I. Taylor's Scientific Management Theory

During the beginning of the 20th century, skilled labour was scarce in the United States which affected productivity. Management thinkers searched for ways to increase efficiency of workers to increase productivity by deleting or combining operations of work. It was then that scientific management theory was introduced by *Frederick W. Taylor* (1856–1915), who is also known as the father of Scientific Management.

Taylor found that work was not done scientifically in most of the organisations. This led to wastage of human and non-human resources. Time and work studies were not followed so that 'how much work should be done in a day and how much should be paid for each day's work' was ignored.

He felt that workers produced much less than what they were capable of because they were following traditional methods of production. 'Hit and trial' approach was used for combinations of work schedules. Scientific ways (or the best way) of work were not adopted.

In this regard, Taylor was confronted with many questions :

1. Could the existing work schedule be reorganised by adding or deleting some of its operations?
2. Could the sequence of existing operations be changed?
3. Was there 'one best-way' of doing the work?

Taylor thought on these lines and provided a scientific base for performing the work. He conducted various experiments and developed his theory of scientific management which focused on the best way of doing each task/job by eliminating wastage of men and materials. He also emphasised on time and motion studies to find optimum time and nature of operations for successful completion of each task.

Taylor's Theory is based on his work experience in three companies : Midvale Steel, Simonds Rolling Machine Company and Bethlehem Steel.

(*a*) ***Midvale Steel*** : Taylor joined Midvale Steel as a labourer and became its chief engineer in 6 years. During his tenure at Midvale, he observed that workers worked at less than their full capacity. He attributed this to the following reasons:

1. The wage system was based on daily wages so that workers were present in the factory but their output was low.
2. Workers feared to work fast because they thought that if they finished their work fast, they would be turned out by the management or their pay would be lowered.
3. General methods of work were based on 'Rule of Thumb' or 'Hit and Trial'. Scientific approach to work was not followed.

(*b*) ***Simonds Rolling Machine Company***: Taylor worked as a management consultant in this company. In one of their projects, workers inspected bicycle ball bearings. Management felt that since this work involved long hours and was also not innovative, workers' efficiency was low. Taylor studied and timed the movement of best workers' and motivated and trained the rest to come up to that level. For this he adopted the system of 'differential rate' and introduced improvements in their working including

rest hours. This changed the quantity and quality of production, and workers' earnings and management's profit both rose up.

(c) ***Bethlehem Steel*** : At Bethlehem Steel, Taylor conducted two important experiments of Pig-iron Handling and Shovelling.

In the Pig-iron experiment, he studied the time and movement of workers who unloaded raw materials from the incoming railcars and loaded finished goods on the outgoing ones. He observed that each worker could load about 12½ tons per day and earn $1.15 each day. Taylor selected the most efficient worker, studied his time and motion and changed the way work was being done. He introduced rest periods during the long working hours and offered incentive plans to workers who achieved the targetted performance. He set the target of 47½ tons per day and a wage rate of $ 1.85 per day for those who met this standard. It was found that workers managed to meet this standard and loaded almost 48 tons of goods each day.

Taylor felt that problem lay with the management (in setting work and wage standards) and not with workers. He suggested the following principles to overcome this problem. These principles formed the basis of Scientific Management Theory :

(a) ***Rule of thumb should be replaced with Science*** : Trial and error approach should not be used for taking decisions, rather scientific way of working should be followed.

Scientific working involves use of organised knowledge, precision and exactness as against rule of thumb which is based on mere estimates.

(b) ***There should be harmony and not discord in group action*** : All members of the organisation (employers *and* employees) should work as a team. Conflicts should be solved by mutual discussions *and* coordination and disagreements should be eliminated

All group actions should be based on mutual understanding so that group, as a whole contributes to organisational output.

(c) ***Cooperation, not individualism*** : People should not promote their individual interest at the cost of organisational interests. They should cooperate with each other, solv each other's problems and work as a team to achieve organisational goals.

(d) ***Maximum output, not restricted output*** : People should not restrict production. The should increase the output and share the benefits of increased output with th management.

(e) ***Development of workers to their fullest capacity*** : Development of workers throug formal education, training and motivation will enable them to give their best organisational output which will benefit both the organisation and the workers.

Training should be provided at the work place so that workers learn about new technologi and methods of working.

Taylor also introduced a system of 'differential rate system' where managers paid high wage rate to those who finished their work in less than standard time (standard time w determined on the basis of time study) *i.e.*, a higher wage to productive workers and a low rate to those who produced less than the standard level. In fact, those getting less could a look for alternative jobs as labour at that time was scarce in supply. Thus, he advocated t concept of rewarding workers whose production was more than the standard.

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Evaluation

1. Taylor's theory gained wide popularity in the managerial world, in both business and

non-business organisations. It introduced better management through scientific methods such as work study, incentive plans, introduction of rest hours etc.

2. It introduced techniques of time and motion studies to increase workers' contribution to organisational goals. He discovered workers' true capacity and provided 'a fair day's work for a fair day's wage'.
3. It emphasised on scientific selection, education and development of workers so that problem solving is not based on random decision-making. It advocated selection of workers on the basis of job requirement. Training methods were also scientifically designed to develop workers to perform the jobs they are best suited for.
4. He identified planning and execution of plans as two distinct jobs.
5. He advocated mental revolution on the part of both employers and employees. This revolution changed the attitude of management and workers towards their work.

Limitations

Despite important developments in Taylor's scientific management theory, critics offered the following arguments against this theory :

1. Taylor focused only on physical and economic needs of workers. He overlooked the importance of social and ego needs that affect their behaviour. Taylor viewed workers as mere factors of production and not as human beings with social and emotional ties.
2. His theory was opposed by workers and labour unions as they felt that scientific ways would increase production but reduce the work force. Workers were convinced that if they adopted Taylor's work methods, they would lose their jobs.
3. Focus on scientific ways of performing the job can make work monotonous so that workers work along pre-defined lines of action and lose interest in their jobs. This results in worker resentment, labour absenteeism and turnover.
4. Differential wage rate system distinguished between efficient and inefficient workers on the basis of standard output. It raised conflict amongst workers, promoted labour resentment and increased labour absenteeism.
5. Though scientific management advocated 'best way' of doing the job, there can never be the best way of doing any work. New concepts and theories keep developing and open ways for better management techniques.

Despite the limitations, Taylor's ideas are practised in the modern management world. His work on scientific management replaced the 'Rule of Thumb' and brought order and logic in areas of production planning, analysis of costs, wage system etc. which are vital elements of the modern management.

As against the criticisms, it is asserted that Taylor never overlooked these facts. Instead, the very idea of scientific management was to select the right worker for the right job so that workers get job satisfaction of performing the job they are best suited for.

Contributors

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