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Unit III: Job evaluation and incentive schemes

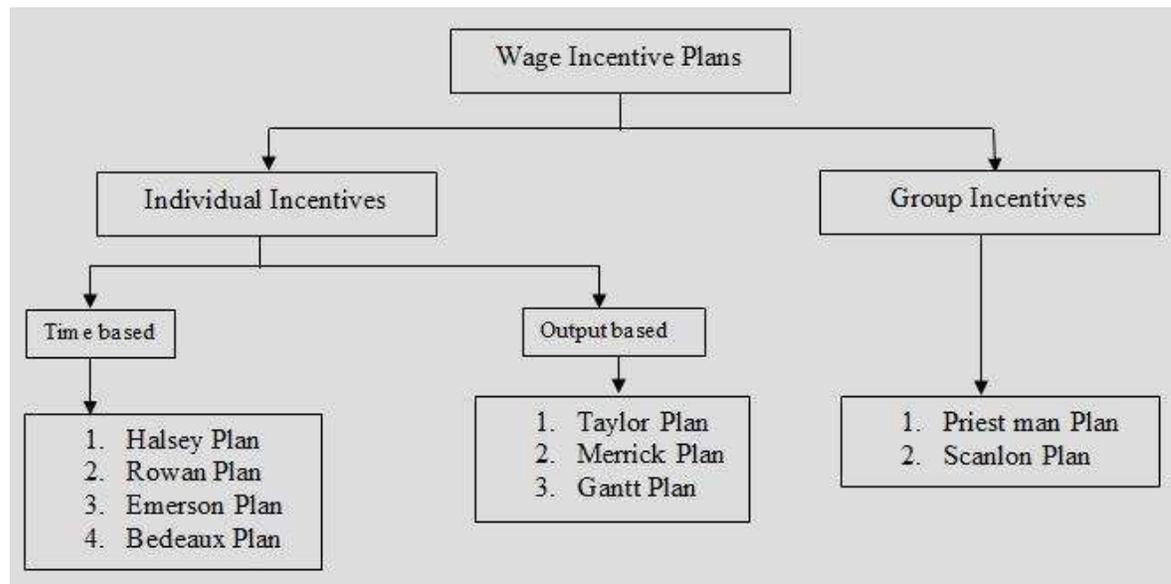
Starlight line, Taylor, Merrick and Gantt incentive plans.

Standard data system; elemental and non-elemental predetermined motion systems, work factors system; Methods Time Measurement (MTM), MOST.

Q How are Wage Incentive Plans classified?

Wage incentive plans may be classified into two broad categories as follows:

- Individual incentive plans, and
- Group incentive plans.



Q Explain briefly Methods Time Measurement (MTM).

Ans

- i) **Methods-Time Measurement (MTM)** is a predetermined motion time system that is used primarily in industrial settings to analyze the methods used to perform any manual operation or task and, as a product of that analysis, set the standard time in which a worker should complete that task.

Methodology :Films were taken using constant speed cameras, running at 16 frames per second, of the work performed by qualified workers on the shop floor at the Westinghouse Brake and Signal Corporation. Each sequence was rated during filming by three qualified Industrial Engineers. These ratings had to agree within a close band, otherwise the sequence was not used.

The rating, or Leveling, system used was the Westinghouse or LMS system – so called after its originators Lowry, Maynard and Stegemerten. This system considers four factors independently:

- Skill – Proficiency in following the given method
- Effort – The will to work
- Conditions – The general work surroundings
- Consistency – of performance

Each factor is assigned an alpha rating, e.g. "B-", "C+", "A", etc. which has a numeric value which is applied later. This reduces the possibility of "clock rating" and ensures that all factors are considered in the composite rating. Appendix 1 shows the model for Causes of Difference in Output on which the LMS system is based.

Layout, distances, sizes of parts and tools and tolerances were accurately measured and recorded on the shop floor to complement the later analyses.

The films were then projected frame-by-frame and analysed and classified in to a predetermined format of Basic Motions. These Basic Motions were Reach, Grasp, Move, Position, Release, etc. A motion was taken to begin on the frame in which the hand first started performing the motion and was taken to end on the frame in which the motion was completed. This allowed a time for each recorded motion to be calculated in seconds, by means of a frame count, and then "leveled" to a common performance.

Plots of the leveled times for the various motions were drawn. Analysis determined the best definitions of limits of motions and their major, time-determining variables, and resulted in, more or less, the structure which the manual motions of MTM-1 have today. Later work, using Time Study, gave the table of Body Motions.

Unit : The unit in which movements are measured for MTM is TMU (time measurement unit):

1 TMU = 36 milliseconds ; 1 hour = 100,000 TMU

1 TMU = 0.036 second

Q What are various Output based Wage Incentive Plans ?

A. Taylor's Differential Piece Rate Plan

Under this system, standard task is established through time and motion study. Two piece rates are laid down. The lower rate for those workers who fail to complete the standard task within the allotted time and the higher rate for those who complete the task within or less than the allotted time.

The objective is to provide sufficient incentive to workers to work hard and achieve the standard.

Ex- Suppose the standard output is 50 units per day. The piece rates fixed are Rs. 4.00 and Rs. 3.00 per unit. Three workers A, B and C produce 40, 50 and 60 units respectively during a day. Their total wages will be as follows:

Worker A : $40 \times \text{Rs. } 3.00 = \text{Rs. } 120$

Worker B : $50 \times \text{Rs. } 4.00 = \text{Rs. } 200$

Worker C : $60 \times \text{Rs. } 4.00 = \text{Rs. } 240$

In this way, an inefficient worker is penalized as he gets a lower rate per unit.

Merits

- It provides sufficient incentives to efficient workers to put forth their best efforts.
- Inefficient workers are penalized but encouraged to reach the standard.
- Use of time and motion study help to improve and standardize work methods.
- Workers have not to share the reward with the foreman.

Demerits

- There is no guarantee of minimum wage to workers.
- The plan is harsh to workers who are just below the standard.

- It treats the workers as machines rather than as human beings.
- The employer may fix a very high standard which workers may find difficult to achieve.

B. Merrick's Multiple Piece Rate Plan

This plan was developed to overcome a drawback in Taylor's plan. This drawback relates to an abrupt change in piece rate. Under it, three graded piece rates are prescribed. Workers producing less than 83% of the standard output are paid at a basic piece rate. Those producing from 83% to 100% of the standard output are paid 110% of the basic piece rate. Workers producing more than the standard output are paid at 120% of the basic piece rate.

Merits

- This plan reduces the severity of the Taylor's plan.
- It is less harsh to beginners or learners.
- It is more flexible.
- It is useful where the performance level is to be increased to 100 per cent.

Demerits

- Minimum wage is not guaranteed to workers.
- It is liberal for the efficient workers. But all workers producing from 1% to 82.9% of the standard output are classified as sub-standard and are paid at the same piece rate.

C. Gantt's Task and Bonus Plan

This plan was developed by Henry L. Gantt, a close associate of F.W. Taylor. Under it, standard time for every task is fixed through time and motion study. Minimum time wage is guaranteed to all workers. A worker who fails to complete the task within the standard time receives wage for actual time spent at the specified rate. Workers who achieve or exceed the standard get extra bonus varying between 20% to 50% of the hourly rate for the time allowed for the task.

Example:

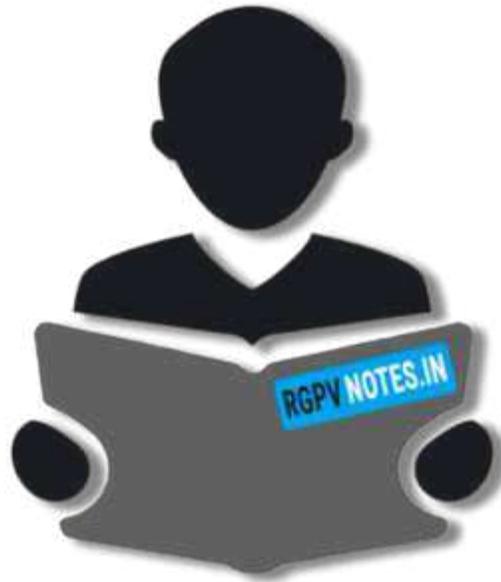
- Suppose the standard time fixed for the job is 8 hours and the time rate is Rs. 20 per hour and the rate of bonus is 25 per cent. A worker, who completes the task in 10 hours, will be paid Rs. 160 ($8 \times \text{Rs. } 20$) only.
- On the other hand, the worker who completes the task in 6 hours will receive Rs. 200 (Rs. 160 + 25% of Rs. 160).

Merits

- Minimum wage is assured to all workers.
- Wage increase progressively with increase in efficiency. Therefore, there is sufficient incentive for efficient workers.
- Inefficient workers are not penalized severely.

Q What do you understand by Pre Determined Motion Standards (PMTS)?

PMT Systems are methods of setting basic times for doing basic human activities necessary for carrying out a job or task.



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