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WHY A FORMAL QUALITY MANAGEMENT SYSTEM MAKES GOOD BUSINESS SENSE

On a cold night in April 1912 one of the world's most enigmatic disasters unfolded, the sinking of what The White Star Line dubbed as the "unsinkable" ship, the RMS Titanic. Like many such events, discrepancies in eyewitness accounts, the passage of time, and the lack of hard evidence, has led to multiple theories and ideas over the years about what really happened. Suffice it to say though, the most likely explanation is that no one thing was responsible but rather many "small" things came together in the "perfect storm". This cavalcade of events conspired against the passengers and crew on that fateful night to sink the "unsinkable" ship and seal its place in history as one of the all-time worst maritime accidents.

Although a hundred years later, we're still searching for answers and one of the recent and more plausible theories that has been proposed has to do with, of all things, the quality of rivets used in the bow. At the turn of the century, state-of-the art technology had ships using steel rivets instead of the traditional iron ones because of their strength. Unfortunately, both the bow and stern sections of the Titanic used iron instead of steel rivets because of installation challenges of steel rivets in these areas. Samples of these rivets, recovered from the wreck have been shown to contain significant amounts of slag, an unwanted residual product from the smelting process. In fact, the Titanic rivets were discovered to have quantities 3 times higher the than the normal accepted levels of this impurity. This was most likely because the shipbuilders,

Harlan and Wolff, were at the time simultaneously constructing the world's three largest ships; Titanic, Olympic, and Britannic. Because of the heavy demand for rivets, the Titanic alone required over three million, a supply shortage of rivets and skilled riveters ensued. As a result, the shipyard was periodically in a bind and made a decision to purchase #3 Bar, a substandard wrought iron quality rather than the normally specified and purchased #4 Bar, and to use new, smaller, and not thoroughly vetted suppliers. It is believed that these substandard and weaker iron rivets failed when Titanic hit the iceberg opening up several seams in the hull plates which ultimately lead to its sinking.

So at this point one might ask what this compelling tale has to do with today's Quality Management Systems (QMS).

The answer is quite simple. Although this technology did not exist in 1912, if Harland and Wolff had one of today's formal Quality Management Systems, or if The White Star Line had required their vendors to have such systems, it is likely that procedures would have been in-place to challenge and perhaps even prevent the decision to purchase inferior quality rivets. This is not to suggest that such a change would have prevented this specific chain of events and ultimate disaster, but it's certainly a romantic notion to contemplate and sets the stage for reflecting on the question about why today's Quality Management Systems are smart business for members of the fastener supply chain.

What Is A Formal Quality Management System?

Every company, large and small, has some kind of management system and philosophy. Although the philosophies may be extremely poor, short sighted, inconsistent, or ineffective, every business has a way of conducting business. Instead of being a disorganized jumble of ideas and practices, a formal Quality Management System is intended to be a "road map" that brings consistency and order. By fulfilling a set of combined prescriptive and performance based requirements, these formal standards lay out the basic framework of a system by which a business can be managed. They are partly prescriptive, meaning that, at times, they may explicitly require a certain action, record, or process. For example, these standards often have a number of specific procedures such as document control or handling of non-conforming product that are specifically identified requirements of the system. On the other hand, many parts of these standards are performance based meaning that the standard identifies an element or item that is important to be included but does not dictate specifics about how it is addressed. An example of this might be Management Review. These systems identify the need to have periodic reviews of issues with executive management, but do not dictate how this is done. In this way, a company may employ something that works for them that is entirely different than the way the company next door handles the same thing.

What Are The Common Systems?

There are a variety of these system standards in use today. By far the most prevalent is ISO9001, although, many industries have specialized variations. In the fastener industry after ISO9001 the two most prevalent ones are TS16949 for automotive suppliers and AS9100C for aerospace suppliers. Each of these specialized standards is built upon an ISO9001 framework with additional requirements important to the respective industries. Other similar systems that exist are VDA 6.1, a European based equivalent to ISO9001, ASME B18.18.1-3 standards, QSLD/QSLM (DoD Qualified Supplier listing, which in and of itself is not a quality management system standard, but requires proof of one for certification), and ISO 16426, Quality System for Fasteners.

What Do These Systems Have In Common?

Although these standards and systems are all different, they do share many common attributes. Specifically they define an entire system or way to manage the business. It is important to understand that although they are called a "Quality" system, and certainly they are heavily weighted with quality related subjects, they are intended to be far more. In other words, "Quality" is an idea about value supplied to the customer and is not the responsibility of just one individual or department. These systems basically help businesses to define a "philosophy" or way they are going to do business, handle problems, respond to vendors and customers etc…

Today's system standards generally have a number of things in common. These include but are not limited to management participation, communication, process control, continuous improvement, customer service, and the use of statistical techniques. There are many other shared details but these capture the highlights.

History

Today's systems trace their origin to MIL-Q-9858 which was first published in 1959. In 1969 this became BS5179, which in 1979 became BS5750. In 1987, the first ISO standards were issued based in BS5780 with three different variants, ISO 9001, ISO9002, and ISO9003. ISO9001 and ISO9002 distinguished organizations that had design control from those that did not. ISO9003 was established for non-manufacturing entities. The standard was revised in 1994. In 2000 it was revised again, however, this revision was significant and reduced the three variants into one single document with ways to distinguish between companies with design responsibility and those that do not. The latest revision was made in 2008.

In roughly this same time frame, industry specific variations for automobile and aerospace suppliers were developed. These systems use ISO9001 as a framework and add industry specific requirements. The automotive standard started in 1997 as QS9000 but evolved to become TS16949. The aerospace version, AS9100, is currently in its third or "C" revision. Companies that possess a TS16949 or AS9100 certification automatically achieve ISO9001 status, although it does not work the other way.

Compelling Reasons To Obtain And Maintain Such A System:

[1] *Define Company Culture.* Although no one item fully describes a company's culture and values, the majority of the content of these systems is performance based. This means that the actions and values that distinguish one company from another can be incorporated under the Quality Management System. In this way, the system helps to define the identity of the company. Let's take for example a company that is especially tuned to customer service and has some unique methods of providing this. When these actions and activities are rolled into the QMS, they help to not only define the system but also the culture of the company.

One can further see that these systems go a long way to actually change a company's culture. Take for example, a company that has been historically poor in the area of problem solving. Adopting one of these standards and taking an approach like six sigma, fundamentally may change the way a company operates, thus helping to define a new and improved culture.

[2] *Customer Requires It.* In some industries, such as automotive or aerospace, having a registered system is a requirement to do business. Although this is probably not a "good" reason on its own to pursue such a system, it has "raised the bar" on these industries and lead to a stronger supply chain. Therefore, if a company has existed in this space for many years or desires to enter it anew, it is a must in those industries that have such requirements.

[3] *Encourages Best Practices.* These standards are regularly updated. For this reason they tend to be pretty up-to-date on actions and activities that are best practices. Companies, like individuals, are generally resistive to change. Therefore, providing an impetus for change can be a very positive and proactive activity. The best-in-class organizations recognize this and gladly make changes and additions when they are required.

[4] *Barometer for a "State-of-the-business" Evaluation.* These systems require frequent internal auditing and periodic external auditing. Although many see this as an intrusion into their business, a better approach would be to embrace and actually look forward to these reviews. Far too often, companies get complacent in what they do. It is "inexpensive" and often very enlightening to have an unbiased set of eyes review the business and point out areas that could stand improvement.

[5] *Better Communication.* For anyone who is married, they will recognize the challenge that really good communication with their spouse entails. Now think about the complexity of the normal business with all its moving parts and the challenge gets even higher. One of the strongest advantages of these systems is that they encourage open channels of communication throughout the entire organization. They encourage the organization to empower employees through better transmission of knowledge and communication. They encourage a flow of communications upward to executive management as well as downward so that ALL employees are aware of organizational challenges and successes.

[6] *Global Recognition.* These systems are globally recognized. In fact, ISO9001 is utilized worldwide for many industries. This is advantageous in several ways, but particularly provides credibility on a global stage and will help any company that is conducting business internationally be recognized.

[7] *Auditors are Accredited.* To be able to issue certificates, auditors must be accredited by an accrediting body (an independent organization that oversees the process). Not only does this help provide some quality assurance of the auditing activity but it guarantees consistency and a high level of quality in these programs.

Conclusion

In summary, therefore, there are a number of compelling reasons why a Quality Management System is smart business. However, the most compelling reason should be simply that it fits your business and provides your organization value. Although it is truly a shame when an organization chooses to avoid installing such a system, it is even a bigger waste and quite sad when an organization sees getting it only as a requirement to meet a customer. The truly enlightened organization which uses it as a foundation to drive its systems and define its culture will end up way ahead and find that it was truly a prudent decision and smart for business. ⬡