ 4.50 = ₹ 40.50

$$\therefore \text{ Effective hourly rate of wages} = \frac{₹\,40.50}{24} = ₹\,1.69.$$

**Problem:2:**

A job can be executed either through workman A or B. A takes 32 hours to complete the job while B finishes it in 30 hours. The standard time to finish the job is 40 hours.

The hourly wage rate is same for both the workers. In addition workmen A is entitled to receive bonus according to Halsey plan (50% sharing) while B is paid bonus as per Rowan plan. The works overheads are absorbed on the job at Rs 7.50 per labour hour worked. The factory cost of the job comes to Rs 2,600 irrespective of the workman engaged.

Find out the hourly wage rate and cost of raw materials input. Also show cost against each element of cost included in factory cost.

## SOLUTION

***Calculation of the Hourly Wage Rate***

Let $x$ be the cost of raw materials and $y$ be the hourly rate of wages

**STATEMENT OF FACTORY COST**

| | *If job is done by worker A* | *If job is done by worker B* |
|---|---|---|
| | ₹ | ₹ |
| Raw Materials | $x$ | $x$ |
| Wages for 32 hours @ $y$ per hour | 32$y$ | |
| Wages for 30 hours @ $y$ per hour | | 30$y$ |
| Bonus : $\frac{50}{100}(S-T)R = \frac{50}{100}(40-32)y$ | 4$y$ | |
| Bonus : $\frac{S-T}{S} \times T \times R = \frac{40-30}{40} \times 30y$ | | 7.5$y$ |
| Works Overheads : For 32 hours @ ₹ 7.50 per hour | 240 | |
| Works Overheads : For 30 hours @ ₹ 7.50 per hour | | 225 |
| Factory Cost | $x$ + 36$y$ + ₹ 240 | $x$ + 37.5$y$ + ₹ 225 |

Factory cost of the job in case of both workers is ₹ 2,600.

$x + 36y + ₹ 240 = ₹ 2{,}600$ ....(*i*)

$x + 37.5y + ₹ 225 = ₹ 2{,}600$ ....(*ii*)

Deducting (*i*) from (*ii*) we get

$1.5y - ₹ 15 = 0$

$1.5y = ₹ 15$

$y = \frac{₹ 15}{1.5} = ₹ 10$

We have assumed $y$ as hourly rate of wages, therefore, hourly rate of wages is ₹ 10.

Substituting the value of $y$ in equation (*i*), we get

$x + 36 \times ₹ 10 + ₹ 240 = ₹ 2{,}600$

$x + ₹ 360 + ₹ 240 = ₹ 2{,}600$

$x = ₹ 2{,}000$

$x$ has been assumed as cost of raw materials, therefore, cost of raw materials is ₹ 2,000.

**STATEMENT OF FACTORY COST**

| | *If job is done by worker A* | *If job is done by worker B* |
|---|---|---|
| | ₹ | ₹ |
| Raw Materials | 2,000 | 2,000 |
| Wages : 32$y$ + 4$y$ = 32 × ₹ 10 + 4 × ₹ 10 | 360 | |
| Wages : 30$y$ + 7.5$y$ = 30 × ₹ 10 + 7.5 × ₹ 10 | | 375 |
| Prime Cost | 2,360 | 2,375 |
| Works Overheads @ ₹ 7.50 per hour | 240 | 225 |
| Factory Cost | 2,600 | 2,600 |

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