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A FRAMEWORK FOR BUILDING A LEARNING ORGANIZATION THROUGH ISO 9000 REQUIREMENTS

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Abstract

The objective of this paper is to develop a framework that integrates the concepts of organization learning, organization memory/ knowledge management, and total quality management to build an environment and culture of organization learning. The paper starts by describing the different aspects of the learning process, and the definition and requirements of an OM/KM. A model for OM/KM build-up life cycle is constructed that supports different learning methods. The framework is then presented that incorporates all components related to achieving a learning organization. To create learning organization processes, quality teams must be elevated successively to knowledge teams, then to innovation teams through creative thinking practices. This progression is depicted along two dimensions: technology needed to store, distribute, and use of information and knowledge; and data transformations from data to information, to knowledge, to intelligent, and eventually to innovation. Finally, the article provides recommendations to supplement the ISO9000 documentation that would assist in building a learning organization.

Keywords: Knowledge management, organization learning, organization memory, total quality management, ISO9000 certification, knowledge verification and validation, knowledge and innovation teams

Introduction and the Basic Approach

This research follows an integrated multidisciplinary approach of the various fields that deal with the learning process. The objective of the paper is to develop a framework for building a learning organization and formulate specific recommendations on how ISO 9000 could be augmented to achieve such an objective. The paper integrates organization learning, knowledge management/ organization memory, and IS9000, with total quality management (TQM) teams as a mean to achieving a learning organization. ISO9000 standard is considered for possible extensions to incorporate principles of organizational learning and organizational memory/knowledge management. ISO9000 is selected because of its wide spread and use. Also, its general guidelines allow flexibility in accommodating different concepts and methods. TQM component is deemed relevant because many organizations implement quality teams to generated quality ideas to cut costs and improve process productivity. This article deals with learning at three levels in a bottom-up mechanism for building a learning organization: individuals, teams, and the organization. Figure 1 below demonstrates this integrated approach. The approach distinguishes between organizational learning and learning organization. The first one constitutes the culture and environment, while the latter one refers to the processes that make the organization a continuous learning one. The feedback insures that the environment and culture of organizational learning is updated and modified so it will continue to lead to the learning organization.

What Is Learning and Why We Learn: the Individual Level?

Learning is defined in the dictionary of American Heritage College as "the act, process, or experience of gaining knowledge or skill." Learning is a dynamic complex process. And as Schein explained, "Learning and the change that inevitably accompanies it, is a complex process, often less successful than we would like it to be, a source of joy when it works, but a source of pain and tension when it doesn't." (Schein, 1994) Learning is acquiring new perspectives, new experiences, and building new methods of doing old things. We learn to be more productive and efficient in doing our job; we learn to avoid future mistakes. All types of learning and changes begin with some form of dissatisfaction or frustration, generated by information that disconfirms our

expectations or aspirations. (Schein, 1997) Humans use trial and error, and elaborate feedback processes that are all the very essence of learning. But we excel at learning because of the desire and commitment to learn. Therefore, learning is not an end by itself, but rather a mean to achieving an objective. It should add a value to the lives of individuals; it should make a difference in their lives.
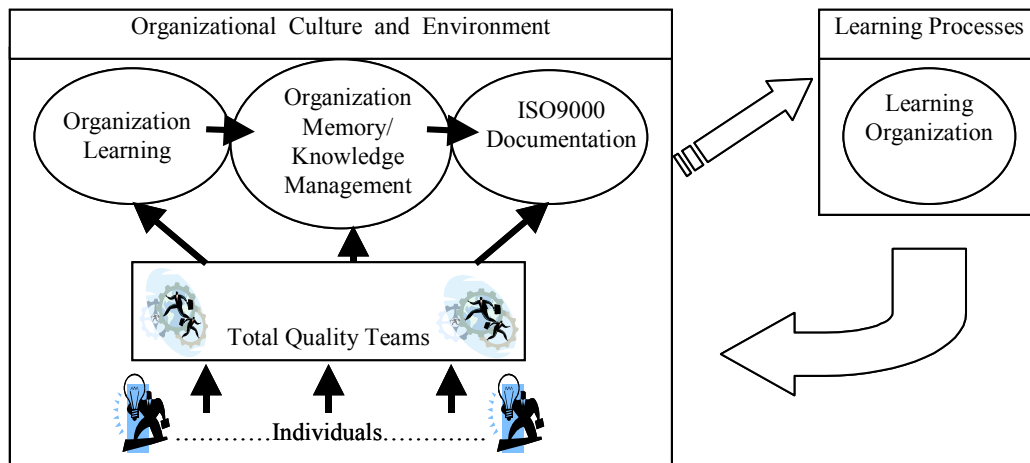

Figure 1. The Basic Approach for Building the Framework

Organizational Learning (OL): The Team and Organizational Levels

Many definitions exist for organizational learning (OL). Each definition reflects different aspects of both terms: Organization and Learning. Though learning as individuals is important, learning as an organization is becoming the pressing issue, and is surely more difficult to be accomplished. One definition is viewing OL as the capacity or processes within an organization, to maintain and improve performance based on experience. (Nevis, et al., 1997)

The difference between learning as individuals and learning as an organization is well explained by a quote from **http://www.fieldbook.com** web site:

> a "learning organization" is an organization focused on marrying the development of every member with superior performance in service of that organization's purpose. The more the organization's members increase their ability to learn collaboratively **(team and organization levels)**, the more they can accomplish, the higher their performance, and the more effectively they can hope to change their organization, and the world, for the better. In our work, the practice of organizational learning has been expressed through five lifelong organizational learning disciplines: Systems Thinking, Personal Mastery **(individual level)**, Mental Models, Shared Vision **(organization level)**, and Team Learning **(team level)**. (Emphasis is added)

One study (Jennex and Olfman, 2002) concluded with a modified IS success model of OM/K systems that incorporates the individual and the organization, but did not add teams. This article recognizes teams as the critical link between the individual and the organization in building a learning organization.

Need for OL

With change being the only constant facing organizations in internet times and globalization, learning becomes very important for organizations to survive, to sustain competitive advantage, and to promote innovation. The ability to learn will be the major competitive advantage that some organizations will have over others. (Schein, 1994) For any organization to survive and grow, its rate of learning has to be equal to, or be greater than, the rate of change in the external environment. Another way of looking at OL is that bringing experts and consultants to solve the organization's problem is usually not efficient. Organizations discover that these consultants do not have enough knowledge of the internal situation to be genuinely helpful in translating the ideas into

new practices. (Schein, 1997) The individuals and teams of the organization can better solve the problems and deals with the changes facing them. Finally, with the current state of information economy, consequences of not being a learning organization can be costly.

Types of OL

For the purpose of this paper, three types of OL mechanisms are described below. (Argyrus and Schon 1978) Other forms of learning mechanisms may be found in (Clegg, 1999), such as exploitive learning and exploratory learning. The following classification of OL is deemed more appropriate to the objective of this paper, because it incorporates loops in the learning process. These three types constitute successive levels. At the low level, single loop learning (SLL) occurs when errors are detected and corrected, and firms carry on with their present policies and goals. Such learning does not alter the fundamental nature of organization's activities. This form of adaptive learning is usually straightforward: we identify a problem or a gap between where we are, and where we want to be, and embark to solve the problem and close the gap. At the second level, double loop learning (DLL) takes SLL further. It occurs when the organization is involved in the questioning and modification of the existing norms, policies, procedures, and objectives. DLL involves changing the organization knowledge bases or firm-specific competencies or routines. This form of generative learning comes into play when we discover that identifying a problem or realizing the gap itself is contingent upon learning new ways of perceiving and thinking about solving the problem. It is the process of identifying problems, seeing new possibilities, and changing the routines by which we adapt, or cope with, that require rethinking and redesign. (Schein, 1994) Learning to learn under all conditions and using our learning are the key to making us complete "learning human being." Deutero learning (DL) occurs when an organization learns how to carry out SL and DLL. The first two forms of learning will not occur if organizations are not aware that learning must occur. Awareness of ignorance motivates learning. (Nevis, et al, 1997) Therefore, SLL is concerned with accepting changes without questioning underlying assumptions and core believes, whereas DLL and DL are concerned with the why and how to change the organization. Researchers emphasize DLL as the most important, often missing level of learning, in contrast with SLL, which they have found to be more common in organizations. (Nevis, et al., 1997)

Factors Affecting OL

Different factors affect OL, mainly organization environment, structure, strategy, culture, and technology. The role of culture will be further explained here for its importance and influence on the learning process. The effect of culture on learning is crucial. Schein (1994) states that culture is about sharing mental models – shared ways of how we perceive the world, what mental categories we use for sorting it out, how we emotionally react to what we perceive, and how we put values on things – it is about shared tacit methods supporting the existence of the organization. The culture of an organization is both the consequences of organization's prior experience and learning, and is the bases for its continuous capability to learn. We can see that the organization's capacity to maintain itself and grow, and to continue to act differently in the face of the changing circumstances, depend upon the creation of a set of shared assumptions that can cut across the sub-systems, and that survive in spite of the changes in the individual membership of the sub-systems, i.e. the culture. Without proper culture to stimulate organization learning, organization memory (OM) and knowledge management (KM) build-up leading towards the learning organization will most properly fail even with the presence of a strong IT.

Organization Memory (OM)/Knowledge Management (KM)

OM/KM can be viewed as a system of knowledge and capabilities, that preserves and stores both 'hard' structured data (or document-based data), such as numbers, facts, figures, rules, check lists, forms, tables and diagrams, as well as 'soft' unstructured information (knowledge or experience-shared applications), such as tacit knowledge, experience, expertise, critical incidents, stories, artifacts, perceptions, actions, biases, problem solving, lessons learned, details about strategic decisions, understanding of the historical causes behind common assumptions, believes, and assumptions over time. A broader concept of OM is explained by Ackerman (1994). OM can be retained in six places: individuals, teams, organization culture, organization transformation, organization structure, organization ecology, and external archives. This list should be expanded to include all information repositories such as corporate manuals, databases, and filing systems. Additionally, emails, competitors' actions, and external databases available through the internet could also be included. Finally, ISO9000 documentation could be targeted as a repository of knowledge susceptible to further investigation by this article to improve its role in building the culture and maintaining the processes of the learning organization.

Need for OM/KM

With OM/KM, there will be a system to capture the continuing learning experience of the organization's existing staff. Consequently, when valuable know-how people leave the company, (as a staff reduction policy, death, retirement, getting better offers from competitors, …), no major losses of knowledge will incur. Also an OM/KM will help in taking better decisions, reducing time taken to make decision, cost saving, and assistance with training. (Cahmore and Layll, 1991) In principle, an OM/KM can play two major roles (Reimer, 1996). In one role, it has a passive function and acts as a container of knowledge relevant for the organization - including meta-knowledge, like knowledge about knowledge sources. In the second role, OM/KM is treated as an active system that disseminates knowledge to users whenever they need it to perform their work at the right time and place. Both these roles are integrated in the framework presented in this article.

Relationship between OL and OM/KM

OM/KM plays an important role in OL. As human beings, we remember the past because we have a memory. Without a memory, learning is impossible. Similarly, as organizations exhibit the characteristics of information processing, they should incorporate some sort of memory. As Ackerman stated that if an organization learns, then the result of learning should be available for later use. (Ackerman, 1994) Even if the culture exist for the creation of organization learning environment, without OM/KM, learning organization processes will not be maintained

Role of Information Technology (IT)

Information technology and systems play a major role in setting the framework, as one study concluded. (Jennex and Olfman, 2002) The high speed in technological development in Information System (IS), which is reflected in the availability of appropriate software models and the expanded computer and network capabilities have made it possible for IS to act as support for learning in organizations. The use of IS and IT to manage OM improves precision, recall, completeness, feedback and review far better than the human components. Various information technologies are used as tools to capture, preserve, sort, and interpret OM, including web-based internet / intranet, e-mail, document management systems, groupware applications, corporate databases, and applications of expert system and knowledge-based system. The most current technology supporting OM/KM is enterprise content management (ECM), which integrates structured and unstructured information to build OM/KM, and supported by workflow management component.

IT is divided into two components: network infrastructure where nodes are located conveniently for knowledge capture and distribution (including wired and wireless networks), and information architecture for extracting, indexing, classifying, storing (centralized and distributed) knowledge. The role of IT should not be overemphasized, however. It should be balanced with culture and human factors. At the same time, the information economy is creating a new type of workers called knowledge worker (KW). Most current textbooks in MIS identify these knowledge workers as a new layer of the organizational hierarchy (OH). To meet the requirements of this article, KW are identified as a vertical cut of the organizational hierarchy rather a horizontal cut. For every level of the OH, part of the human resources should be classified as KW. These KW group is also depicted as a special case of a pyramid: the trapezium, meaning more KW at lower levels and less at higher levels.

Building an OM/KM

Almost all research papers discuss OM and Knowledge Management (KM) as separate issues. Researchers have dealt with the subject as two distinct disciplines. For example, one study suggested the use of OM to describe the physical location and IS used to store knowledge (Jennex and Olfman, 2002). In our opinion, however, both could be used interchangeably in their broader context. Knowledge can be defined in different terms. It is a high value-added form of information with context, insight, experience and synthesis. It is an intellectual asset; data in databases, information in manuals and knowledge in peoples' head, which can add a substantial value if properly used. Such definitions and others are similar to the 'hard' and 'soft' components of an OM. (Nevis, et al., 1997) It also refers to the assimilation and utilization of knowledge process as OM. Advanced KM requires what is called an enterprise or corporate memory, which is the central repository of all knowledge relevant for an organization.

One of the objectives of KM, as explained by Wiig (1997), is to make the enterprise act as intelligently as possible to serve its viability and overall success. This meets the objective of an OM. Hence by discussing the building an OM, we will be trying to manage knowledge through the organization. Knowledge, then, is an important resource for the organization. It has some

properties that are present in almost all other resources used in the company. But some of the most important characteristics that set knowledge apart from the other resources are:

- Knowledge is intangible, and difficult to measure.
- Knowledge is volatile, that is, it can 'disappear over night.
- Knowledge is most of the time, embodied in agents with wills.
- Knowledge has wide-ranging impacts in organization.
- Knowledge cannot be bought on the market at any time; it often has long lead-time.

However, other advantageous characteristics are:

- Knowledge is 'not consumed' in process, it some times increases through use.
- Knowledge is 'non-rival'; different processes can use it simultaneously.

At the same time, this resource is to be defined at the right time, available at the right place, present in the right shape, satisfies the quality requirements and obtained at the lowest possible cost. (Wiig, et al, 1997) Taking these characteristics into consideration, and trying to achieve the above requirements in building an OM, it is important to have an approach that ensures the integration of various knowledge sources into the OM. Such integration causes considerable added value, because it avoids redundancy and follow-up on problems.

Context problem and knowledge interpretation may be problematic as context changes because of time elapsed between the storage of 'memories' and their access. Capturing, extracting, classifying, indexing, and storing knowledge may be hard, and thus will be difficult to retrieve subsequently. Another complexity factor is knowledge sharing. Knowledge sharing occurs when people genuinely are interested in helping one an other develop new capabilities for action; that is about creating the learning process. Encouraging people to share information/knowledge to be stored in an OM may be a difficult task, since individuals and organizations may not desire to give up valuable information for the fear of losing their power and competitive edge, respectively. (Cashmore and Layll, 1991) Therefore, a paradigm shift in organizations is needed from knowledge hiding to knowledge sharing for OM-KM building to succeed. The use of OM/KM adds to the cost of both IT infrastructure (mainly networks nodes and workstations) and IS architecture (mainly KM software and knowledge integration of various resources, extraction or relevant knowledge, and knowledge access from anywhere and everywhere).

OL/OM Modeling

A two-part model is constructed. The first part is related to the task of true transformation in the way individuals and teams in an organization perceive their roles. It mainly has to do with employees, individually and in teams, acting as a key element in the organization and enablers of any action to be taken. The second part has to do with the management to have insight of the inherent capabilities of employees, and to have a collective vision focusing on all activities and processes, not only the results.

In managing this transformation and preparing the culture for organization learning, we need to:

- Change the idea of power concentration and top-down control – that is reduction of the hierarchical levels and decentralization of authority/leadership.
- Change the traditional strategy formation – all employees at all levels are to be involved.
- Change the quantitative performance measurements, or at least adding qualitative measurements.
- Adding slack – that is providing permission and time for people to learn and interact.
- Building work groups or teams, with the ultimate objective of having a network of human beings working collectively.
- Emphasis on empowering employees and providing incentives.
- Conduct awareness campaign on innovation and creativity thinking processes
- Establish individual and team profiles using available creative thinking methods: Myers-Briggs Type Indicator (MBTI(r)) **http://www.myersbriggs.org** and Herrmann Brain Dominance Instrument (HBDI) **http://www.hbdi.com**

This all will lead to the enhancements of the capacity of people to work more productively. Its goal is the development of the human resources at all levels, as the major resource to manage all other resources.

The second part is related to the tools and methods that aim at developing an environment for an organizational learning system that leads to building an organizational memory/knowledge management. The suggested model is depicted in Figure 2 below:
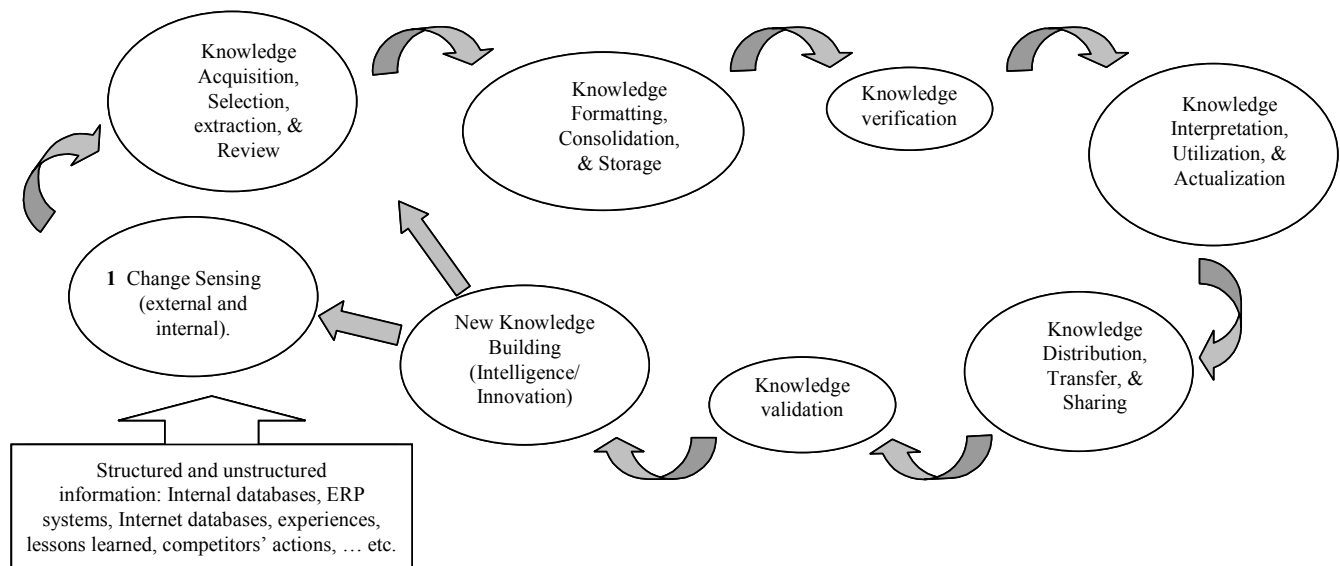
Figure 2. Knowledge Management/Organization Memory Build-Up Life Cycle

The underlying assumptions behind this model are:

–   All the knowledge used and created for all quality elements is integrated and made available; it acts as a supportive system for all activities.
–   Single-Loop Learning, Double-Loop Learning and Deutero Learning are all included in the model.
–   If an organization is using a workflow management system, the KM/OM build-up life cycle steps should be incorporated with the workflow directly or through the use of intelligent software agent.
–   We borrowed the concept of verification (building the right system) and validation (building the right system) from software engineering and incorporate it the model.

The objective in the first step, Change Sensing (externally and internally), is to obtain continuous input and feedback from external and internal environments, and have a continuous flow of new ideas, learning from organization's experience and from the experiences of best practices of other organizations worldwide. This step will provide durability and sustainability. It will help the organization to become flexible enough not only to respond, but also to anticipate internal and external changes in a much competitive style. The second step, Knowledge Acquisition, Selection and Review is to make scanning of all available knowledge to decide on what to preserve for the next step. The media for the third step, Knowledge Formatting, Consolidation, and Storage, is proposed to be a hybrid model of the different tools currently used to preserve knowledge that is a multimedia of computer-based approach and human-centered approach. The basic problem with the first one is the content-rich, context-poor of stored knowledge. In human-centered approach, knowledge is volatile and its storage is linked to the wills of those people involved. A mix between people and technology is seen to be the right solution.   The next step is knowledge verification. Knowledge verification will check knowledge against the source, collection medium, and congruence with existing knowledge.

The fifth step, Knowledge Distribution, Transfer, and Sharing, ensures that knowledge is available when needed. It can be viewed as Just-In-Time Knowledge Delivery. It is accomplished through an integrated knowledge network through computer-based solution linked with hypermedia technology, and enhanced with a network of people. Another related function to this step is the people rotation programs at all levels of the organization. The sixth step, Knowledge Interpretation, Utilization and Actualization, is to digest and draw the correct conclusions about available knowledge. The following step in knowledge validation. Knowledge validation will ensure the proper application of knowledge before adding it to the knowledge base. The last step, New Knowledge Building / Intelligence/ Innovation, is the end result of all previous ones. It can't be obtained unless all previous steps are correctly implemented.

Framework for Achieving a Learning Organization

The framework, as shown in Figure 3, culminates the discussions thus far and illustrates the framework of this research with processes and stages needed to achieve a learning organization.
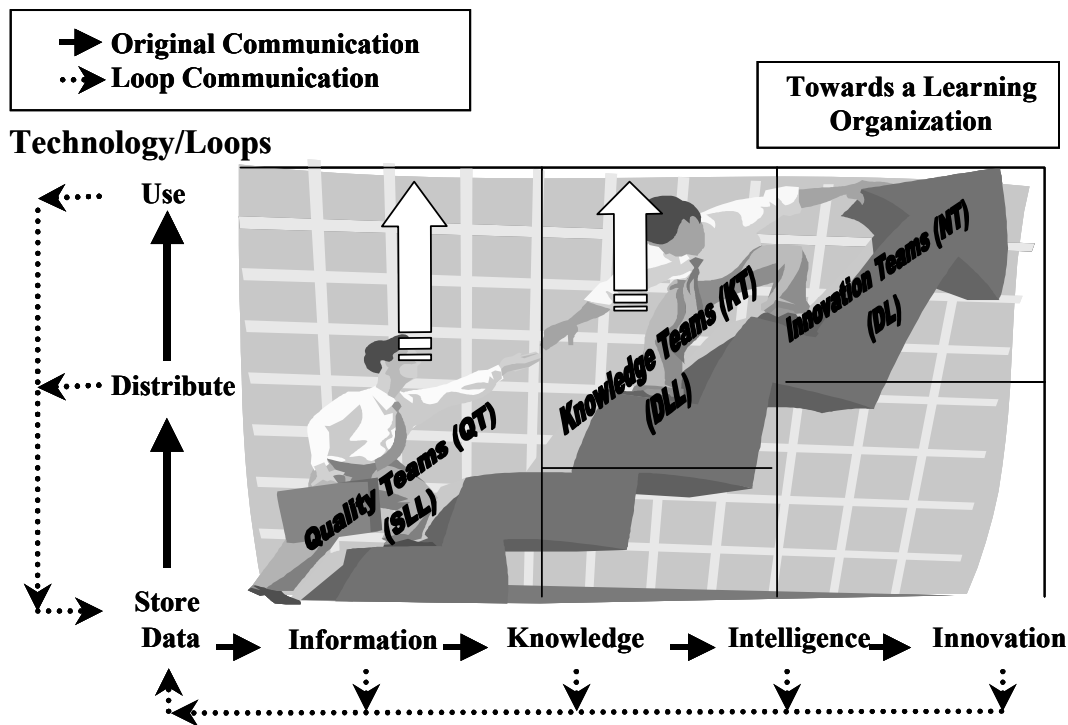

**Figure 3. Achieving a Learning Organization with Technology and
Data Transformation Coupled with Loops and Team Structures**

The following points are the salient features of the framework:

- Technology and data transformation dimensions and build-in loop structures. Technology helps in the storage, dissemination, and use of data/information/knowledge/ intelligence/innovation through databases, networks (intranet and Internet), and appropriate information systems (IS). Technology is critical for the sharing and dissemination of knowledge for virtual teams and inter-organization teams. Also, technology is needed to computerize ISO9000 documentation for ease of maintenance and update, as well as scanning the documentation for knowledge extracting and access. The loop is used to verify and validate knowledge use and the transformation of tacit knowledge to hard knowledge, if possible and feasible. Since a knowledgeable organization practicing SL is not learning organization, the loops will assist organizations to move from lower level teams to higher level teams. The loop component is not included in previous models on OM/KM, including the one proposed by Jennex and Olfman (2002). Data transformation is needed to move organizations closer to a learning organization through intelligent and innovative use of knowledge and information.

- The ladder represents the OM/KM build-up life cycle, which was depicted in Figure 2. New knowledge has always to be sensed and adapted. Consequently, the organization can generate new ideas and new ways of thinking through intelligence and innovation. These ideas are generated and communicated bottom-up approach and implemented top-down manner. To create a culture of organization learning, all levels of management must support and practice the transformation of an organization attitude from hiding of information and knowledge to sharing it.

- Team types. Three types of teams are referenced in this figure. QTs practice SL, while KTs perform DLL. With continuous practice of DLL and training on creative thinking, KT will be elevated to NTs. The progression of quality teams to knowledge teams and then to innovation teams require the organization to move along the two dimensions in a proportionate manner. Eventually, each team will perform some activities related to the generation of quality, knowledge, and innovation ideas. The dominant activity of the three will be determined by the nature of the team's functions, ie functional/cross-functional

teams, management/non-management teams, and intra- inter-organization teams involving customers and suppliers. Achieving the final level of innovation teams requires specific measurements and subsequent training on creative thinking, such as those supported by the two common methodologies: Myers-Briggs Type Indicator (MBTI(r)) and Herrmann Brain Dominance Instrument (HBDI) mentioned earlier. This paper recommends the use of these techniques to capitalize on individual capabilities and improve team operations, for the purpose of achieving a learning organization as presented in this paper. Since not all knowledge can be captured, classified, indexed and stored, face-to-face meetings among team members still could be used to share such tacit knowledge.

Further resources on organizational learning and knowledge management could be found at **http://www.brint.com/OrgLrng.htm** and **http://www.kmbook.com**.

Role of Total Quality Management (TQM)

Detailed discussion of the techniques of TQM is beyond the scope of this paper. The concept of total quality teams will be incorporated in this paper as a mean to sharing experiences and building organization memory and knowledge management databases through the life cycle presented in Figure 2. This will balance the ISO 9000 process improvement with the TQM people improvement thrusts. Organization may implement a scaled-down version of TQM using knowledge teams (KT) only to target specific processes for OM/KM improvement, as opposed to an organization-wide TQM quality teams (QT) with designated KT within it. Using Figure 3 as a guideline, QT will be close to the bottom steps and KT will be close to the middle of the steps, as indicated on the chart. Functional/cross functional teams and horizontal/vertical teams could be established to share experiences, synthesize these experiences, and arrive at an intelligent use of the resulted body of knowledge. Organization should devise a mechanism to effectuate change by using knowledge and intelligence accumulated in OM/KM databases, such as the use of a rewarding system. The role of top and middle management to establish this mechanism is very critical. For further discussions of issues related to TQM/ISO9000 relationships, see (Joubert, 1998). For the role of TQM in organizational change, see (Ho, 1999). For more detailed information on TQM, Learning Organizations, Culture, and HRD, see (Crick, 1996).

ISO9000 Family Objective

The international standard for quality, ISO9000 family is developed by the International Organization of Standardization to provide a "generic core of a quality system standard applicable to a broad range of industrial and economic sectors." (**http://www.iso.org/iso/en/ISOOnline.frontpage**) The need for such a standard arises to satisfy customer's needs in an increased global competitive market. Therefore, the need for ISO9000 as a response to the global competition in the market is, in a way, similar to the need for learning, as individuals, teams, and collectively in organizations. The purpose of the ISO9000 family is to unify the quality terms and definitions used by industrialized nations.

Such an objective concentrates on the quality of the product/service, however, it does not meet the requirements for building a organizational learning environment. Or, at least, it does not provide an environment that enhances the building of an organizational memory/knowledge management system. Since the standard's objective is the "quality of the product/service" of the organization, then the standard is far away from the objective of an organizational learning system. The latter element focuses on the quality of the human beings in the organization, as measured by their ability to learn and respond to changes collectively. We can expand this further by emphasizing the quality of the relationships between individuals in the organization. So the objective of an organizational learning is much broader than that of just building a quality system. The emphasis nowadays is on the intellectual capital as a basic economic resource. People are not considered as just another resource, but as the prime factor of concern to management. (Schein, 1994)

People are the organization's principal enablers or disablers of change. The need the capacity of people to learn and respond effectively to whatever happens is achieved by instilling continuous learning mindset, aiming at sustaining high performance. Within the same context, making people knowledgeable bring innovation and continued ability to create and deliver products/service of the highest quality. (Wiig, 1997) This is based on the concept of "economics of ideas" that the economists wrote about, where almost the unlimited potentials for growth and success that new innovations and knowledge-based products make possible. In the knowledge society we are entering, the new emphasis and explicit dependence is on adding value to product/service by application of direct or embedded human expertise – knowledge. The resulted new paradigm is a significant change from providing value by relying on natural resources or operational efficiency, as was the case in previous eras. The role of people is better explained through the history of society transformations from the natural resource economics, to industrial revolution, to information revolution, and now to knowledge revolution. This is reflected in that learning organizations see that

their employees are the fundamental capability behind their whole existence and success instead of being a replaceable commodity.

One point to mention here is that by the quality of human beings is not measured by their IQ, or any other traditional way of measuring quantitatively the performance of people. Tools and methods for measuring the ability and quality of people as "collectively good learners" are not yet developed. A learning organization's knowledge IQ measurement needs to be developed as well. Finally, ISO9000 is a quality system based on traditional quality control theory, identifying elements such as design control, supplier control, process control, inspection and management of training, to achieve quality results for customers. So quality is ensured through control and feedback. It includes the idea of continuous improvement of the quality system through corrective action. This enhances mainly SLL. It provides a mechanism to store and use information, but not knowledge. It doesn't provide methods and loops required to learn new knowledge for DLL.

ISO9000 Implementation

In ISO9000, the implementation of the requirements is left to the organization depending on its particularities. ISO9000 is independent of any specific industrial or economic sector; it only provides guidelines for quality management and general requirements for quality assurance system. It describes what the quality system elements are, but not how a specific organization implements these elements.

The general focus in implementing the ISO9000 is to:

– Document what you say you do,
– Do what you say you do, and
– Check and correct what you do.

Since the needs of organizations vary, the design and implementation of the quality system is influenced by the particular objectives, products, services and practices of the organization. The question we may ask ourselves: why an ISO implementation fails or succeeds? Is it attributed to the fact that it provides standards with general guidelines or is it dependent on the perspectives of people applying the standard? The answer to this question is very critical for the objective of this paper and it may need further research to come with definitive conclusions. However, current practices and experiences of the authors lead to the first factor rather than the second one. This actually supports the thrust of the learning organization as dependent on culture and human element.

To carry on the discussion mentioned earlier, the flexibility in implementing the standard is one factor behind its fast and worldwide spread. This is due to the fact that as a standard, it can only require the basic minimum. It provides a framework for a quality system that meets these minimum requirements. As a result, many organizations look at the standard registration and certification as the objective and an end-result by itself. For the ISO9000 to lead to a learning organization, it must be viewed as a strategic option that has long-range implications for the organization.

ISO9000 Benefits

The ISO9000 was mandated to promote the development of international standards, and to facilitate the exchange of goods and services worldwide. Being adopted by the European Community (EC), and a worldwide emphasis on the quality issue; the standard has become universally accepted. Different reasons for implementing a quality system that conforms to the standard are: to increase market share, to increase customer satisfaction, …etc. However, the internal benefits that can be realized from implementing and developing a well-documented quality system can far overweight the external pressures. Most organizations found that the system led to improved quality, increased productivity, reduction in non-conformities, and increase of on-time deliveries and provided customer satisfaction, all of which led to increased profit. However, these benefits constitute only a small part of the total benefits of having learning as a continuous process in the organization.

Does ISO9000 provide an environment or infrastructure for building an organizational learning environment? In fact, misuse of ISO certification may hinder organizational learning, especially if ISO transforms the organization into a bureaucratic one. As explained earlier, learning and learning collectively are not easy tasks. Learning as individuals requires personal transformation and basic shift on how we think and interact. The commitment to build a learning organization goes beyond people's typical "commitment to their organization." Learning is required to make transformational changes – changes in the basic assumptions that organizations need in today's fast moving, often chaotic environment. And building a learning organization demands a shift that goes all the way to the core of the organizations' cultures and its fundamental and basic operations.

Recommendations for Supplementing ISO 9000 Documentation

Role of Management

In terms of management responsibilities, the standard doesn't require a basic transformation in their practices. Besides the centralized role of management and their exhaustive controlling role in almost every activity are major drawbacks. This generally leads to having a bureaucratic organization, and can hinder any possible innovation that may arise. A more distributed approach to managing processes is recommended. For each documented process, an owner management should be designated that will be responsible for accumulating experiences and knowledge that later will be used as an input to OM/KM databases. Owners of processes may form a quality/knowledge team to review intra- and inter-process links to improve the overall organizational effectiveness and learning. An example of inter-process team is a team consisting of representatives of production and quality department in a manufacturing set-up. An example of a management level team is a team consisting of marketing, production, accounting, and human resources managers. An example of inter-process feedback is between purchasing and production from one side and marketing forecasts form the other side. For example, the latter one should be adjusted according to plant capacity and raw material ordering and availability.

Role of Employees

The role of employees is not recognized or emphasized as the major resource to manage and improve activities and sub-activities. For each process, a quality/knowledge team should be established. The team will meet to suggest methods of continuous improvement and to move the team from conducting the function of a quality team to the function of a knowledge team. Team should comprise of employees performing the sub-tasks/sub-activities for a particular process. Specific loops within the documented process may be identified that are necessary to improve the knowledge and learning of team members.

Responding to Changes

The standard doesn't specify how to react to changes, but once a change is targeted, then it can be analyzed and managed. An incentive and rewarding program should be established to encourage improvements and intelligent and innovative use of knowledge. Some form of metrics may also be developed to measure progress and improvement, such as cost and time.

Role of Documentation

Document control is one of the main concerns of the standard. Again, the way it is handled might lead to enhance bureaucratic methods in the organization. Almost every quality element in the standard starts with 'to establish and document.' Of course such phrasing doesn't specify what type of data, information, or knowledge is to be documented, nor how will it be documented. The common practice is to document "hard data/information" only through the use of hard-copy manuals or computer software. The way ISO9000 requirements are stated now helps in providing a history of revised procedure, since all documentation should be controlled by a centralized method. This document's role – though limited- can be seen as a basis for building an OM/KM databases. For each documented process, roles for team meetings should be stipulated, knowledge accumulated should be specified, experiences and background of each team member should be stated, and any training requirements to improve the process should be identified. Within each of the documented processes, data/information/knowledge may be transferred between sub-activities and tasks for that particular process. Not each process will have a knowledge component. For knowledge-based processes, loops and roles needed to accumulate knowledge and transfer knowledge to intelligence and innovation could be highlighted, by using traditional flowcharting techniques. For each process, technical terminologies associated with the process should be specified. Employees associated with a particular process should be treated as a team and encouraged to use these terminologies to describe suggestions, ideas, and other related activities to the process. The contents of these supporting documentations may be used later to build a repository of knowledge that covers the whole organization using the concept of enterprise content management (ECM).

Conclusions and Further Research

ISO9000 family can lead to an organizational learning by augmenting its documentation of processes with organizational learning principles, organizational memory/knowledge management techniques, and the principle of quality teams from total quality management. The integration of these disciplines, if properly managed, will hopefully lead to a learning organization. An

organization adopting the learning organization model as presented in this paper will lead a major shift of its strategy form products and markets to processes.

The work presented here in building an organizational learning through an organizational memory/knowledge management is based on the western culture and the western standard ISO9000 family. Most researches in this regard concentrate on technological approach. Other cultures have its own characteristics that can enhance organizational learning that best suits their respective environments. This is particularly more critical in the Gulf countries, where multi-cultural labor force exists. Such area of research has to be explored. Organizations with multi-cultural labor force must take into consideration the human factor for successful development of the learning organization, as described in this paper. In addition, new research is needed on how to use ISO14000 series to improve organization learning and environmental management. Further research is needed on models that measure the maturity level of organization learning. The majority of ISO certified organizations are at the first stage of quality teams. Others are developing knowledge management and business intelligent applications. Currently these applications are directed towards internal processes. However, portal strategies and web service technologies force processes to cross organization boundaries. This new emerging technologies will make the development of a learning organization more difficult, since customers, suppliers and multi-organization cultures must be taken into consideration. New models and framework for this type of environment is needed. Further research is needed on the actual implementation of the framework in a real world scenario. One of the authors will attempt to apply the framework to an organization based on a consulting project that involved standardization of ISO documentation across several organizations belonging to one corporation as part of IT/MIS strategic planning for said corporation. Also, further research is needed on how the framework could be implemented in organizations that did not acquire ISO9000 certificate.

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