ANALYSIS OF FREDRICK WINSLOW TAYLOR'S SCIENTIFIC MANAGEMENT THEORY: CRITICISMS AND IMPACT ON MODERN MANAGEMENT OF EDUCATION IN THE 21ST CENTURY

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Abstract

This study was carried out on the Analysis of Fredrick Winslow Taylor's Scientific Management Theory: Criticisms and Impact on Modern Management of Education in the 21th Century. The study looked at the philosophy behind Taylor's scientific management theory. The study also discussed the essential principles guiding the recruitment in an organization. Further discussed was the criticisms of Fredrick Taylor's theory, relevant aspect of Taylor's management theory, no matter the much criticism. The paper also discussed the impact of Fredrick Taylor's scientific management theory for the modern management of education. The study was concluded by stating that Fredrick Winslow Taylor's theory is important to the modern management in every organization. The study recommends among others, that Fredrick Taylor's management theory should be followed in practicing other management styles.

Introduction

Scientific Management Theory is a management theory developed by Fredrick Winslow Taylor in the late 19th and early 20th centuries. It is other-wise known as Taylorism. The theory focuses on improving economic efficiency and labor productivity through systematic studies and management methods. In the early 1900s, the most common approach to management involved offering incentive-based pay in order to promote initiative (initiative and incentive). This was described as workers giving "their best initiative and in return receiving some special incentive from their employers "However, Taylor argued that getting initiative out of workers is rare and a better approach would be to apply the scientific method in order to increase efficiency and performance. Through his studies that used the scientific method, Taylor established Four Principles of Management, which including: Develop a science for each element of work; Scientifically select and then train, teach, and develop the worker; Cooperate with the worker so as to ensure all of the work is being done in accordance with the principles of the science which has been developed; and Equally divide the work and the responsibility between the management and the workers, where the management take over all work for which they are better fitted than the workers (Adrian & Erica, 2023).

The Philosophy behind Scientific Management

In the Principles of Scientific Management, Taylor posited that the principal object of management should be to secure the maximum prosperity for the employer, coupled with the maximum prosperity for each employee (Herarera & De Las Heras-Rose 2021). In saying this,

he meant that the organization and employees should work together, strive to get the most out of one another, and be compensated for their efforts as it's in everyone's best interests. For workers in particular, taking this approach would mean that they could benefit from higher wages, shorter working hours, and better work and home conditions.

Taylor's emphasis on pro-worker efficiency was ahead of its time, but still impacts western corporations today. Taylor believed that the worker should be focused on labor, due to insufficient capacity and/or education, while managers should be focused on and held accountable for optimizing performance (Dickson, Philppe & Neel, 2018). Regarding their interaction, Taylor in Dickson et al (2018) posited that workers should be taught daily and receive the most-friendly help from those who are over them, instead of being driven or coerced by bosses or left to their own unaided devices.

In fact, Taylor in Jonathan and Marlen (2024) believed that training and development was the most important object of both the workmen and the management in order to produce maximum efficiency and that a close, intimate, personal cooperation between the management and the worker is of the essence of modern scientific or task management.

So, while Taylor's Theory of Scientific Management has often been painted as cold and impersonal, as argued by Gemeda and Leo (2020), it is not really the case; Taylor's philosophy had good intentions for everyone and the problems come from poor application. Specifically, Taylor stated that poor application comes from: Employees incorrectly believing that greater productivity would result in loss of jobs; Defective systems of management that work against employees and productivity; An inability to leave behind traditional and habitually inefficient procedures; and Driving workers against their wishes, and without much increase in pay, to work much harder, instead of gradually teaching and leading them toward new methods.

He concluded by positing that to maximize output, proper staffing and employee training are required. The goal of both management and employees should be to maximize output. Maximum output boosts a company's profits and benefits both the administration and its employees. Taylor went further to provide some principles to be followed by the management during recruitment. These principles are as follows:

Principle One: Develop a Science for each Element of Work

It should be important to note that, Taylor in Afshar and Gibon (2016) sated that he was not attempting to determine and force upon workers the maximum work that a man could do on a short spurt or for a few days. Rather, in developing a science, he wanted to know the best number of day's a worker could properly do, year in and year out, and still thrive. Thus, Taylor had a focus on long-term productivity, considering both the organization's and the workers' perspectives. With this focus in mind, when Taylor spoke of developing a science for each element of work, he essentially meant that management should: Gather objective data on work;

Perform experiments; and Standardize policies and procedures based on the results of the experiments.

In order to gather objective data on work, Taylor in Fathiani, Rahmat and Fabrian (2021) stated that first-class laborers should be allowed to perform a given task, pay them extra wages, and carefully examine and test them to ensure that they were working to the best of their ability at all times. That way, optimal productivity could accurately be determined. He continued to posit that these workers would be observed while performing various procedures and timed, using a stop-watch, in order to determine how much time was taken for each motion. Then, after experimenting with different tools and or procedures, which often included varying rest intervals, the tools and/or procedure that would produce the optimal productivity could be determined. And finally, with optimal tools and/or procedures determined, such tools and/or procedures could be documented and used as standard for a given task.

Principle Two: Scientifically Select, Train, Teach, and Develop the Worker

Given the "science" of the task, Iqbal and Hashmi (2023) emphasized that individuals "especially suited" for the work should be selected. In his example of a pig-iron handler, he found that approximately only one in eight current workers were capable of meeting the newly established standards. That being said, he also determined that there were plenty of other internal and external candidates that would be capable of fulfilling the role. Thus, combined, it was clear to him that selection and correct assignment were critical to the theory of Scientific Management.

Regarding training and development, if a worker was performing below standard, Taylor believed that a competent teacher should be sent to show the worker exactly how their work can be best done, to guide, help, and encourage them, and give them the time and the help required to make them proficient at their present job. However, if after studying the worker it was found that they would be unable to perform according to standards, the worker should then be "shifted to another class of work for which they are either mentally or physically better suited." Therefore, training and development were also important and inextricably connected to selection and assignment. Otherwise, it is important to note that Taylor recommended gradual implementation of a new science to a job. This is because it requires a change in the mental attitude of the worker and it is impossible to hurry it beyond a certain speed.

Principle Three: Cooperate with the Worker

When speaking about the Bethlehem Steel Company, Taylor said that work should be distributed among four parties and in the following fashion (Division of Labour). Here, Taylor in Benson, Shamir, Avolio and Popper, (2001): One set of employees engaged in the development of the science of laboring; Another set of employees, mostly skilled laborers themselves, who are teachers, and who help and guide the workers in their work; Another set of tool-room employees who provide the proper implements and keep them in perfect order"; and Another set of clerks who plan the work well in advance, move the workers with the least loss of time from one place to another, and properly record each worker's earnings.

Taylor posits that by distributing work in this fashion, each worker: Performs the function for which they are best suited; Preserves their own individuality and is supreme in their particular function; and at the same time loses none of their originality and proper personal initiative, and yet is controlled by and must work harmoniously with many other workers. This is what Taylor referred to as cooperation between the management and the workers.

Principle Four: Divide the Work and Responsibility

According to Taylor, the initiative and incentive approach required workers to bear almost the entire responsibility for the general plan, each detail of work, and the actual physical labor. In contrast, he argued that Scientific Management was more effective because even if the worker was well suited to the development and use of scientific data, it would be physically impossible for them to work at their machine and at a desk at the same time. Moreover, in most cases one type of man is needed to plan ahead and an entirely different type to execute the work. Thus, Taylor argued that the best approach would be an almost equal division of the responsibility and the work between the management the worker (Dickson, Philippe, & Neel, 2018).

Jingyu and Hari (2011) emphasized that management's responsibility was to ensure cooperation between all of the aforementioned parties. This included ensuring that workers were provided the correct tools, operating under the right conditions and according to the correct procedures, and informed of their pace and progress. Simultaneously, Taylor said that management should also be side by side with the workers, helping, encouraging, and smoothing a way for them. Therefore, management was responsible for enforcement of methods, adoption, and cooperation, while workers received extra pay for performance.

1. **Science, not the Rule of Thumb**

This rule focuses on increasing the efficiency of an organization through scientific analysis of work and not with the 'Rule of Thumb' method. Taylor believed that even a small activity like loading paper sheets into boxcars can be planned scientifically. This will save time and also human energy. This decision should be based on scientific analysis and cause and effect relationships rather than 'Rule of Thumb' where the decision is taken according to the manager's personal judgment. (Manuel, & Victor, 2013).

2. Harmony, Not Discord-

Taylor indicated and believed that the relationship between the workers and management should be cordial and completely harmonious. Difference between the two will never be beneficial to either side. Management and workers should acknowledge and understand each other's importance. Taylor also suggested the mental revolution for both management and workers to achieve total harmony.

3. Mental Revolution-

This technique involves a shift of attitude of management and workers towards each other. Both should understand the value of each other and work with full participation and cooperation. The aim of both should be to improve and boost the profits of the organization. Mental Revolution demands a complete change in the outlook of both the workers and management; both should have a sense of togetherness.

4. Cooperation, not Individualism-

It is similar to 'Harmony, not discord' and believes in mutual collaboration between workers and the management. Managers and workers should have mutual cooperation and confidence and a sense of goodwill. The main purpose is to substitute internal competition with cooperation.

5. Development of Every Person to his Greatest Efficiency-

The effectiveness of a company also relies on the abilities and skills of its employees. Thus, implementing training, learning best practices and technology, is the scientific approach to brush up the employee skill. To assure that the training is given to the right employee, the right steps should be taken at the time of selection and recruiting candidates based on a scientific selection. These five (5) principles of scientific management process involved experiments, observation, analysis, and inference and were applied to create a cause and effect relationship.

Six Elements in Principles of Scientific management process

Taylor further stated that there are six elements of scientific management. These principles are: Work Study; Standardization of tools and equipment; Scientific selection, placement and training; Development of functional foremanship; 5.Introducing costing system; and Mental system.

Criticism of Scientific Management Theory (Taylorism)

Frederick Winslow Taylor was one of the first theorists to consider management and process improvement as a scientific problem and, as such, is widely considered the father of scientific management (Akinbode & Fagbohinde, 2012). He proposed that a business's economic efficiency could be improved by simplifying and optimizing work processes, which would, in turn, increase productivity. Taylorism, as a philosophy, was the product of a series of experiments and observations, such as time-motion studies, designed to determine the most effective and efficient way to complete a task. Its fundamental and inter-related principles can be summarized as follows:

i. Using scientific method to challenge habitual working practices and to determine the most efficient way to perform specific work tasks;
ii. Matching workers' capability and motivation to the task requirements and supervising them according to the established rules and procedures;
iii. Establishing fair performance levels and develop a pay system that rewards, and therefore encourages, over-achievement; and
iv. Appropriate division of responsibilities to allow managers to apply scientific management principles to plan work and ensure workers are effective.

Taylor's work influenced a number of other contemporary theorists, such as Frank and Lillian Gilbreth, and, later, Henry Gantt, who also favored empirical methods to determine the most efficient procedures. Indeed, his new scientific system of organisation was met initially with widespread support in the USA and Great Britain amongst theorists, politicians and economists alike (Alipour, Aslano & Rahimi, 2013).

However, Taylor's scientific management was not without its critics, both at the time and subsequently. By the 1930s and 40s it had broadly fallen out of favor. The following section undertakes a critical evaluation of scientific management. It discusses the arguments of Taylorism's detractors and also explores its legacy in popular modes of management practice today.

One of the most popular criticisms leveled at Taylorism is its perceived lack of human appreciation (Manuel & Victor, 2013). In the drive to increase physical efficiency, it considers the worker as a part of the production process on a level equal to the tools he or she uses and, as such, strips him or her of all capacity to reason and act autonomously. All thinking and planning is taken over by management, and the worker's role is reduced to the simple repetition of standardized and simplified work flows in accordance with productivity targets. By assuming that fair payment will motivate employees to perform optimally, Taylorism overlooks the individual's subjective motivation and their need to derive personal satisfaction from their work. On the one hand, standardized work instructions have been shown to improve quality, facilitate training and reduce waste. However, on the other hand, today's low skilled and highly rationalized roles, such as call center or fast food jobs, workers are often characterized by high absenteeism and high turnover due to low job satisfaction. Since these are drivers of increased cost, it can be argued that the strict doctrines of scientific management actually run the counterproductive risk of increasing costs and reducing productivity (Jingyu & Hari, 2011).

A further point of controversy for Taylorism's critics is that the scientific theory process will eventually identify the 'one best way' of carrying out a specific process of work to maximum efficiency. They argue that the implementation of 'one best way' disregards individual talents and preferred working methods, thereby alienating workers and preventing them from developing an appreciation of their place or function in the entire industrial process. This, in turn, suppresses their initiative and the potential for discovering new and innovative ways of working. Instead, opponents of Taylorism advocate a plurality of methods for increasing productivity, which should be tailored to workers' needs. Feedback should be encouraged and decision-making shared between workers and management to engender a greater sense of participation and ownership, greater engagement, and a stronger sense of collaboration between workers and management (Afshar & Gibon, 2016)..

In the light of the above criticisms, it is perhaps unsurprising that employees' views of Taylorism have tended to be unfavorable. In its pursuit of efficiency and productivity, Taylor's scientific management principles divide labor un-democratically, in such a way as to empower managers, benefit employers and lower workers' morale. Although Taylor advocated fair assessments of working hours, productivity and pay, his theory obliges the worker to depend upon the employer's conception of fairness, and gives the worker no voice in hiring and setting the task, in negotiating the wage rate or determining the general conditions of employment. In reality, many employers implemented Taylor's theories only partially, using strict control, punitive measures to drive maximal output. This not only caused significant additional mental

and physical strain, but also increased the potential for accidents and work stoppage. Furthermore, workers believed down-skilling and eventual automation were responsible for growing unemployment, even if ultimately it might lead to lower prices and increased demand. They also objected to the fact that the gains of higher productivity were not shared with the workers. Rather, the major proportion was taken away by the employer in the form of higher profits. Such an imbalance of power and resultant dissatisfaction has the potential to polarize industrial relations leading to increased risks of strike action and disruption (Alipour, Aslani, & Rahimi, 2013)

Although there is much to criticism about Taylorism and its early implementation, it should also be acknowledged that its advent paved the way for many of the management theories and methodologies that are followed today. The division of labor into 'doers' and 'thinkers' is a dichotomy that continues to shape the separation of strategy and implementation in most organizations. Likewise, in most organizations management and labor continue to co-exist in an uneven relationship which privileges intellectual work over manual skills. Likewise, the rationalization of processes into discrete, unambiguous units with defined work instructions has laid the foundations for knowledge transfer, automation and eventual offshoring strategies that continue to be implemented in many multinational corporations today as management theory, and management itself, evolves with changing times. Incentive schemes are still widely recognized as an effective means to encourage higher performance and are a standard component of most sales compensation packages.

Meanwhile, Taylorism's simplification of skilled work and the elimination of unskilled work represents a central tenet of business process engineering techniques such as Six Sigma and lean manufacturing. By the same token, modern quality assurance, operations management and total quality management methodologies arguably have their roots in scientific management. In this way, scientific management transcends the narrower confines of Taylorism by means of its direct and indirect influence on those subsequent evidence-based methodologies that also attempt to treat management and process improvement systematically as a measurable, scientific problem (Akinbode &Fagbohunde, 2012)..

Some of the Frederick Taylor devices that are still relevant today no matter the level of criticisms are:

1. **Select methods based on science, not "rule of thumb."** Rather than allowing each individual worker the freedom to use their own "rule of thumb" method to complete a task, you should instead use the scientific method to determine the "one best way" to do the job.

2. **Assign workers jobs based on their aptitudes**. Instead of randomly assigning workers to any open job, assess which ones are most capable of each specific job and train them to work at peak efficiency.

3. **Monitor worker performance.** Assess your workers' efficiency and provide additional instruction when necessary to guarantee they are working productively and 4. **Properly divide the workload between managers and workers**. Managers should plan and train, while workers should implement what they've been trained to do.

Impact of Fredrick Taylor's Scientific Theory to Management

Fredrick Taylor's scientific theory laid the foundation for modern management theory practices. This he did by introducing systematic approaches, standardization, specialization, and incentive system. Taylor aims at maximizing efficiency and productivity within organization. Taylor's idea play an important role in today's business world. Taylor's management and administrative principles help managers decide what to do scientifically and how to act. They help managers understand and predict business situations, which in turn helps them act in a certain way. As it is, they can't be used right away, but in complicated real-world business situations, they are very important to know how to do things. Managers can use them in different ways to solve the same problems over and over again. These principles help you make decisions that are based on facts and logic, which makes them more likely to be right. They are made over time through a lot of observation and experimentation. Thus, they give useful information about how things work in the real world (Berson, Shamir, Avolio, & Popper, 2001).

These principles can be used by any organization, no matter how big or small they are or where they are in the world. These principles, on the other hand, are based on how people act, so they help to connect human and material resources in an organization. These principles can be used to help the whole organization grow. These principles are meant to improve the overall efficiency of the organization and make the best use of resources. They also talked about how important it is for employees and managers to work together to keep the workplace harmonious. To put it another way: According to Taylor's principles, implementing scientific management can boost a company's overall efficiency.

He brought about a paradigm shift in the way government is run. In 1911, Taylor published a monograph on scientific management theory. As a pioneer of industrial engineering, he was one of the foremost minds in the field of industrial engineering. Taylor envisioned a world in which workers relinquished control of their jobs to managers. He was of the opinion that an organization could earn significantly more money by adhering to his principles than by following conventional management practices. Methods derived from science, such as employee training and staffing, have aided businesses in developing ground-breaking ideas. There was a lot of attention paid to how people worked and how that affected productivity. To put it another way, Taylor argued that making people work harder was less effective than finding ways to make them more effective (Yunin, 2019). In 1909, Taylor published "The Principles of Scientific Management." He asserted that streamlining and simplification of tasks could lead to an increase in productivity. The idea of workers and managers working together was also promoted by him. There had been a major shift in the way work was carried out in the

past. Taylor argued that workers should focus on their work, while managers should be held responsible for maximizing productivity.

Increased wages and more favorable work/life balance are just some of the benefits workers can expect from this strategy. It is a myth that Taylor's Theory of Scientific Management is cold and impersonal. His philosophy was well-intentioned, but it was hampered by a lack of effective implementation. When it comes to management, Taylor's theories are a set of theories that reject the traditional methods and rule-of-thumb methods of managing the workforce. Using scientific methods to solve managerial issues is acceptable. It adheres to the five management principles. Among them are:

Conclusion

Fredrick Winslow Taylor's Scientific Management Theory is a management theory developed in the late 19th and early 20th centuries. It is other-wise known as Taylorism. The theory focuses on improving economic efficiency and labor productivity through systematic studies and management methods. In the Principles of Scientific Management, Taylor posited that the principal object of management should be to secure the maximum prosperity for the employer, coupled with the maximum prosperity for each employee. Taylor went further to provide some of the principles to be followed by the management during recruitment. Though, Taylors' scientific management theory was very much criticized, its usefulness in today's organizational management cannot be overemphasized.

Recommendations

Based on the discussions above, the study recommend as follows:

1. That, the theory should be practiced along with other administrative theories;
2. Management of the organizations should practice this theory;
3. Employees initiatives and ideas should be considered in every administrative practices;

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