Quality Philosophy and Foundation

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Abstract

The issue of quality ranges from product quality control to company-wide development; from individual companies to supply chain development; from manufacturing to development in all kinds of industries; from economic production needs to ecological and sustainable development. Probably summed up, in the "quality philosophy", the emphasis is on continuous improvement, leadership, consistent goals, full participation, common language, technology sharing, change management, cultural heritage and people oriented; accompany with "core value", system integration as a means and practice application is the purpose, the pragmatic benefit is the incentive, and the sustainable development is the good fruit.

Keywords: Quality Philosophy; Sustainable development; Industry 4.0; Supplier chain; Demand chain

Philosophy

Professor Shi Ansheng (1939~2020), my wife's uncle, was engaged in physics before he retired. After his retirement, he began to study philosophy because of certain reasons. He is very familiar with the philosophies of Aristotle, Descartes, Kant, and Hegel, and well-known in Jingzhou, Hubei, China. He has a nickname called "Ar-De-Kan-He". For each time when I stayed in Jingzhou, he often taught about the topic of philosophy with me, when we discussed about philosophy, I only could listen to him. He said that philosophy is a kind of thinking reflection of human beings. "I think then I am" is what Descartes considers to be a reliable philosophical truth and first principle, and thus develops its philosophical thinking. My personal knowledge is limited, so I can't interpret it deeply. In terms of personal understanding, the meaning is that if I know how to think then I am worthy of being told about the past, the present, and the future; if I don't know how to think then I am not worthy of being told about the past, the present, and the future. Thinking and not thinking, depending on the individual's knowledge, behaviour, and conscience, and should also be different level.

Quality Philosophy and Foundation

The development and promotion of quality related knowledge and technology is not developed independently, it would be developed accompany with the necessary requirements in politics, economy, industrial, and technology of community, society, region, country, and whole world. Such as, Control Chart and Sampling Acceptance due to World War II, TQC and CWQC due to quality is the companywide problem, ISO 9000 series due to European Common Market, and TQM, Six Sigma due to western world quality renaissance. Although the development of modern quality professional fields, were originated from the requirements of the procurement of U.S. Department of Defence during the World War II, but some of useful philosophies, systems, technologies, methodologies and tools, were promoted by many quality gurus and organizations to the different organizations widely, such as governments, industries, enterprises, schools, hospitals, etc.. Most of them can get the value-added effectiveness, furthermore; induce some safety, health, environment, ecology, social accountability issues, and try to let the economic production, ecological environment and people's life to enhance the upward balance. In the transformation of generations of nowadays, not only must let the new generation recognize that the development of quality is the gene of improvement due to the needs of human spiritual knowledge, but also must let the old generation know that the development of quality is the induce of prosperity due to the needs

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1

of human material satisfaction. In the now of Internet Information Technology, numbers of related hardware and software involve into our life and work, stupid-like old generation feel cannot be adaptive, but smart-like new generation feel cannot be satisfied. The era of Industry 4.0 has been coming. A value chain of an industry includes supplier chain and demand chain, are shown as Figure 1. When the consumers on the market willing pay to buy the products and services which the value chain offering, then the value chain starts to add the value, who contributed more, who will get much benefit. Industry 4.0 is a collective term including a number of automations, data exchange and manufacturing. It will create many kinds of innovative business model via customized design and marketing. From supplier chain: purchasing, production controlling, incoming, production and shipping to demand chain: ordering, logistics delivery, retail, and maintain service, it can integrate all processes to be a value chain through computation, communication, controlling, collaboration and real time response (Figure 1).
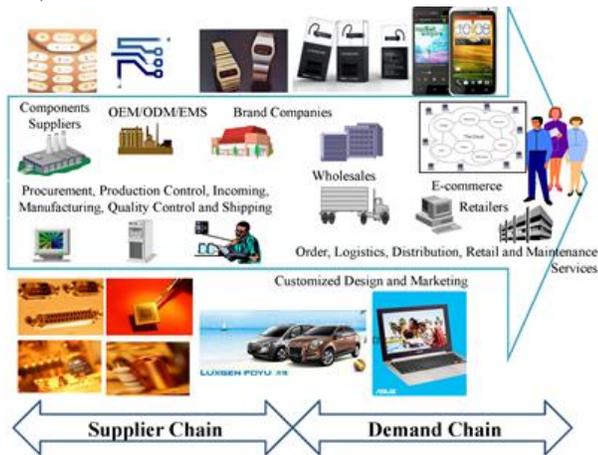

Figure 1: Supplier chain and demand chain.

What will happen due to industry 4.0? In my opinion, the quality requirements of all processes of the value chain of Industry 4.0 would be much more transparent. As the demand chain, product and service will be required more accurate, speedy, reliable, safety, ecological, and environmental. As the supplier chain, the product and service will be required more easily to design, manufacture, change, transport, maintain, recycle and trace. Therefore, quality practitioners and organizations should pay more attention to the requirements of all processes of the value chain in the future. The impact of modern network information technology on future quality development, the quality requirements will be more transparent, and the business model of the organization must be transparent also. The governments of the 30 Member States of the Organization for Economic Co-operation and Development (OECD) agreed to a revised version of the 2004 "The OECD Principles of Corporate Governance". The corporate governance framework should promote transparent and efficient markets, be consistent with the rule of law and clearly articulate the division of responsibilities among different supervisory, regulatory and enforcement authorities. Markets for corporate control should be allowed to function in an efficient and transparent manner. The corporate governance framework should ensure that timely and accurate disclosure is made on all material matters regarding the corporation, including the financial situation, performance, ownership, and governance of the company. Information should be prepared and disclosed in accordance with high quality standards of accounting and financial and non-financial disclosure. "The OECD Principles of Corporate Governance" have been recognized by Member States and other countries as a benchmark for appraising corporate governance, this trend is of universal value. How to use modern online information technology to enhance transparency and information disclosure should be an important issue in the future development of quality. The following are the discussion of the future development of quality from the supply chain and demand chain two aspects. As the supply chain, vendors in the supply chain are scattered all over the world. The transparent information provided by the cloud computing SCM can establish a platform for manufacturers' communication and coordination in the supply chain. This cross-regional, cross-national, cross-industry and cross-company information system enables Engineering Collaboration and Logistics Collaboration under the network platform architecture. Engineering Collaboration: provide collaborative process of two-way interaction between customers and suppliers to provide customers with the engineering information needed to speed up customer quality analysis, quality improvement and design improvement process, as well as shorten the customer's time schedule from pilot run to mass production. Logistics Collaboration: provide customers and suppliers more transparent and complete information interface, from the customer's order to the production schedule, from the production order to status of the lot number, from the outgoing quality control to the shipping, customers can get the information from the system and analyze in advance, solve the common problems of both sides immediately.

From the demand chain, the human's material needs side, such as Maslow's Hierarchy of Needs, physiological and safety needs; the human's spirit needs side, such as love and belongingness needs, esteem needs and self-actualization needs. The demand for material is nothing more than food, clothing, shelter, transportation, recreation and security. With the developed society in today's science and technology, people have met their needs from sufficient conditions to convenience, from convenience to rapidity, from rapidity to refinement, from refinement to rarity and so on, such endless needs. The data on these needs, people in the consumer process incidentally stored in all sectors of public or private cloud which is now the hot topic of "big data." This

transparent information provides enterprises understand the needs of people, and objectively innovative design products / services to meet people's needs. As for the human's spirit needs, also inevitably need to rely on a transparent network of the world, from the message of E-Mail to social networking sites; search from a keyword to find a complete knowledge of documents; from the well-known Scholar's blog site absorbs the knowledge or experience which they have developed; from the self-built blogs recorded its own feelings of knowledge or experience can share with others. All kinds of documented information and knowledge properly operated and compiled by individuals, communities, society and countries, and systematically identify, create, acquire, capture, apply, share, store, map these documented information and knowledge. By paperless e-book mode built in the existing cloud computing knowledge management system for public access to learning and can enhance the level of knowledge of all people. The development of future quality professional fields will still develop a wide range of fields, based on the material and spiritual needs of human beings. The platform provided by Internet-based information technology, system integration theory will be an important knowledge and technology, such as human-machine integration, machines integration, information systems integration, supply chain integration, network entity integration, value integration, knowledge integration, ideological integration, and wisdom integration.

The July 2001 issue of Quality Progress, "What is Quality?" [1]. Even though they were discussed by eight international quality gurus, quality philosophy is slightly different. It can be summarized as the following 7 points [2]:

- Quality improvement is never-ending process.
- Top management commitment, knowledge, and active participation are critical.
- Management is responsible for articulating a company philosophy, goal, measurable objectives, and a change strategy.
- All employees in the organization need to be active participant.
- A common language and set of procedures are important to communicate and support the quality effort.
- A process must be established to identify the most critical problems, determine their causes, and find solutions.
- Changes in company culture, roles, and responsibilities may be required.

After the development of the quality professional field in the 1950s into the statistical quality control (SQC), through the contribution of the gurus in the quality field, as shown in Figure 2, and the continuous development and promotion of the world's professionals and organizations for nearly 60 years, gradually from SQC → TQC → TQM → Sustainability Development to the present glory. The issue of quality ranges from product quality control to company-wide development; from individual companies to supply chain development; from manufacturing to development in all kinds of industries; from economic production needs to ecological and sustainable development. Probably summed up, in the "quality philosophy", the emphasis is on continuous improvement, leadership, consistent goals, full petarticipation, common language, technology sharing, change management, cultural heritage and people oriented; accompany with "core value", system integration as a means and practice application is the purpose, the pragmatic benefit is the incentive, and the sustainable development is the good fruit (Figure 2).

Figure 2: The gurus in the quality field.

The philosophers are gone, still effect our world, and the philosophies, systems, methods, techniques, etc. that they have developed are still shining in the industry, and their contributions are overwhelming. They all faded in the field of the industry. They are the originators of academic research in the Pragmatic Approach.

References

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