

The impact of scientific management on contemporary New Zealand business

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Contemporary business in New Zealand is a diverse entity. No single organisation is exactly the same, and each organisational structure is formed from many different variables. Some of these include culture, external business environments and personal experience. Research in management and organisational theory also plays a part in how contemporary business operates. This essay looks at one component of this research, named scientific management, and tries to determine what impact it has on businesses in New Zealand today.

Scientific management is largely based on the work of Frederick Taylor performed during the latter part of the 19th century and further developed in the early 20th century. Taylor (1987) gives four principles of scientific management. By relating these to the contemporary business environment in New Zealand it is possible to see how that environment has been shaped by the ideas of Taylor. The first principle is “the development of laws and scientific principles for work tasks to replace old-fashioned or traditional methods” (Boone & Bowden, 1987, p. 126). Although we are in an era of factory automation where the speed of the production line is determined largely by mechanical considerations, there are numerous instances where tasks undertaken by workers are optimised using a scientific approach. The use of ISO quality standards such as AS/NZS ISO 9001 is an example where work tasks are designed to assure the quality of a product. This is a very popular quality management initiative in New Zealand and by reducing waste, rework and customer returns due to process defects an increase in efficiency is gained.

The second principle is the “scientific selection and development of workers” (Boone & Bowden, 1987, p. 126). This is perhaps the most relevant principle today as much effort is placed on hiring the right people for a position. The use of psychologists during interviews to determine an applicant’s suitability is one common use of “science” for selection. Once a suitable employee is found, many firms make use of training programmes to continually develop employees’ skills. An example of this in New Zealand is the business training programme offered to employees at McDonald’s restaurants, as well as the existence of training institutions such as the Auckland based The Learning Curve.

The third principle of Taylor’s work is the “bringing together of science and the trained worker by offering better treatment and an opportunity for the expression of employee needs” (Boone & Bowden, 1987, p. 126). This concept can be seen today in the form of human relations. Scientific management is not usually seen as advocating human relations, but Clark (2000) points to Gilbreth’s study in 1914 of scientific management where it was found that rest in the workplace was very beneficial to productivity. Indeed, maintaining a happy and healthy workforce is in the forefront of most managers thoughts in New Zealand today. Legislation such as the Health and Safety in Employment Act of 1992 aim at

protecting the worker from unsafe work environments, and ensuring employee happiness can reduce staff turnover therefore potentially improving efficiency.

The final principle is based on dividing up the work in an organisation into two large components, one for the workers and one for management. This increase in responsibility on the management side can be seen as fostering the need for the four management functions, namely planning, organising, leading and controlling. It is not easy to say if the textbooks on management would be the same if this principle did not exist. It perhaps gave an emphasis to managers at the time that more had to be done by management, therefore paving the way for further study in the subject.

In moving beyond the four principles, evidence can be found that scientific management is historically important to the development of contemporary business and, at the same time still relevant. Group technologies is one example where improved quality and efficiency can be achieved in products by the use of part simplification, process standardisation and production control (Kroll & Wang, 1994). Taylor introduced group technology in 1919, and it has become a vital process in factory automation, especially where hundreds of thousands of parts need to be designed and classified. While in New Zealand the number of very large manufacturing plants is small, the usage of group technology in smaller, more flexible plants is still possible. An example of such a plant is Vertex Pacific, a plastic packaging production company with factories all over the country. Each plastic thermoforming machine is flexible in that it can quickly change the product that it is manufacturing. By implementing group technology, significant efficiencies were realised. Parts were simplified by reducing the number of tools required, the process standardised by grouping machines together in close proximity and production control achieved by streamlining how orders were scheduled.

Parker & Lewis (1995) discuss how scientific management has shaped current practices in contemporary accounting. In particular, the method of management by exception is said to have been derived from the early days of classical management where only deviations from the normal are reported to management. This is said to still be common in accounting today, where budgets are often used as a guide to the success or otherwise of a business process. If the budget is overrun, the accountant knows to inform higher management about the problem. Parker & Lewis (1995) go on to identify the process of continuous improvement, often cited as a quality management initiative, as having many of the same goals as that of scientific management. The authors argue that goals of securing harder work and increased productivity, so valued in the days of Taylor, are intrinsic to continuous improvement. It is arguable that securing harder work by employees is necessary to achieve continuous improvement, but the value of increased productivity and the creation of new ideas are obvious and especially relevant in New Zealand. Enterprise in this country needs to be able to compete on an international stage, which can be achieved with cost effective goods and services that offer something unique.

History often looks back on scientific management and Taylorism as being narrow-minded, failing to consider many of the human elements in organisations. There is one area where the human element became an important part of scientific management, and this is in

relation to the length of the working day. Nyland (1995) describes how even before Henry Ford, Taylor advocated the shortening of the working day to optimise productivity. In New Zealand's history, the eight hour day has been taken for granted. But in more recent years there seems to be a shift away from the rigidity of an eight hour stint at the office. Concepts such as working from home, the selection of working hours and an increase in available communications systems are changing contemporary New Zealand business.

This issue of working hours aside, Robbins & Barnwell (2002) point to scientific management often having a negative effect on the workforce. The optimising of tasks can lead to the problem of poor job satisfaction for employees because of monotony. The deskilling of tasks to increase productivity can lead an employee to loose pride in his or her work. In New Zealand organisations it is not hard to find employment of this nature. The important task for management is to reduce as much as is possible the level of monotony in an employees work. This can be achieved for example by task rotation, employee empowerment and workplace enrichment.

Furthering the criticism of Taylor's work is that of Wrege & Perroni (1974, cited in Hough & White, 2001). This investigation examined the pig-iron handling experiments performed in 1899 at Bethlehem Iron. The authors found many inconsistencies in the data presented by Taylor for the experiments, and came to the conclusion that the "pig-tale" that Taylor used to illustrate his concept of scientific management was morally unacceptable. Hough & White (2001) take a different view of the story telling by Taylor, and suggest that the message conveyed was more important than the accuracy of the research. This links in with the relevance of scientific management today, as many discredit Taylor's work based on criticisms such as those by Wrege & Perroni. By ignoring the possibilities that scientific management can offer in increasing productivity and efficiency, managers could be doing their organisations an injustice. To back up the idea that scientific management can still be relevant some 100 years after its initial popularity, Hough & White (2001) point out the disciplines of operations management, work design and systems reengineering as current examples that use many aspects of the ideas that Taylor proposed. Parayitam, White & Hough (2002) also identify task design, labour / management relations and securing cooperation with incentives as being areas that are based on scientific management.

To further this idea of relevance in the modern world of business, Parker & Lewis (1995) argue that the environment during the early days of scientific management is in many ways similar to the one we see today. Corporate mergers, product and service diversification, technological change, intense competition, national economic recessions and a pre-occupation with efficiency are all given as examples of similarities between the environments. This apparent environmental parallel separated by many generations is given as a reason why the ideas of scientific management can still be of use today. The streamlining of business systems in a merged company can certainly be achieved with the application of scientific analysis. Likewise, increased productivity during times of economic slow down and intense competition is a valuable thing. Recent events such as the destruction of the Twin Towers in New York had a major impact on tourism in New Zealand and showed that this country is vulnerable to events in the external world environment. The application of management theories and practices in this global setting, based on, built upon or derived from scientific management may be of great value.

This essay has examined how scientific management has made an important contribution to the business world we see today in New Zealand and worldwide. The ideas generated by Frederick Taylor during the latter part of the 19th century and into the early 20th century still have a place in current management thinking. A manager, regardless of position, must use the ideas of scientific management carefully with an understanding that it is somewhat limited to a mechanistic, closed environmental view of an organisation. Improvements can certainly be made by carefully examining work processes, designing then implementing changes but consideration needs to be given to a more holistic view of the organisation, encompassing human needs, open systems and analysis of power just to name a few.

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