An Introduction to Operations Management

Shay M. Walker

Cairn University

# Abstract

Operations is the aspect of a business or organization that creates goods and/or services. Over the course of the history of manufacturing from the pre-Industrial Revolution era to the e-commerce platforms one uses to shop and sell today operations management plays a major part in the success and sustainability of said businesses. Therefore, operations managers need to analyze and adapt quickly to any and all issues within their responsibilities to ensure success.

*Keywords:* Operations, operations management, operations history

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The collective success or failure of an organization’s operational functions has an impact on their nation to compete with other nations, as well as within the nation’s economy. Operations is the aspect of a business or organization that creates goods and/or services (Stevenson, 2021). The management of these processes is called Operations Management. Operations are heavily interconnected to supply chains and a business would not thrive without both working in tandem. The main function of operations and its functions are to create or add value through the transformation process of a good or service. Technology and customer involvement are two of the largest factors that contribute to the design and implementation of operations management (Stevenson, 2021). Without operations management, the goods, and services available today would vary greatly and the economies of all nations would differ tremendously from how they are at present.

## History of Operations Management

Going back to ancient times there have been systems for the productions of goods and services. Simply look at the Pyramids or the roads, aqueducts, and architecture of the Romans and one can see that they must have had a system to produce these lasting buildings. However, the modern production method that one can see today has its roots in the Industrial Revolution.

In the 1770s beginning in England and expanding throughout Europe and then to the United States in the 19th century, the Industrial Revolution began to shape operations and operations management into what it is presently. Before the implementation of factories and mass production, products were produced in small shops by craftsmen and their apprentices. Simple tools were used to construct and create highly customized products and typically one person created said product from start to finish which is known as craft production. Craft production did have some shortcomings. The most impactful issue was that craft production did not allow for there to be economies of scale (Stevenson, 2021). In other words, there was no incentive for businesses to expand because production was slow and costly. Thus, many small businesses were established each with its own set of standards. With the invention of many stronger and more durable machines, including the steam engine, the simple flexible tools were replaced, giving way to mass production and factories, the Industrial Revolution (Stevenson, 2021).

One of the most impactful changes that came about in the Industrial Revolution was that of standardization. Standard gauging systems were introduced in factories which in turn reduced the need for custom-made goods due to the mass-produced goods that were now available and more widely affordable and accessible (Stevenson, 2021). The factories opened up many jobs and attracted individuals from rural areas. All of these changes were the beginning of the creation and need for operations management, leading into the scientific management era.

Frederick Winslow Taylor was an engineer and inventor who is often referred to as the father of scientific management. He believed in the “science of management” which is based on observation, measurement, analysis with the end goal being the improvement of work methods and economic incentives (Stevenson, 2021). Taylor believed that members of management should be responsible for planning, selecting specified workers for specific positions, enhancing performance within each role, and creating a difference between workers and management activities (Stevenson, 2021). However, in making every aspect of production more efficient this method did not take into account the well-being of the employees. This oversight did lead to a public outcry that reached Congress which gave publicity to the scientific methodology and helped it to achieve wide acceptance within industry (Stevenson, 2021). Some other notable figures that have helped to develop the way operations are managed today are Henry Gantt, Harrington Emerson, and Henry Ford.

Henry Ford adopted the scientific management from Taylor and introduced the moving assembly line in his automatic factories in the early part of the 20th century (Stevenson, 2021). Ford truly introduced the concept of mass production in which large volumes of products are manufactured quickly and efficiently by low-skilled workers using highly specialized equipment. For also, introduced the concept of interchangeable parts which allowed for greater cost efficiency and time efficiency. Lastly, he implemented the concept of division of labor that was developed by Adam Smith in the *Wealth of Nations* (1776) (Stevenson, 2021). Division of labor means that an operation is divided up into a series of many small tasks, and individual worlds are assigned to complete each one (Stevenson, 2021). However, like Frederick Taylor, Ford had little regard for his employees, and this made way for the human relations movement.

The human relations movement placed emphasis on the human element of job design (Stevenson, 2021). Studies were conducted on worker fatigue and motivation within the work force. It was found through these studies that motivation is a crucial aspect of increasing productivity. Quantitative techniques were also defined and developed to assist in areas such as inventory prediction and quality control (). These models were widely used and accepted and refined after the manufacturing boom due to the Great War (World War I). Japan also influenced the operations process in the United States. They were constantly in pursuit of quality improvement, empowering worker teams, and achieving customer satisfaction (Stevenson, 2021). In the 1960s and 1970s management science techniques were regarded highly but lost some of their reputability in the 1980s. However, due to the ever increasing volume and improvement of technology and new software scientific management techniques have yet again increased in popularity.

## Goods vs. Services

There are clear distinctions between producing goods versus providing a service, thus there are differences between how operations management are conducted. With goods there is a tangible output or a physical object or item. With services it implies an act rendered, like getting your teeth cleaned at the dentist office. Some other points of comparison include degree of customer contact, labor content of jobs, measurement of productivity, quality assurance, inventory, wages, and the ability to patent (Stevenson, 2021). All must be taken into account when planning a strategic operations management plan. These aspects must also be considered in order to succeed in managing a budget, economic analysis, investment proposals, and provisions of funds. All are important to the scope of operations management, whether forecasting supply and demand, capacity planning, designing layouts, managing inventory, quality control, and with motivating and training employees (Stevenson, 2021). Prioritizes need to be set in place and evaluated frequently alongside of performance metrics in order to make the best decisions possible.

# Operations Today

Today, technology has majorly impacted the way that operations management functions. With the world primarily operation on an e-commerce platform most business is done over the internet rather than in person. Technology has also advanced to provide for real-time analytics and performance metrics. This is a boost to helping businesses stay agile and flexible. Technology has also allowed for lean systems of production, in which minimal amounts of resources are used to produce high-quality product's in large volumes with some variety (Stevenson, 2021). However, technology cannot and does not solve every problem. Operations management need to stay alert to key issues like those of economic shifts, innovation, ethics, sustainability, quality, risks, cyber-security, and the competition in the global economy (Stevenson, 2021). The realm of operations is ever changing, and management needs to be aware and ready to take necessary actions at all times for success and sustainability.

# References

Stevenson, W. J. (2021). Introduction to Operation Management. In Operation Management (14th ed., pp. 2-39). Boston, MA: McGraw-Hill.