Essay 3 – Quality Management

A Quality Management System (QMS) is a formalized system that documents the structure, responsibilities, and procedures to achieve successful quality management. Quality Management (QM) is an application of QMS to increase customer satisfaction at a low cost while improving processes. The implementations of QMS vary in organizations of different sizes, industries, and cultures, which is referred to as a contingency approach to QM. (Krehbiel & Miller 2018)

Deming's Quality Management Theory

Quality management has its roots in manufacturing and statistical quality control, after which W. Edwards Deming became one of the most influential persons in the quality theory. In the 1980s Deming challenged the quality theories of the time with this Total Quality Management theory (TQM). Deming criticized the lack of a systems perspective and argued that competition between people and departments, rather than working together as a system, harms business. (Krehbiel & Miller 2018)

PDSA Cycle (Early 1980s)

Plan-Do-Study-Act is a process that is built upon a Japanese PDCA (Plan-Do-Check-Act) model. It evolved the checking activity and added a perspective of afterthought. We can learn from our successes and failures (Willis 2021). The cycle includes (The W. Edwards Deming Institute n.d.):

- *Plan*: Identify a goal or a purpose, define success metrics, and put the plan into action.
- *Do*: Implement components of the plan and make the product.
- *Study*: Monitor outcomes for signs of progress or problems.
- *Act*: Adjust goals, change methods, or broaden the plan based on what was learned.

Deming modified the PDCA cycle to PDSA, as he believed that checking for failure or success was not enough, but that studying better enables us to revise the theory.

Deming's 14 Points for Management (1983)

Krehbiel & Miller (2018) summarize the 14 points:

1) *Constancy of Purpose*: Constant improvement is the highest priority.
2) *Adopt the New Philosophy*: Change management is essential in the modern world.
3) *Cease Dependence on Mass Inspection*: Eliminate the need for inspection by incorporating quality earlier in the process.
4) *End the Practice of Awarding Business on the Basis of the Price Tag*: Minimize total cost by using a single supplier.
5) *Improve the System Constantly and Forever*: Constantly improving quality and productivity reduces cost.
6) *Institute Training*: Managers should have a broad understanding of the whole company and product lifecycle from manufacturing to customers.
7) *Institute Leadership*: Use supervision as a tool to help people and machines.
8) *Drive Out Fear*: People perform best when they feel secure.
9) *Break Down Barriers between Departments*: Diverse teams can foresee problems.
10) *Eliminate Slogans and Exhortations*: Asking for new levels of efficiency and zero defects is not effective, workers cannot succeed if the system is faulty.
11) *Eliminate Numerical Quotas and Management by Objectives:* The focus should be shifted from numbers to quality.
12) *Remove Barriers to Feeling Pride in Workmanship:* Abolish individual merit ratings.
13) *Encourage Education and Self-Improvement:* Organizations need people who improve.
14) *Take Action to Accomplish the Transformation*: Transformation is the responsibility of everyone.

The 14 points do not stand alone but form a philosophy. In Deming's own words, merely finding out the faults in quality is not in itself an improvement of a process, the root causes must be found. Otherwise, one manages outcomes instead of the system that produced the defect. (Deming Institute 2014)

Deming's views of education go beyond work life, as improving in subjects outside of work will help keep the worker's minds open. People are a big part of the system, and to be successful, a business needs people to develop themselves. At work, people should understand their operating context and best practices as well. Other departments are treated as customers, and the customer satisfaction view is fostered between departments. (Deming Institute 2014)

Deming's System of Profound Knowledge (1993)

In 1993, Deming proposed a SoPK system that in a way comprehends the 14 points, but it draws upon four different theories:

1) *Appreciation for a System*: Optimize the whole system, not just components of it.
2) *Knowledge about Variation*: Proper data analysis is needed to understand the causes of failures and successes.
3) *Theory of Knowledge*: Knowledge comes from theory, but contradictions to it should result in modifications or abandonment of it.
4) *Psychology*: Important to understand people and the interactions between them, and how to motivate the team.

Drawing upon well-known theories makes it easier for management to embrace them (Krehbiel & Miller 2018). In SoPK, Deming combined all of his knowledge and proposed that the four perspectives are used as lenses to grasp complexity better (Willis 2021).

Quality Viewpoints in Agile

Krehbiel & Miller (2018) summarize how Agile maps to Demings 14 Points for Management:

1) *Constancy of Purpose*: Agile has constancy of purpose, but not on an organizational level.
2) *Adopt the New Philosophy*: The Western style of command and control of management leads to silos, and thus sub-optimization of the system.
3) *Cease Dependence on Mass Inspection*: Short iterations and TDD reduces the need for mass inspection.
4) *End the Practice of Awarding Business on the Basis of the Price Tag*: Not handled in agile, as it often does not revolve around manufacturing.
5) *Improve the System Constantly and Forever*: Agile practices support continuous improvement of the product development lifecycle but lack enterprise-wise practices to better the system.
6) *Institute Training*: Agile's pair programming practice can be seen as training, but Agile does not on its own go beyond the daily tasks to train people in quality improvement methodologies.
7) *Institute Leadership*: Agile is focused on self-leading teams and does not have strategies for developing organization leaders that manage the system.
8) *Drive Out Fear*: Indirectly, Agile's standups resurface problems early, and responding to change and prioritizing people should mitigate fear.
9) *Break Down Barriers between Departments*: Agile embraces collaboration, but rarely on a systemwide level.
10) *Eliminate Slogans and Exhortations*: Slogans created by the team can bring teams together, but risk of resulting in tribalism within an organization.

11) *Eliminate Numerical Quotas and Management by Objectives:* The agile aim to get a minimum viable product to the market emphasizes completion over quality.
12) *Remove Barriers to Feeling Pride in Workmanship:* Agile often includes the individual merit ratings Deming criticized.
13) *Encourage Education and Self-Improvement:* Agile methodology is silent on this topic, but many train by taking Agile credential paths.
14) *Take Action to Accomplish the Transformation*: As Agile is often used in a sub-group of an organization, there is no systemwide emphasis on transformation.

Agile's lack of a systemwide view is one of the biggest differences compared to Deming's points. While many Agile practices are part of Deming's theories, as seen in the listing above, the emphasis is not on the whole organization.

Krehbiel & Miller (2018) propose that Lean methodology can be used to incorporate a systemwide view into Agile, as Agile on its own cannot be seen as its own QMS. A Lean approach could be to use Lean to map the current state of the of the situation and derive a desired future state. Requirements are gathered based on the future state and then mapped to Agile user stories and tracked with an Agile backlog. (Krehbiel & Miller 2018)

Considering the SoPK, Agile is noted to be strong in Theory and Knowledge, and Psychology, but weak in Appreciation of a System and Knowledge about Variation. Other methodologies such as Lean and Six Sigma also have varying weaknesses and strengths about SoPK, and thus a holistic approach of different methodologies is advised. When choosing a quality management style, it is better to expand the view beyond single methodologies. (Krehbiel & Miller 2018)

Furthermore, inspiring individuals to pursue knowledge outside of the professional domain is not actively encouraged in Agile, in the same manner as in Deming's theories. Deming believed that people keep their minds open by learning about various things, which benefits organizations (Deming Institute 2014).

References

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