Operations Management

Module 9: Quality

Module Introduction

Readings

Note: The following readings will require you to be logged in to the Unified Login System and the Saudi Digital Library. To log in, please click here (https://coursecms.csuglobal.edu/items/b3b5632c-43b1-4123-bd67-3268e2270a85/1/production/SDLLibrary/SDLLibraryInstructions.html).

Required

Chapters 9 & 10 in *Operations Management*
Chapter 9 PowerPoint (https://coursecms.csuglobal.edu/items/9be88287-dd46-4e03-a616-2d9d77a705e4/2/production/Textbook%20PPTs/IPPTChap009.pptx) slides – *Operations Management*
Chapter 10 PowerPoint (https://coursecms.csuglobal.edu/items/9be88287-dd46-4e03-a616-2d9d77a705e4/2/production/Textbook%20PPTs/IPPTChap010.pptx) slides – *Operations Management*
Supplement to Chapter 10 PowerPoint (https://coursecms.csuglobal.edu/items/9be88287-dd46-4e03-a616-2d9d77a705e4/2/production/Textbook%20PPTs/IPPTChap010S.pptx) slides – *Operations Management*

For Your Success

In this module, you will learn about the management of quality and quality control.

Remember, this week you have another Critical Thinking Assignment and required readings to complete. Your instructor will also lead another required Live Session.

Learning Outcomes

1. Analyze the evolution of quality management, the dimensions of product and service quality, cost of quality, total quality management, and quality tools.

1. Total Quality Management (TQM)

The idea of **total quality management** (TQM) is that the culture of the organization is to constantly look for ways to improve quality and to increase the satisfaction of the customers served. This can be for the goods produced or the services offered by the organization. One of the biggest hurdles to overcome with total quality management is that it needs to become engrained in the **culture of the organization**, and everyone needs to be on board with it for it to be successful.

Of course, changing a culture takes time, so this cannot be instituted overnight. However, small things can be done to help foster the environment of TQM. First and foremost, the leadership of the organization must be involved and on board with the philosophy of total quality management and they need to communicate their expectations for this new philosophy to the employees.

TQM requires a bit of a different mindset, which is also why it may make it more difficult to institute in an organization. It constantly requires people to ask the question "Is there a better way to do this?" In a previous module, you learned about the process of payroll and how an easier way was developed to manage payroll using tools and technologies that were in place. That process improvement example did not come from the people who run payroll, however. It came from management and the IT department's stating that there was an easier way if payroll would just use the systems that are already available. The real trick is to get people who are actually involved in the processes to start to think about easier ways that the processes and tasks can be completed, and to have them actively seek out ways to improve those processes and tasks.

TQM involves a culture of problem-solving, which Stevenson (2015) describes in Table 9.7, Basic Steps in Problem Solving. Along with the problem-solving approach, TQM includes use of various tools and methods to accomplish process improvement. One such tool is the Shewhart **Plan-Do-Study-Act Cycle**; another is the Motorola-invented **Six Sigma** methodology. Specifically, Six Sigma means no more than 3.4 defects per million opportunities. A Six Sigma organization may also consider itself a "lean" organization when it uses flexible operations to reduce resources, whether people, inventory, floor space, power, or the like. You will learn more about lean operations in Module 14.

Consider several other tools used for quality management in this video, including both Lean and Six Sigma.

Introduction to Lean Six Sigma and Process Capability

(Source: https://www.youtube.com/watch?v=OToakjR5s9Y)

This video includes a brief overview of both Lean and Six Sigma, which is followed by a discussion and example of Process Capability.

2. Payroll Process Revisited

Part of the idea surrounding total quality management is that you are doing something that provides more quality for the customer. Well, the term *customer* can mean very different things, depending upon where you work in a given organization. For the payroll department, the customer is the employee who is receiving a paycheck for the work performed. That customer really gets to decide what will add value to the product, which in this case is a paycheck or pay advice.

It was determined that being able to access that information (and the entire history of pay advices for the past 10 years anywhere that there is an internet connection) provides value to the (internal) customer. Additionally, when employees put their own time electronically into the system, it increases their responsibility for keying it in correctly and takes that responsibility away from the payroll department. It also speeds up the process, so if there was overtime in a week, it was sure to be paid on the next run of payroll instead of sometimes having it caught up in the payroll department and then having to wait two more weeks to receive that overtime pay. These are all valuable to the customer.

Let's look at another example of TQM from a manufacturing organization standpoint. In manufacturing, a TQM culture is usually implemented through TQM systems that can reduce defects, which in turn increase profits while—hopefully—also increasing customer satisfaction.

As we will learn in upcoming modules, while the customer is at the center of TQM efforts, in a manufacturing example, the customer is usually not directly involved; whereas in service examples, the customer is the heart of TQM. For more insights into a manufacturing example, see Rahman and Attar's findings (2009) as they look at **implementation of TQM in manufacturing industries in the Kingdom of Saudi Arabia (http://www98.griffith.edu.au/dspace/bitstream/handle/10072/29945/58859_1.pdf?sequence=1)**.

3. Determining Value

In the previous payroll system scenario, determining what was valuable to the customer was fairly simple because the customer was in-house, and it was easy to ask them what they would like to see. However, determining what is valuable to the customer is not always that easy. When the customers are spread out over the entire globe or are from many different backgrounds, figuring out what they determine to be valuable is difficult, and sometimes nearly impossible.

Caterpillar (http://www.cat.com/) (Cat®) is considered a to be a leading manufacturer of construction and mining equipment, diesel and natural gas engines, industrial gas turbines, and diesel-electric locomotives globally. *See how Caterpillar utilizes Six Sigma for quality management within its organization.*

Six Sigma at Caterpillar

Go to the Video (http://www.viddler.com/embed/ee24445d/?f=1&autoplay=0&player=full&disablebranding=0)

By setting the highest quality standards, in measuring their ability to achieve those standards, companies like Caterpillar can and do improve their bottom line performance. The methods they use to determine and measure their quality commitment also give them the opportunity to market their quality standards to their customers.

4. Obstacles for TQM

Obviously, from what has been stated in this lecture, one can realize that there are some potential issues and obstacles for implementing TQM in any organization. One of the main issues is the **lack of a customer focus** in an organization. Again, these could be internal customers or external customers. In the case of the payroll system, the customers are internal to the organization. However, in the case of the airline industry, the customers are external. In a manufacturing example, the customers are also external. Either way, if the culture of the organization is not centered on what the customer wants and needs, the idea of total quality management is never going to work.

The second obstacle to implementing such a system is a communication issue within the organization. Most organizations would agree that there is a **lack of communication throughout the organization**. This poses a very big hurdle when it comes to productivity at all, let alone total quality management. Each part of the organization must communicate with the other parts of the organization in order to make sure that everyone is on the same page for the changes that are made. If the supervisors and staff were not made aware of the process changes for the payroll system, it would be very difficult to implement such a system. If downstream in the manufacturing process supervisors and staff were not aware of changes that might deliver raw goods sooner, backlog situations might occur.

Three individuals are credited with the inception of the TQM movement. First was Walter Shewhart, who favored a statistical view of quality control. Shewhart had a great influence on both Joseph Juran and W. Edwards Deming. Both Juran and Deming were instrumental in working with Japanese manufacturers after World War II. Deming's 14 points served as a model for implementing quality in an organization. **Table 9.1** details those 14 points. Two of his points focus squarely on education and training.

Walk through the process steps of Lean Six Sigma with an example process improvement initiative.

Lean Six Sigma Project Case Study: Reduce Procurement Cycle Time

(Source: https://www.youtube.com/watch?v=xkUwU7U9U64)

On the theme of “Six Sigma Made Easy”, this video highlights how one might reduce time within the procurement cycle.

5. Conclusion

Determining quality and value, and managing for quality and value in the organization, no matter the industry, is a very important aspect of operations management. Understanding that the customers determine the value is a very large part of the battle, and getting employees on board with that focus is important as well. In order to implement a total quality management strategy successfully, it has to become the culture of the organization, and that change must start at the top.

Check Your Understanding

Read the front of each card and decide if the statement is true or false. “Flip” the card for the correct answer.

Click Here to Begin

References

Rahman, A., & Attar, M. T. (2009). Implementation of TQM in manufacturing industries in the Kingdom of Saudi Arabia. Eibar, Spain: Fundación Tekniker. Retrieved from http://www98.griffith.edu.au/dspace/bitstream/handle/10072/29945/58859_1.pdf?sequence=1