The Knowledge Management Process for Implementing Quality Improvement Programs

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The importance of quality to any and all organizations is well known, and it is necessary to teach employees quality discipline. However, the analysis of literature indicates that many of quality improvement programs are ineffective. This article discusses knowledge management processes for the organizational learning mechanisms that can help to plan and implement quality management programs more successfully. The processes are implemented in sequence for the development of knowledge management in an organization in which user needs and expectations are recognized as an input. The processes are controlled by knowledge management strategy planning, knowledge process, customer and knowledge supplier relationships. The mechanisms are led by a knowledge management leader, knowledge management personnel, and knowledge management system infrastructure. The input is transformed into knowledge management results in terms of users’ needs and expectations of knowledge management outcomes, knowledge management strategy and planning outcomes, knowledge management delivery outcomes. By using the knowledge management process organizations can increase the effectiveness of quality management training.

Keywords: quality management, knowledge management, ISO 9000 standards, quality programs

Introduction

An increasing number of organizations have adopted quality management as a means to achieve their strategic objectives, to improve their productivity and competitiveness and thereby meet the demands of customers. In order to effectively participate in quality management, employees need to be adequately trained and aware of the benefits of total quality management. Management must ensure an organization-wide quality training program (Jun et al., 2006). However, analysis of the literature indicate that many of quality improvement programs are ineffective (Oliver, 2009). The investigations of Clegg et al. (2010) also show that the training of quality is often ineffective. Training needs to focus on the initial understanding of tools, the endorsement of classical critical success factors, and their subsequent deployment within a suitable methodological framework. It is suggested that the success of total quality management is dependent on organization’s ability to learn, to absorb, to adapt and to apply changes and integrate...
them throughout the organization (Terziovsky et al., 2000). The investigations of Ruževičius (2005) also show that there is a correlation between knowledge management and quality management, and knowledge management processes can be used for solving quality problems. Knowledge management emphasizes cultural and internal operational changes in organizations (Jennex, 2008). The identification of changes and their rapid implementation are extremely important and relevant in the conditions of the current global crisis (Klimas and Ruževičius, 2009, p. 72). Investigations of Atkočiūnienė (2010) emphasize that an organization reaching for the competitive success needs to promote knowledge renewal, create and model the processes of knowledge management. This helps to develop individual creativity, organizational knowledge and experience into organizational work, creation of improved products and services. Business and knowledge management activities should be related in the way enabling to get the maximum profit at the minimum costs, rendering advantage not only to the market, but also to the society-oriented business vision (Atkočiūnienė, 2008, p.21).

The mixed success of quality programs as reported in the literature provides the motivation for this study. This article may contribute to understanding whether a lack of learning is inhibiting the success of quality programs. The purpose of the research was to find out how quality management training can be practiced more effectively.

The present study is based on two methods of qualitative research: analysis of literature and a review of quality management and knowledge management practices.

**Recognition of user’s needs and expectations**

In this study, the user is defined as an organization member who uses knowledge from the knowledge management process. While knowledge management benefits the organization when it also benefits users, conversely, if users fail to receive values, the knowledge management program will fail. Effective knowledge management must be people-focused, because success is determined by a full organization members’ commitment, and the effectiveness of their actions results from knowledge utilized to handle situations (Wig, 2003). Therefore, an organization should have a well-managed program for implementing knowledge management in response to satisfying the organization member requirements. There is now growing attention to focusing on organization members’ satisfaction with knowledge management as an indicator of a direct measurement of knowledge management performance (Chou et al., 2005). Grossman (2006) also states that an effective way to measure knowledge management is to communicate with organization members to get their opinion about the impact of knowledge management initiatives. People at all levels are the essence of an organization, and their full involvement enables their abilities to be used for the organization’s benefit. Organizations need to pay more attention to its members’ understanding the willingness to change and cultural transformation of their behaviour, and involve them into the process of planning changes (Spender, 2006). There are many cases of knowledge management (learning) failures documented in the literature, often attributed to resistance to changes by organization members (Chou
et al., 2005). In order to reduce resistance to changes, organizations should focus on what its members want rather than on what the organizations are delivering. When satisfied with knowledge management initiatives, organization members will voluntarily participate in diverse knowledge processes (Lee and Chen, 2005).

Public service organizations have different mission objectives to private sector organizations and the different cultural and contextual values need to be considered for this need to be accounted for when selecting the quality management program objectives (Clegg et al., 2010).

Typically, employees receiving a quality training are from different functional areas in an organization and thus have different vested interests and learning objectives, i.e. the training audience is typically heterogeneous and not homogeneous. Therefore, in such situations, training must be tailored to accommodate the unique needs of the various elements of the training audience and to correctly ascertain whether the employees in each segment (or role) have learned what they need to know to directly apply in their specific job (Nanda, 2009).

Quality projects in the programme are sometimes too internally focused. The implication is that practitioners should be aware that projects need to be driven either by the voice of the external customer or by an organization’s key stakeholders (Clegg et al., 2010).

**Knowledge management strategy development**

Knowledge management strategy must be aligned with user requirements. Knowledge management leaders should understand the user’s needs and expectations prior to the knowledge management delivery. The closer the needs and expectations come to the actual performance, the greater is the perceived effectiveness of knowledge management, and the greater is the satisfaction. The upper management may ensure that all employees are made aware of what quality means to the organization by showing their own commitment to quality initiatives. When the upper management spends time on quality activities, it provides the evidence of leadership that inspires others to do their share. Knowledge management leaders may act as role models through their ethical behaviour and personal involvement in planning, communication, and coaching (2004; Hariharan and Cellular, 2005). Some upper management groups can be chosen to be highly visible in the quality process by leading quality training. In such cases, managers at a variety of levels personally conduct some of the managerial training for their subordinates.

Leaders not always understand the skepticism about the “new quality program”. Perhaps the greatest cost an organization suffers as a result of failure is the loss of morale or an increase in cynicism among employees. Many people have seen previous programs on quality quietly sink into oblivion. Unfortunately, the skepticism is not vocalized. The organizations that have achieved or exceeded the desired quality outcomes have embedded quality into the organization’s culture. This has been assisted by management ensuring that all employees are made aware of what quality means to the organization and by showing their own commitment to the quality initiatives (Oliver, 2009, p. 555). Very important is the participation of line managers in
designing training. Without this participation, training is technique-oriented rather than problem- and result-oriented.

Another form of evidence is upper management quality improvement teams. Each team, consisting solely of upper management members, addresses a problem which requires attention at its level. Examples include the effectiveness of the product development process, the quality of decision making in selecting new product managers, and the administrative aspects of high warranty costs. The visibility of upper management taking such training and then conducting such projects sets an example for other levels to follow.

Upper management should act as shapers and coaches. As a coach, it should help when asked. Middle management should not only run its area of responsibility, but also work as a group to integrate all parts of organization. In addition, it must support the work force by eliminating obstacles to progress.

The work force is the primary producer of the output for customers. Its closeness and knowledge about its work means that it should use its knowledge to determine how the work can best be done.

**Knowledge management system infrastructure**

Often quality management programs fail because there is a lack of an infrastructure for knowledge management. The information and communication technology infrastructures, as well as data collection and measurement provide the foundation to support the alignment of goals in the whole quality program. With other major activities, management has successfully delegated responsibility, but only after evolving the mechanisms that include clear goals, plans, organizational mechanisms for carrying out the plans, budgets, and provision for recognition and rewards. In contrast, the same elements are usually vague or are missing with respect to quality (Robinson et al., 2006).

Organizational learning is operationalised through organizational learning mechanisms, which are the institutionalized structural and procedural arrangements that aid the learning process. Such mechanisms allow organizations to collect, analyze, store, disseminate, and use the information that is relevant to the organization. This mechanism enables the experience of individual organizational members to be analyzed and shared by other organization members. The experience becomes the property of the entire organization through the distribution of lessons learned by relevant units or through changes in standard operating procedures.

Total quality management (TQM) has long been a major quality management practice. Knowledge management (KM) has gained popularity in organizations recently. In addition, innovation has also received considerable attention as critical to securing sustainable competitive advantage in the market. Hung et al. (2010) have examined how knowledge management initiatives, total quality management and innovation performance are related. The findings have shown that knowledge management is positively associated with both total quality management and innovation performance, and that total quality management is a mediator between knowledge management and innovation performance.
Ni and Sun (2009, p. 1048) investigated the relationship between organizational learning, continuous improvement and performance improvement from the evolutionary perspective. The results can be summarized as follows. First, continuous improvement directly contributes to performance while organizational learning does not contribute directly. Second, continuous improvement and organizational learning do enhance each other, but there is a time lag. A well-established learning capability contributes to continuous improvement, and continuous improvement, in return, supports the current organizational learning. The relationship is evolutionary like rolling a snowball. The result suggests that companies have to be patient when implementing organizational learning and also combine organizational learning with a continuous improvement or other problem-oriented programs.

**Performance measurement system**

It is argued (Oliver, 2009, p. 550) that for a quality program to be successful, an organization must have in place both the commitment to learning and the performance measurement system flexible enough to meet the changing needs of the business environment. Without an appropriate performance measurement system, quality programs and improvement activities can fail (Claver et al., 2002). In reality, it could be any system aimed to monitor and assist organizational learning practices. The performance measurement system may be structured to support the learning environment, management decision making, facilitate the rapid and effective learning, and enable the acquisition and development of information, knowledge and understanding, provide the feedback for driving the improvement effort. It is the continuing process of evaluating performance and taking corrective actions when necessary and enabling the organization to maintain a high quality process, and also to bring processes under control for improvements to be made.

**Using explicit knowledge for programs designed for the implementation of ISO 9000 quality management systems**

Nonaka and Takuechi (1998) have conceptualized that the knowledge in organizations can be identified as tacit or explicit. The tacit or explicit classification of knowledge offers a simple and widely understood classification. Tacit knowledge refers to the experience, intuition, judgment, and heuristics that one develops over time; it is embodied in the knower. Tacit knowledge cannot be easily transferred or externalized. It takes place through a long process of deep learning, apprenticeship, socialization, and mentoring. Explicit knowledge, on the other hand, refers to the knowledge that is recognized and embodied in the various organizational routines, i.e. manuals, procedures, instructions, standards, protocols, etc. This type of knowledge can be easily acquired and transferred. As the role of knowledge and the learning organization has grown, the tacitness and explicitness of knowledge in an organization will become a key strategic consideration in shaping the competitive strategy (Abdullah and Ahmad, 2009). For quality management programs and quality models, more useful and more popular is the explicit knowledge.
Abdullah and Ahmad (2009) examined the fit between values underpinned in the ISO 9000 standard and selected the managerial and organizational factors. It is postulated that more mechanistic and explicit knowledge-based organizations can implement programs for ISO 9000 quality systems easily, while the more organic and tacit knowledge-based organizations will experience tensions arising from the lack of fit. Hence, the standard will work best in more mechanistic and routine knowledge-based settings.

A successful implementation of the quality management system requires an appropriate program formulation (Addey, 2001). The program related to a quality management system implementation should consider from the early stages of their lifecycle the right activities, in the right order, and with the right resource involvement. In this context, Lin and Wu (2005) identify the most important activities within ISO 9001:2000 processes which can facilitate the knowledge flow and suggest a knowledge-creating model for ISO 9001:2000 that an organization can use to gain the knowledge needed to enhance its quality and performance. It also provides a ready framework for ordering and structuring an organization’s knowledge.

The ISO 9001:2008 standard explicitly requires that all processes and procedures be established, documented, implemented, and maintained (Anwar and Jabnoun, 2006). The quality manual symbolized the institutionalized system of control of the processes by which the requirements of the customers are met (Mike, 2004). Many studies have positioned that quality assurance including ISO 9000 certification tends to result in a greater formalization and explicitisation (Naveh and Erez, 2004). Explicitisation that enables knowledge transferability and ensures know-how is routinized and embedded in the actions and practices for carrying out day-to-day the quality management system by way of training programmes (Lin and Wu, 2006). In fact, in a high tacit knowledge organization, the implementation of a program for the ISO 9000 quality system is inherently more difficult as much of the system cannot be described or effectively documented. Without explicit documentation, the quality system is deemed to be weak.

The impact of the standard on organizational performance is greatest in the organizations that mainly utilize explicit knowledge, and it is weakest in organizations which mainly utilize tacit knowledge (Abdullah and Ahmad, 2009).

Knowledge-delivering process

A organization may identify skills and knowledge needed to recruit a new personnel, organize and manage work and jobs, develop the performance management system not only to appraise the performance of the knowledge management personnel, but also to recognize and reward for reinforcing high-performance work (Lo and Chin, 2009).

One of the essential ingredients of a broad-scope quality program is an extensive amount of training. Experience in training has identified the reasons why some training programs fail.

Failure to “start small” and learn from pilot activities. There is a great need to select the correct tools for a particular quality project and to realize that they will change with the size and complexity of a particular project. The implication
is that an evident lack of practical experience in the field suggests that there is a need to create a “road-map” style guide to steer inexperienced users into making the right choices. This is especially apparent in small and medium-sized organizations (Clegg et al., 2010, p. 194) Sometimes, in a haste to achieve sizable results rapidly, the small pilot phase is omitted; instead, massive training takes place with the expectation that the troops can then simultaneously advance on all fronts. This does not work (Chou et al., 2005; Spender, 2006). A much better alternative uses a small number of pilot projects, with the scope of each project carefully defined. Perhaps the most common error in quality projects is the failure to limit their scope to a digestible bite. People quickly grow tired of the projects that seem to take forever.

Reliance on specific techniques as the primary means of achieving quality goals. Examples of such techniques are the statistical process control, quality cost, quality circles, quality function deployment, etc. All of these are valuable and often necessary, but they are the techniques that address only specific parts of the problem. The technology of quality, particularly statistical methodology, can be mystifying to some people. Many benefits are possible if we emphasize simple language and graphical techniques.

Clegg et al. (2010, p. 195) show that many quality tools are not known or understood well and that training has an important role in raising their awareness and making sure they are used correctly. In general, the initial definition of the quality problem and the classification and measurement of a program’s success are both highly subjective and difficult issues. These findings imply that more standardization of practice across the profession would be beneficial. The study also implies that they are many points still to be addressed if quality management is to maximize its full potential; many of these revolve around the accurate measurement and selection of programs, the comparison and declaration of delivered benefits and the coast of resources consumed to achieve them. Additional training needs to focus on the initial understanding of tools, the endorsement of classical critical success factors, and the subsequent deployment of them within a suitable methodological framework. Training programs fail if they do not result in a change of behaviour. Applying these lessons can help to prevent such failures.

Necessity to provide training at the time it will be used. In too many cases, training is given to a large number of personnel who have little or no opportunity to use it until many months later. A much better approach schedules training for each group at the time it is needed (Nanda, 2009).

Analyses of literature show that for quality improvement programs, especially those associated with ISO 9000 standard requirements, more useful is explicit knowledge. Very important for a successful implementation of quality programs are the learning management leadership, involvement of employees, setting of objectives and planning, infrastructure, development and improvement of learning process, measurement of learning performance. A seven-phase knowledge management process is identified through literature analysis as the basis for a successful preparation and implementation of quality programs (Table 1).
**Table 1. Knowledge management process for the implementation of quality programs**

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<thead>
<tr>
<th>No.</th>
<th>Process phases</th>
<th>Necessary activities</th>
<th>Indicators for control and measurement of outputs</th>
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<tbody>
<tr>
<td>1</td>
<td>The investigation of users’ needs and expectations</td>
<td>The internal marketing with the consciousness of organizational commitment enhances users’ satisfaction with encouraging an effective dissemination and application of knowledge. The building of a two-way communication channel and the internal marketing of users’ needs and expectations</td>
<td>Determines how well the organization determines the needs and expectations of users with the aim of formulating the learning management strategy</td>
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<tr>
<td>2</td>
<td>Learning management strategy development</td>
<td>The formulation of knowledge management strategy. The involvement of leaders in planning, communication and commitment of the quality program</td>
<td>Examines how well the organization establishes its knowledge management strategy and determines knowledge management objectives. Determines the key aspects of learning management leaders’ responsibilities in respect of how leaders set goals and target performances and communicate with all levels of the related learning management personnel</td>
</tr>
<tr>
<td>3</td>
<td>Planning for learning</td>
<td>Setting the objectives of the quality program and formulating the action plans to guide the implementation at relevant levels in the organization</td>
<td>Determines how well the organization establishes the learning management objectives and how well it converts its objectives into action plans</td>
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<tr>
<td>4</td>
<td>Users and knowledge supplier relationship</td>
<td>Building close linkages with customers and establishing networks with knowledge suppliers</td>
<td>Examines how well the organization determines requirements and expectations of users and keeps pace with their expectation change, how it builds partnership with knowledge suppliers</td>
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<tr>
<td>5</td>
<td>Establishing the infrastructure for learning</td>
<td>Designing and improving workplace for the learning process. Establishing infrastructure for data collection and assessment performance</td>
<td>Determines how well the organization ensures the quality and availability of needed knowledge for internal customers and systematically integrates data and information for tracking the daily operation of learning performance</td>
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<th>Management of the learning process</th>
<th>Development and improvement of the learning process</th>
<th>Determines how well the organization formulates the people-oriented knowledge processes for conversion between individual knowledge and organizational knowledge to enhance continuous learning at relevant levels</th>
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<td>6.</td>
<td>Learning performance (focusing on results and creating competitiveness)</td>
<td>Measurement of learning performance</td>
<td>Determines how well the organization evaluates the learning process performance and uses the evaluation results to set priorities and targets improving the learning process</td>
</tr>
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</table>

The process is implemented in sequence for the development of a quality program in an organization. The internal customers are the final arbiters of how well the organizations implement the quality program. The organizations may focus on a systematical communication with the internal customers and act quickly to meet their requirements. An organization’s quality program success depends increasingly on the leadership. The leaders may act as role models though their ethical behaviour and personal involvement in planning, communication, and coaching (Lo and Chin, 2009, p. 457). The ongoing quality program implementation strategy development involves the performance goals and action plans that reflect the importance of the quality improvement activities. It is necessary to understand the necessity of the participation of line managers in the planning and design of training. Without this participation, training is technique-oriented rather than problem- and results-oriented. Establishing the infrastructure for learning provides the foundation to support the alignment of goals to satisfy the internal customer’s needs and expectations and the implementation of the program on all organizational levels. A continuous development and improvement of the learning process helps organizations to communicate customers’ requirements, to monitor the actual knowledge management performance, and to make adjustments in prioritizing and reallocating resources.

Very important for a successful implementation of the quality program is the performance measuring process. A well-structured performance measuring process provides a linkage between strategies and actions. The links are established by the performance goals developed to encourage employees to meet the organization’s objectives and facilitate quality learning by incorporating a goal-setting feedback as an essential component of the system.

**Conclusions**

An increasing number of organizations have adopted quality management as a means to achieve their strategic objectives, to improve productivity and competitiveness, and it is necessary to teach the em-
ployees quality discipline. However, the literature reports a mixed success of quality management programs. The findings suggest that for a quality program to be successful, the organization must have the commitment to learning and adopt a supportive knowledge management process flexible enough to meet the changing needs of the business environment.

Very important for the successful planning and implementing the quality program is how well the organization determines the needs and expectations of users with the aim of formulating the learning management strategy. Very useful for this purpose is the involvement of the organization members. Being satisfied with knowledge management initiatives, organization members will voluntarily participate in diverse knowledge processes. Attention is growing now to focusing on the organization member satisfaction with knowledge management as the indicator of the knowledge management performance.

The successful implementation of a the quality management system according to 9000 standards requires an appropriate program formulation. The ISO 9001:2008 standard explicitly requires that all processes and procedures be established, documented, implemented, and maintained. For this purpose, very useful is explicit knowledge. Explicit knowledge refers to the knowledge that is recognized and embodied in various organizational routines, such as manuals, procedures, instructions, standards, protocols, etc. This type of knowledge can be easily acquired and transferred. For quality management programs and quality models, more useful and more popular is explicit knowledge.

The success of an organization’s quality program increasingly depends on the leadership. Knowledge management leaders may act as role models through their ethical behaviour and personal involvements in planning, communication and coaching. When the upper management spends time on quality activities, it provides the evident leadership that inspires others to do their share.

The main obstacles to implementing a successful quality program are also the lack of a necessary infrastructure for learning, reliance only on the lecture method of training or only on specific techniques as the primary means of achieving quality goals, underestimating the skepticism about the “new quality program”.

The seven-phase process has been identified through analysis as the basis for a successful preparation and implementation of quality programs.

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Reikšminiai žodžiai: kokybės vadyba, žinių vadyba, kokybės programas, ISO 9000 standartai.