

The first principle addresses the development of a true science in the field of management. This can be applied to the art of bricklaying (Myers Jr., 2011). The process of bricklaying can be significantly enhanced if scientific principles are employed. This may be implemented through the enactment of rules that will govern the motion of every workman involved in the process of bricklaying (Bell & Martin, 2012).

Secondly, the bricklaying process would also be more efficient through the perfection and standardization of all implements and working conditions (Paxton, 2011). This would ensure that the bricks are of uniform size and shape. This would enhance the efficiency of the bricklaying process. As for the working conditions, it is necessary to provide a favorable atmosphere for employees engaged in the brick-laying process.

Employees tend to work better if the management implements various mechanisms to motivate them (Phelps & Parayitam, 2007). Money is one major medium for motivating employees. Employees need to feel they are getting value for their labor and that they are being compensated adequately. However, there are other factors that may come into play in the motivation of employees. This is where science comes in. An organization may need to draft appropriate policies and rules that would spur efficiency in the services rendered by employees.

The development of a true science is crucial in the management process. A true managerial science would ensure the efficiency of the workman in various ways. First, it makes it possible for the standardization and perfection of the working equipment. This ensures the uniformity of goods and services being produced and may increase the demand for such products as they will be more appealing to customers (Giannantonio & Hurley-Hanson,

2011). A true science would also define appropriate rules and regulations which should be adopted in the process of creating goods and services.

The second principle is the scientific selection and training of the workman. The success of any business organization depends on the selection of personnel to work in the organization. Consequently, many organizations go to great lengths to ensure that only the best talent is selected and hired for a given job. Organizations have sought to develop their human resource departments so that they can be effective in the staffing process. This is a critical task that may be made easier through the use of scientific methods in the selection of the workman.

Organizations, therefore, have drafted various meticulous ways of selecting the right man for the job. This includes careful scrutiny of the professional and academic qualifications of all prospective employees. The next stage is a thorough interview of the shortlisted candidates for the post before settling on the most qualified individual. Scientific methods of selection are, therefore, quite handy in the recruitment process.

It is also important to release any workers who do not live up to the expectations of the organization. Those employees who are unable to adapt to the new methods of production become unnecessary baggage to the organization and have to be weeded out. Each employee, therefore, strives to work harder and more efficiently in order to avoid being eliminated from the organization. The basis for determining which employee is less effective can be established through scientific methods of selection and recruitment (Maqbool et al, 2011).

However, Taylor contends that it is the responsibility of the employer to train employees and ensure they are fit to

handle the responsibilities assigned to them. Instead of the management letting each employee figure out his tasks and goals, it has to guide the workers in their daily activities in the organization. Reliance on the old rule of the thumb may be inefficient in improving the performance of the employees (Blake & Moseley, 2010).

The third principle calls for the workman's scientific education and development. It is the responsibility of the organization to ensure that employees remain relevant at their jobs (Wagner-Tsukamoto, 2007). In order for the organization to remain profitable, it is crucial that each employee continue dispensing their duties in accordance with the principles laid down for them. The implication of this principle is that workers have to constantly undergo training and development in order to be more efficient in performing the tasks assigned to them.

It is for this reason that collegiate education has been put into place. This has arisen out of the need to constantly refresh the knowledge and skills of employees, especially in the fast-changing markets that characterize modern business. Some organizations provide in-house training for their employees, while others allow for study leaves so that their employees can gain more knowledge.

There are some cases in which employees take it upon themselves to upgrade their education. In such cases, employees may quit their jobs in order to pursue further studies, hoping to land better jobs on completion of their studies. Such employees usually have to finance their own education and, though it may be expensive, they find it a worthwhile investment as they are able to land better paying jobs in future.

The fourth principle postulates the cooperation between employees and the

management. Taylor explains that his intention is for a clear division of labor between the groups, with the management team responsible for all the planning and cognitive functions. Taylor warns managers that they would run into significant risk if they try to quickly adjust from the old approaches of doing things to his new system. He cautions that the most significant danger in introducing new methods is devising a way to transform the psychological attitudes and habits of the management team, as well as those of the workers (Blake & Moseley, 2010, 2011).

Taylor contends that it is possible to determine the best way to perform a task to maximize its efficiency. This can be achieved through a scientific study. According to Taylor, all a manufacturer needs is a man with a stopwatch and a properly ruled book. Then, you only need to select ten to fifteen men who are skilled in a particular task for a scientific analysis. The next step is to analyze the exact series of operations needed while doing the work under investigation, as well as understanding the tools which are used. A stopwatch is utilized to measure the required time for each of these elementary steps to select the quickest way of doing each step. Finally, the subsequent tasks are to eliminate all false, slow, and useless movements, collect the quickest and most efficient movements, and implement them into one series (Blake & Moseley, 2010, p29).

Division of labor takes a central position in Taylor's fourth principle. This is because the cooperation between employees and the management provides a suitable working environment for distribution of tasks among the employees according to their skills and qualifications. This works best if there is a common understanding between the management and the employees.

Taylor's theory of scientific management revolutionized the management of

organizations locally and internationally. However, Taylor's theory faced various challenges (Peaucelle, 2000). Some of the challenges included a lack of education among the lower levels of supervision and within the ranks of the workers. Another challenge is the concept of task allocation in which a task is broken down into smaller tasks. This allows planners to determine the best approach to go about accomplishing tasks. Then, there is the reductionist approach which may dehumanize workers.

Taylor's legacy contribution to the field of business management and its various disciplines is still thriving today (Myer Jr., 2011; Wren, 2011). Taylor's contributions have survived the management evolution that has progressed from the industrial age into the information age, and is now poised to enter into what some authors hypothesize as the virtual age. This possible entry into the virtual age suggests that many new applications of Taylor's principles will be put into practice in the future (Myer Jr., 2011, p11).

Challenges of Taylorism in Modern Managerial Practice

Lack of Education

Lack of education presented a major challenge to the early use and adoption of scientific management. This was an especially noteworthy issue with the lower levels of supervision and laborers. Taylor noted that most of the factory workers had insufficient education levels because most were recent immigrants. In addition, many workers were not even fluent in English, which rendered communication to be difficult (Blake & Moseley, 2010).

Taylor was unconvinced that low level supervisors and line workers were sufficiently qualified to handle effective planning. This was because they had low levels of education as most had not under-

gone proper training. Although the workmen were best suited for their jobs, they were incapable of comprehending the science of management. Since they did not have the relevant educational background, they lacked the mental capacity to work (Blake & Moseley, 2010). Lack of education was, therefore, a key challenge in the adoption and use of scientific methods of management. Since most of the lower cadre workers lack the necessary education to enable them to comprehend the scientific aspects of management, it would be difficult even to train them. This is compounded by the problem of language, considering that most of them were recent immigrants.

Nevertheless, Taylor attempted to meet the challenge of lack of education by making a proposition. He proposed that there should be a separation of powers between planning and execution. To this end, Taylor suggested the creation of departments for planning, and these departments would be run by engineers.

These engineers would be tasked with four basic responsibilities; namely, developing scientific methods of doing work, establishing goals for worker productivity, setting up systems for worker rewards and teaching and training personnel on how to use scientific methods of management (Blake & Moseley, 2010, 2011; Paxton, 2011).

The Concept of Task Allocation

Another challenge facing Taylor's scientific management methods lay in the concept of task allocation. Task allocation has drawn sharp criticism over the years and it involves the splitting a huge single task into several smaller ones that allow the planner to determine how best the task can be handled. The implication here is that a single task will be accomplished by a series of persons, ranging from top management to workers.

Task allocation, which leads to division of labor, has made Taylorism an expensive system of management. This is because it creates redundant positions for non-value adding workers such as supervisors and other indirect workers (Pruijt, 2002). Taylor subdivided the work meant for one gang boss among eight men. The eight men included different categories of clerks, gang bosses, speed bosses, inspectors and shop disciplinarians.

This means that Taylorism not only vouches for efficiency but also for the provision of middle class jobs. This makes it very expensive to implement and run. It is for this reason that the US Steel Corporation laid off 60 specialized foremen (Pruijt, 2002). This dismayed Taylor but there was no other choice for the steel corporation as it had too many non-value adding supervisors in its organization. The emergent high costs of operations due to unnecessary personnel led companies to dilute Taylor's model of scientific management.

The concept of task allocation has been criticized for its lack of flexibility. It is complex or impossible to increase the time allowed for operations as the time cycle is clearly stated in the standard worksheet of operations (Prujit, 2002). This becomes a major dilemma for older workers, especially when timelines have been set to accommodate the more youthful workers in the organization. The older workers, consequently, may find it difficult or impossible to keep up with the company's expectations, objectives and goals.

Dehumanization of Workers

Dehumanization of workers is yet another challenge to Taylorism (Blake & Moseley, 2010). This can be attributed to Taylor's reductionist approach to scientific management. The general perception was that the individual worker had no chance

to excel or think on his/her own. This criticism arose from later writings based on Taylor's research by other authors as opposed to Taylor's own words and theories (Maqbool et al., 2011).

Actually, Taylor had considered and discussed worker's happiness throughout his monograph. He stressed that the task was always regulated so that the worker who is well suited to his job will thrive while working at this rate during a long time period. The worker will grow happier and more prosperous, instead of being overworked (Taylor, 1911, p15). Taylor's concept of human motivation was extremely limited. Taylor had a strong conviction that the only way to motivate workers was through monetary incentives (Brogan, 2011). Although the study of human motivation would not become popular for several decades to come, it still seems naïve to contend that money is the sole motivator for employees (Blake & Moseley, 2010, p30). Taylor frequently came under sharp criticism for having his work being exclusively beneficial to the management team. This was despite the fact that he tried to establish a common ground between management and laborers.

Taylor further indicated that the majority of these men hold that the fundamental interests of employees and employers are necessarily antagonistic (Zuffo, 2011; Blake & Moseley, 2010). Scientific management, in contrast, has its basis that the interests of the employees and employers should be necessarily the same. The employer's prosperity cannot subsist through a long time period unless it is accompanied by the employee's prosperity and vice versa. It is possible to give the worker what they want most, which is high wages, and the employer what they want, which is low labor costs—for their manufactures (Caldari, 2007).

Nevertheless, Taylor showed concern for the well-being of the workers through-

out his research despite exhibiting an attitude that was often biased against workers (Taylor, 1911; Blake & Moseley, 2010). For instance, he contended that naturally, man strives to do as little work as is safely possible in the majority of cases. The implication of this assertion is that man has to be given timelines for them to meet goals and obligations.

His directions were geared toward the uneducated. As an example, during his case study explanation at Bethlehem Steel, he directed a pig iron worker to obey his supervisor by saying "When he tells you to pick up a pig and walk, you pick it up and you walk, and when he tells you to sit down and rest, you sit down. You do that right straight through the day. And what's more, no back talk" (Blake & Moseley, 2010, p30; Taylor, 1911, p18). This attitude from management would not be acceptable in modern work environment, but it was commonplace during Taylor's time.

Conclusion

Taylor's principles of scientific management still remain relevant in modern times, although they have undergone some modifications. Some corporations have made some revisions on the principles and have been able to experience continued success in the fast-changing world of business. There are three essential principles that underlie Taylor's scientific approach to management. They are the development of a true science, the scientific selection of the workman, the workman's scientific education and development and the intimate relationship between the management and the workers.

However, Taylor's principles of scientific management have faced various challenges. The most prominent among them is lack of education, dehumanization of workers and the concept of task allocation. Lack of education cripples the workers' ability to understand the scientific

methods of management. Dehumanization of the workers occurs due to Taylor's assumption that the individual worker cannot excel or think on his/her own. This is the implication created when Taylor vouches for the creation of middle class jobs. The jobs are for supervisors who guide the workers in dispensing their duties. The concept of task allocation pushes the organizational costs of operation to higher levels.

Essentially, the principles of scientific management as presented by Taylor have withstood the test of time and are poised to enter the next age, which pundits refer to as the virtual age. However, some modifications may be needed in order to make Taylorism more efficient and profitable to companies.

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