

# Impact of Transition to Knowledge-based Economy on Quality Management

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**Abstract:** This research analyses the main link between the new concepts of knowledge-based economy and quality management. In this ever-changing environment, the systemic vision of any organization will outline in the direction of developing new skills, having as the main objective to overpass the waste identified in the knowledge transfer process on different hierarchical levels. In this article, we present different characteristic of new quality management techniques, opportunities of the future to gain the competitive advantage and a personal point of view regarding the most important teachings from high quality management literature.

**Keywords:** competitiveness, knowledge-based economy, planning, strategy, knowledge, lean production

**JEL Code:** O14, L60, L23, A12

## 1. Introduction

*"Doing the right things right, first time and every time"*. This phrase represents, in our point of view the starting point for these theme, raising the awareness of the impact of transition to knowledge-based economy in Quality Management. The four criteria described by this quote are actually four basic objectives that support the development of quality management based on knowledge economy. Notice that each of the activities or guidance in this phrase is mainly referring to research. Only with a good knowledge regarding the customer needs and the organizations characteristics, the manager can be able to accomplish the outputs set in his organizations with high quality associated. It is important to manage the right process of implementation from the first time, since correcting failures might be more difficult and more costly than implementing a good planning strategy from the start. Everything must be done having in mind the objective to increase the quality level and the benefits that could be given to buyers, to decrease the cost level. All actions must develop under the desire to improve any organizational activity. It is important to have a continuous improvement process, a continuous knowledge based process, to provide constant satisfaction. A single achievement will not be effective for long-term activity. Thus, to evolve, we must learn constantly, in order to be able to overcome our own limitations.

### 1.1. Knowledge-based economy

The first question regards this set of terms definition: what is primarily knowledge-based economy? It is all about a fundamental change in natural resources for knowledge. However, in order to understand the concept of the knowledge-based economy, we have to integrate it into the larger concept of the knowledge-based society.

The knowledge-based society was conceived as a social phenomenon as well as an economic development (European Commission, 2003). Therefore, the concept of knowledge-based society is used in correlation (and not identification) with the concept of knowledge-based economy. This is because the intensive use of knowledge is the essence of several processes with economic impact on one hand, and the society is a concept larger than the economy or its progress on the other hand (Duca and Gaidric, 2007). As a result, the knowledge-based society brings economic effects, as well as consequences of a more complete realization of human personality (Duca and Gaidric, 2007).

There are different stages in the evolution of society and, as Kauppinen (2005) found, researchers have very different visions about the emerging societies, ranging from the information society to the knowledge society or to the learning society, virtual society, techno-society, dream society, network

society, bio-society, and wisdom society. These societies may all be considered in our view as models of the knowledge-based society because all are societies in which knowledge, along with information and communication technologies, creativity, networking and virtual communication, are the main driving forces (Zamfir, 2010: 21).

According to Duca and Gaidric (2007), the economy of the knowledge-based society has to rely on its own resources at a new level of knowledge. These resources are directly correlated with the process of information and knowledge, providing a new configuration for the society and the economy. As a result, a socio-cultural and economic metamorphosis, without precedent in the mankind known history, takes place now, under the pressure of continuous acceleration of all processes related to the society. "Humankind has the capacity to create far more information than anyone can absorb, to foster far greater interdependency than anyone can manage, and to accelerate change far faster than anyone's ability to keep pace" (Senge, 2006: 69).

Knowledge has become a critical ingredient to gain competitive advantage in the new economic landscape. Knowledge includes basic data and essential information, but is more comprehensive than that. Knowledge allows the action. The essential question for an organization that wants to succeed with the development of a knowledge-based economy is how to transform information into knowledge and further than that, into competence and wisdom (Nicolescu and Nicolescu, 2005).

The knowledge-based society and more specifically, the knowledge-based economy, have a major influence on management, whether it refers to private or public companies. The major changes that take place globally within the knowledge-based society are reflected in the managerial field as well, and could be thought of as a managerial revolution. According to Drucker (1999), the managerial revolution is a transformation of knowledge in which knowledge is applied to knowledge. Thus the central resource of management is knowledge and the leading social groups are knowledge workers. This means that management is centred on knowledge-sharing, in order to discover how knowledge can be best applied to create new knowledge. However, new knowledge may be created using human brain in networks as a tool. Therefore, management relies on two core resources, namely knowledge and people (Zamfir, 2010: 36). Since knowledge is the main asset within the knowledge-based society, its quality and productivity become vital, as Drucker (1994) outlines: "We need systematic work on the quality of knowledge and the productivity of knowledge – neither even defined so far. The performance capacity, if not the survival, of any organization in the knowledge society will come increasingly to depend on those two factors. But so will the performance capacity, if not the survival, of any individual in the knowledge society" (Drucker, 1994).

## 1.2. Quality management

What is quality management? Total quality management is an organizational strategy based on the idea that performance in achieving a high quality level it can only be reached through the involvement of the entire organization within the process of continuous improvement. The main objective is to increase efficiency and effectiveness in customer satisfaction.

Dr. Edwards Deming proposed the concept of Total Quality Management – TQM in 1940 but its use began in 1985, along with the takeover by Americans of Japanese industry-working principles:

- Focus on continuous improvement processes so that processes can be visible, repeatable, and measurable (Kaizen);
- Focus on analyzing and eliminating undesirable effects of production processes;
- Consider how the consumers use products for improvement;
- Expanding beyond product management preoccupations.

All of these words: "focus", "examination", "extension", provides a fundamental link between quality management and knowledge-based economy.

The effective use of knowledge is often argued to be the key to competitive success in the global economy of the 21st century. Not only is the effective management of knowledge argued to be a critical element of the innovations needed to be successful, Knowledge Management is, of itself, a major "innovation" (Grant, 2011).

## 2. The transition to knowledge management in quality management

What are the main characteristics of an organization that operates in parallel with both the quality management and knowledge based management? The organization's ability to produce competitive advantage is based on knowledge integration inside the organization so that it can be used collaboratively. One of the basic principles of quality management is the division of an organization in working teams. The improvement of coordination cannot be achieved by emphasizing the hierarchical differences. This is the reason why we must take into account one of the principles of quality management

that says that "efficiency of a team consists in achieving set objectives within a certain period of time, through strengthening both internal and external ties between the members of a team and the rest of the organization ". In fact, the human resources are the closest to the transfer of knowledge. Organizations that want to improve knowledge management should organize people in "temporary constellation", understanding by these the flexibility in the human behavior and their ability to organize and engage themselves in different activities. This organization will create an opportunity to share common experiences that will lead to new ways of understanding the development of an effective reality (Nicolescu and Verboncu, 2007). In this way, the basis for knowledge transfer is created and is further requested and coordinated in management direction. Thus, since there are fewer intermediaries in the relationship between two people, the transfer is more easily to achieve.

Quality management involves the implementation of a solution that will help people to make major changes in the way they operate. However, decisions are taken at executive level. To take a correct decision, they must gather knowledge across the organization and ensure their transfer to the groups who make decisions. When knowledge transfer does not take place vertically, but horizontally, in order to avoid the risk attributed to failure, the workers acting in terms of their own knowledge must be able to assume responsibility.

Quality management is based not only on improving internal processes, but also on improving relationships. Establishing the organization's position inside the supply chain is essential in order to understand how to act. Knowledge based management pushes organizations to create long-lasting ties with their partners. This is because it was scientifically proven that innovation occurs mainly in the networking between companies, rather than at internal and individual level. This brings us to the conclusion that the transfer of knowledge came from customers and suppliers and leads to an increased flow of knowledge within the organization.

The knowledge transfer participates in the end of the extended supply chain to increase profitability. This link is effective because it eliminates the possibility for the competition to achieve the same progress, because it cannot access the entire flow of knowledge that circulates inside and outside the organization.

Thus, quality management practices such as cooperation with suppliers, teamwork, autonomy, quality control processes, or relationships with customers, together with the transfer of knowledge between the organization and the extended supply chain that it is a part of, lead to an increase in performance.

In recent years, we emphasized the phenomena of transition to knowledge-based economy. This period coincides with the development of methodologies to improve quality, embodied in total quality management. Studies show that this compliance of periods is not random. Great power to clarify the issues brought by this new economy led to the creation of a socio-technical system to improve quality, and therefore it meant a significant increase in profitability of organizations.

From our point of view, the transition to knowledge-based economy is particularly clear in terms of quality management. In 1900, the entire production system was based on the idea of separation between production and planning, on the lack of involvement of human activity and knowledge that they could seize and develop. It was used more like a mass production approach, based on manufacturing in large batches using the machines automatically programmed. Everything was brought to the required standards of physical resources and thus a complete lack of involvement of human resources was manifested.

Along with sophistication and diversification of market demand, with increased trade and the need to increase productivity, a shift to knowledge-based economy for quality management was also needed. We think that the best approach that we can report regarding this parallel is Lean Methodology. As management is a "vector of economic growth", so the Lean Approach supports productivity growth. It is characterized by productivity, quality, low cost, favorable time delivery, safety, and care for the environment and morals. All this is supported by knowledge.

Adopting new knowledge based management features, Toyoda Kiichira implements new ways of action. He adopts an innovative character and the flexibility of workers sits in the center of the new management approach, their motivation, new formative and participatory modes of action, and above all a systemic approach. Quality management approaches all the activities inside the organization as an integrated suite of pieces with a defined objective. The idea is to cross the mapping of our own minds to mapping the minds of those who are at the top. This is a communication problem (Hotăran and Năftănăilă, 2010).

As Goldratt used to note in his book "The Goal," to be effective, an organization must first define their clear purpose and then apply participatory methods to seek to clear restrictions, everything based on knowledge management (Goldratt and Cox, 2004).

As quality management says, there are three rules that management must ensure before the employee be held liable: he must be trained and taught what to do, how to do it, and he must assist to a presentation of a correctly implemented process. Likewise, in knowledge based economy we can find four categories of knowledge: "to know what", "to know why", "to know who" and "to know how".

Currently, the economic foundation of the knowledge-based economy is the intellectual property. The same direction was also developed for the quality management. As a starting point for the application of this approach, Kiichira Toyoda occurred to Toyota and changed the employment contract into a document that involves the man and puts emphasis on intellectual property. The knowledge is the only resource that cannot wear out physically and because of this it supports cooperation, collaboration, and staff involvement.

To emphasize this strong influence of knowledge backed by human resources, Convey said: "front line makes bottom line". Therefore, to make an activity work, front-line employees need to know all the requirements, characteristics and not least all the clients' wishes and at the same time, to believe in them, in their personal capacity. In the last century, we realized that for an organization to work, we must play "catchball". This is the game where everyone is entitled to an opinion. The top management takes the final decisions regarding the starting point of their next process for implementation, but the feedback is strictly necessary. This creates a permanent exchange of knowledge. The involvement of staff is also due to the kaizen circles, characterized by communication, perception and surveillance solution. People are encouraged to express their opinions, under the tutelage of a leader. Knowledge-based economy has developed in parallel with a visual management, whereby we all see together, we learn together, we act together. Establishing a direct link with customers will definitely lead to a process of continuous improvement. It is very important that in the moment of quality improvement techniques implementation to allow the flow of the supply chain and to establish close cooperation with both upstream and downstream partners.

How the knowledge-based economy has influenced the innovation of quality management within an organization? We can take the simple example of a company that produces a certain category of goods, activity that brings a good profit, but not enough, and because of this, it decides to add a new type of production. The first problem that appears will regard the space and they will discuss about renting a new warehouse. By implementing knowledge based management, we learn that this very expensive action, based on physical resources, can be removed easily by studying the problem and appealing to an already existing knowledge flow along with creating a higher level of acknowledgment among the whole staff. One solution can be the implementation of 5S methodology, by this understanding sorting, straightening, shining, standardizing and sustaining. By separating the pieces, removing waste, better organization and labeling resources by imposing an order among the elements that occupy space, we discover how much room it is not used at full capacity. By reducing transport distances and through a better localization of workstation, the organization would definitely succeed to obtain the space required, without any financial resources. This in-depth knowledge of the current situation leads to the discovery of bottlenecks, to subordination of the entire activity of an organization to them and finally to their removal and to an effective usage of resources (Dennis, 2002).

### 3. Future events

The new trends evolving in the land of technology and education are represented by the merger of activities involved in acquiring and implementing knowledge based management and enhancing learning ability and performance skills. Thus, these four elements are the links between the learner and the technology in an effort to support lifelong learning process in a knowledge-based society and economy. Learning management systems can handle very flexible processes, often in unanticipated directions. Thus, in this age of information overload, these systems are of a great use in helping people and organizations to reorganize their work (Nicolescu and Nicolescu, 2005).

At present, the business environment outlined by the knowledge-based economy is characterized by globalization and international competition, focuses on the capital represented by human resources and knowledge, flexible organizations, flexibility in production, personalization and localization, distribution of wealth, corporate and environmental responsibility based on innovation.

Continuous learning in the knowledge economy was applied also in quality management. Thus, new methods of improving performance are based on establishing some "teachers" and develop further applied principles. For example, in the Six Sigma approach, the staff starts as a "Green Belt", reaching the highest rank of "Black Belt", meaning the one who has the highest level in terms of knowledge, but who must also know how to share it to others.

Worldwide, in the management quality field we recognize two trends, namely the proliferation of advanced management practices of companies that generated them in many other companies, see Toyota,

General Electrics, Microsoft, and theorization of these practices through the formulation of rules, principles and approaches (Waller, 2003).

How we can highlight changes brought by the transition to knowledge-based economy in quality management processes? We can do this using the principles that dominate in this area being fully consistent with changes from last periods. Thus, quality management knowledge is expensive, but so is ignoring it. It is important for every organization to analyze in order to discover if there are higher costs involved by the implementation of improvement solutions rather expensive, such as Six Sigma, or ways to improve the flow inside the supply chain such as Microsoft Dynamics NAV or by the lack of these implementations. It is a question of prior management reviews regarding the costs involved by the implementation of these solutions. Through good communication between customers and solution providers and through the respect that large organizations show to those who support their activities, the suppliers will not intend to sell useless solutions (Gupta and Sri, 2007). The process will include an analysis of existing costs, an analysis regarding the return on investment from implementing the solution and upon the benefits brought, before the finalization of a contract. The need for the flow of knowledge occurs again and also the importance and interest in human resource collaboration (Martin, 2006).

Stephen Convey remembers in his book "Seven habits of highly effective people", that there are seven stages of knowledge, of human development to a more efficient way to work. The first step is to be proactive and to focus on long term activities, to get involved and to be able to take long-term responsibility. We think that from this first step, the spiritual foundation of a future top manager must be represented by knowledge. Knowing a small part stimulates the desire for the infinite knowledge. The second step consists in guiding each of us to start having in mind "the vision of the end". He does not refer here to the frustration of people to achieve success, but to an inside feeling to guide the person upstream. In the next chapter, we learn how to decide what the priority is when we decide about our activities' order. It is better to do what is important or what is urgent? Without knowing the problems and needs, we cannot make this choice. By important we understand a series of activities that will increase work efficiency and by urgent we define those actions that have deadlines. It is essential to accomplish objectives important but not urgent, so we can focus on the planning, preparation and prevention areas (Convey, 2004).

To achieve only win-win activities, we must first seek to understand and then to be understood. Here comes the knowledge process. After each person has shown own strength, somebody must focus on the most important thing that is the synergy of activities. It should be understood that "the whole is more important than the sum of its parts". The final chapter is a relatively short story, in order to illustrate the importance that a manager must give to the system implemented in the organization. He must be the one who sharpens his sword in order to drive the organization in the right way. The story says that two people were trying to cut down a tree with a blunt saw. This exercise was exhausting them and extended over a long period. When they were asked why they did not sharpen the saw, they said that there is no time for this. It was easier if they stopped and sharpen the saw for half an hour and after they were able to finish their work in about another half hour, or if they continued until the end of the day in the same way? This highlights the importance of knowledge during the first stage of a business, the planning activity. Once inside the execution phase, skipping the rhythm of action, the path takes the road to failure on the smallest impediment (Convey, 2004).

However, in new approaches, sharing knowledge between different people is a normal process and puts a great emphasis on visual management. It is easy to notice that none of emerging approaches has strict limits, but has only a knowledge base over which we may continuously complete, stimulate collaboration and involvement.

#### **4. Total quality management principles**

These principles are increasingly influenced by the power of knowledge:

1. Customer orientation. Competition is very high in terms of customers, both locally and globally and this has led to a significant increase in the importance of quality for products and services.

2. Continuous quality improvement is very rewarding for the large image of the organization, improving its credibility on the market and encouraging communication and teamwork. This process is rewarding for the entire staff of the organization - mainly psychological - and increases labor productivity through efficient use of personnel, equipment and resources at a general level.

3. Everyone's involvement. Total quality management is a philosophy involving organization's staff at macro level in achieving high quality for products and services, highlighting the role and place of each employee to ensure quality. Staff awareness on the contribution made to the prosperity of their company as part of a whole is a managerial excellence goal that brings satisfaction for all those involved in organization's activity (shareholders, managers, and operators). Teamwork, both between individuals and

between groups of individuals who tend not to cooperate (engineers and accountants involved in designing a system for analysis of quality costs in a specific area), is also a defining element. Improving the working environment by implementing a climate of trust, encouragement and motivation is an objective of total quality management and a prerequisite for the knowledge based economy.

4. Orientation for process. Designing and implementing a quality management system is a process directly conditioned by the specific organizational culture, by pre-existing cultural elements at the starting point of the process, by its flexibility to integrate new values and norms of quality. Total quality management aims people who are constantly challenged to find solutions, innovative and flexible people.

5. Management actions through knowledge based activities and long-term perspective for improvement. The success of an organization in improving the quality of all activities depends also on the manager's ability to develop relations, to assess and to recognize talent and individual characteristics, to give the employee the opportunity to reach his full potential, to develop and constantly educate the entire staff. Managers need to develop an individual and a group behavior of all staff, quality-oriented. Senior managers send messages (through their own behavior) as an example to be followed by subordinates. Managers will support trainings among subordinates and development of all skills that support the change, namely the implementation of quality management system, and together with their teams, they will periodically review the progress.

The quality offered by an organization is the measure of satisfaction to those interested in its results.

With the economic growth, the term of quality becomes the basic problem. We talk about a buyer's market more than a manufacturer's market. Thus, the customer has many opportunities to choose and the manufacturer's tendency is not to get maximum profit by selling average products, but to gain customer loyalty by increasing quality and reducing prices.

If the knowledge is not implemented correctly in quality management, this will lead quickly to a failure of the execution phase when nothing can be fixed.

The Japanese are among the first people who realized that the advance in quality is based on continuous improvement, which is nothing but knowledge. They have managed to bring together small and continuous changes associated with kaizen method and long lasting revolutionary changes. They support each other and the whole activity is based on knowledge. This strengthens the claim that knowledge and continuous learning support correctly implemented quality management.

Lately, due to transition to the knowledge-based system, we see more radical and revolutionary changes. The quantity of these changes tends to grow constantly and because of this, the innovation process is accelerating its curve. We also notice the tendency to implement and support competitive advantage based on knowledge and not on tangible resources.

In addition, the improvement regarding material resources is based on knowledge. It is important to know how and what to implement to ensure technological progress. In Taylor's days, it was not possible to require employees anything, because they were very uneducated and most of them did not know to write. The next period makes the change from the "blue collar" to knowledge-based workers.

The need for knowledge within organizations is essential. We need knowledge primarily because the client is constantly changing and if we fail to evolve in line with this, surely we will fall behind.

One of the most controversial issues is the transmission of knowledge. This process is particularly difficult. It is very important to know to collect and exploit old teachings, known broadly by the entire population, but is very hard to transmit new knowledge, to try to teach others what you have discovered. The most important step to success is to document yourself and to know how to pass your knowledge to others. In quality management, ISO requires that each objective achieved to be noted and to describe its method of accomplishment. In this way, knowledge transfer takes place.

It can be said that the new source of power source is not "money" that are owned by few, but the information hold by "many". Knowledge-based economy is characterized by desire and by the need of continuous learning as well as by the skills learned to properly use all this information. This trend has already started and the knowledge has become the driver on the upstream way to productivity and economic growth, addressing a new trend of focusing on the role of knowledge, on technology and on the understanding of increased economic performance (Molina et al., 2007).

People's ability to seize knowledge and to turn them into constructive and useful ideas has an impressive economic cost. A key element to be handled correctly is the efficiency with which knowledge is organized, accessed and communicated further on.

Why the transition to knowledge-based management is important? The answer is: because we are living in an ever-changing society and the flow of knowledge tends to expand and improve innovative abilities. Then it should be noted that ideas and innovations from one department could have an effective

implementation elsewhere. Third, note that dissemination of knowledge makes the investment less risky and therefore more attractive.

It is important to note that the contribution of knowledge differs from other types of economical inputs for two main reasons. The first reason is that they are intangible and we can not give them in return as we do with diamonds, gold and other riches. For this reason, many disputes have arisen based on the use of intellectual property. The second reason is that the flow of knowledge can be used several times, without the appearance of its quality degradation. Therefore, it becomes interesting to fully exploit this profit-making capacity.

## 5. Conclusions

It is important to know and to keep inside your organization the bright ideas. We can notice that with the passage of time, money is not the first factor to motivate the "bright minds". Only 7% of successful managers recognize that money is the main motivating factor. Even this percentage is because we cannot speak of a homogeneous mass of the categories of people, and must always be exceptions, must always be people who have not reached the maximum development level but still have to climb the ladder of knowledge, even if hierarchical rank is in contradiction with this movement. Therefore, to avoid dissolution of the organization, as those from IBM have left the company in order to innovate at Intel and to create their own organization, it is important to constantly motivate every employee, especially spiritually.

When in quality management a new idea is developed, we must act in terms of collaboration, of discovering the standards of implementation, the knowledge base and lifelong learning in order to assure a proper implementation.

An old proverb says, "Who makes a mistake must pay". From our point of view this is not true, because "only who does not work, is never wrong". This drastic approach hinders innovation and prevents people to take risks. Having in mind the fear associated with wrong results, people prefer to keep hidden a brilliant idea or even the finding of a bottleneck, action that leads to a stoppage in development, and even bankruptcy. From my perspective, the most important collaboration within an organization must be ensured between quality management and knowledge based economy, this couple being the key for the road to success.

Peter Drucker said, "*There's nothing more useless than to do effectively what should never be done at all*". **This is the main support for the central theme described in this paper. Quality management is based on knowledge, without which we could not know what we must realize the fact.**

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