

IMPACT ANALYSIS OF QUALITY AWARD PROCESS ON LEARNING
ORGANIZATIONS

by

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ABSTRACT

IMPACT ANALYSIS OF QUALITY AWARD PROCESS ON LEARNING ORGANIZATIONS

The core competency of the most effective organizations is their capacity to learn in an increasingly complex and unpredictable business environment. Assessors play an additional critical role in the Quality Award Process by contributing in their own personal development and in transformation of their organization into a learning organization.

This study has two purposes. First, it aims to explore the individual and organizational learning of the assessors obtained throughout the Quality Award Process. To do so, a survey is carried out to aid management to realize the contribution of this process to the individuals working as assessors. It is clearly observed that assessors benefit from the award process as an effective learning platform. Hence, the organizations should encourage and support their employees to act as assessors for being individually developed and for getting organizational learning by utilizing their experiences.

The second purpose of this study is to develop an instrument to assess the current status of the organizations as being learning organizations. Five organizations are selected, and a survey is carried out to investigate strengths and weaknesses regarding the learning organization characteristics. The result of this study indicates that selected organizations exhibit many characteristics of a learning organization with particular strengths in “Organizational Formation” and “IT Infrastructure” and weaknesses in “Empowerment” and “Learning from Failures and Successes”. This study shows that applying for the Quality Award Process and acting as an assessor in this process have substantial impacts on individual and organizational learning.

ÖZET

KALİTE ÖDÜL SÜRECİNİN ÖĞRENEN KURUMLAR ÜZERİNDEKİ ETKİ ANALİZİ

Gittikçe artarak karmaşıklaşan ve tahmin edilemeyen iş çevresinde, en etkili kurumların temel yetkinliği öğrenmeye olan kapasiteleridir. Kalite ödül sürecinde görev alan değerlendiriciler, kişisel gelişimlerine önemli katkılar sağlarken, kurumlarını da birer “Öğrenen Kuruma” dönüştürmek adına kritik rol oynamaktadırlar.

Bu çalışmanın birinci amacı, kalite ödül sürecinde yer almanın değerlendiricilerin bireysel ve kurumsal öğrenmelerine olan etkisini ortaya çıkarmaktır. Kurumların ödül sürecinde değerlendirici olarak görev yapmanın bireylere kazandırdığı katkıları anlamalarına yardımcı olmak amacıyla bir anket çalışması yapılmıştır. Anket sonuçlarına göre, değerlendiriciler ödül sürecinden etkili bir öğrenme platformu olarak fayda sağlamaktadırlar. Kurumlar değerlendirici olmak isteyen çalışanlarını, hem kendi bireysel gelişimlerini desteklemek, hem de onların tecrübelerinden yararlanıp kurumsal öğrenme edinmek için teşvik etmelidirler.

Bu çalışmanın ikinci amacı, kurumların “Öğrenen Kurum” olup olmadıklarını değerlendirmek adına bir anket geliştirmektir. Hazırlanan anket seçilen beş kuruma gönderilmiştir. Çalışanlarının gözüyle, beş kurum için en güçlü öğrenen kurum unsurları “Kurumsal Yapılanma” ve “Bilişim Teknolojileri Altyapısı”, en zayıf unsurlar ise “Hata ve Başarılardan Öğrenme” ve “Yetkelendirme” olarak bulunmuştur.

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1. INTRODUCTION

1.1. Background

The organizational contributions for award recipients in a Quality Award Process have been investigated earlier. Hendricks and Singhal [1], Eriksson and Hansson [2], Wrolstad and Kreuger [3] compare recipients of quality awards with different control companies. The main conclusion of these studies is that companies that have received a quality award outperform the control companies concerning a number of financial measures. However, little attention has been given to the relationship between Quality Award Process and its added value through the learning experience. Eriksson and Hansson [2] state that the assessors may transfer their knowledge gained through this process to their organizations.

Besides, numerous researchers have attempted to identify various ways for organizations to develop into a learning organization (LO). For example, Senge [4] promotes “The Fifth Discipline” which is composed of five activities to be undertaken in an organization: personal mastery, mental models, shared vision, team learning and system thinking. Bennett and O’Brein [5] suggest “12 key factors that influence an organization’s ability to learn and change”. Goh [6] suggests “core strategic building blocks” for learning in an organization to take place, with organization structure and design, and employees’ skills and competencies as supporting foundations. From the aforementioned approaches, it appears that a LO needs to be developed through the continuous learning of its members individually and collectively.

Quality Award Process (QAP) can make a substantial contribution, within a wider framework of individual and organizational learning of the assessors and their own organizations. Assessors gain and develop individual and organizational learning through the Quality Award Process, and share their experiences with their own organizations and to make a contribution in becoming a learning organization. In other words, the quality award models and associated organizational assessment processes

are critical for the development of a learning organization. In addition, organizations that are performing self-assessment and having applied to the QAP can also possess a high profile of a LO.

The major terms used throughout this study can be defined as:

A Learning Organization is an organization which is skilled at creating, acquiring, and transferring knowledge, and at modifying its behavior to reflect new knowledge and insights [8] and **Learning Organization Characteristics** reflect the capability to continuously acquire, share and utilize knowledge.

Assessors are the individuals who are working voluntarily in the Quality Award Process to assess the participant organizations and give recommendations for selecting the award recipients.

Learning is the way, in which individuals or groups acquire, interpret, reorganize, change or assimilate a related cluster of information, skills, and feelings [7].

Individual Learning is the capacity to build knowledge through individual reflection about external stimuli and sources, and through the personal re-elaboration of individual knowledge and experience in light of interaction with others and the environment[20].

Organizational Learning is defined as the knowledge which is acquired, shared and transferred by employees within an organization, and is embedded in either formal documents or organizational routines, processes, practices and norms [8].

1.2. Purpose of the Study

The primary purpose of this study is to explore the contribution of the QAP to individual and organizational learning through the assessors and quantify and compare the LO maturity levels of their organizations according to a conceptual model

constructed for this study after an extensive literature survey.

The secondary purpose of this study is to compare the learning organization maturity levels of five organizations; each of them are performing self-assessment and four of them have participated in the Quality Award Process. In addition, the strongest and weakest learning organization characteristics will be explored and compared according to the perceptions of the respondent individuals.

1.3. Conceptual Model of the Study

Many model of a learning organization in the related literature are taken as reference for this study. [4], [7].

A conceptual model which enhancing the earlier studies is constructed to be employed in this study. This model proposes five LO features that consist of 16 characteristics. The proposed conceptual model shown in Figure 3.1 has been developed based on a review of literature and preliminary qualitative interviews. Five main features of the conceptual model are Organizational Culture, Human Resources Management, Communication, Knowledge Management, and Performance Measurement.

1.4. Study Questions

In this study, the concepts of Quality Award Process and a learning organization provide a theoretical and practical framework within which an investigation should occur to led the following study questions to be answered.

The study questions are asked in order to analyze the impact of Quality Award Process on individual and organizational learning of the assessors and on transforming their own organizations as a learning organization. The following subsections are summarizing the questions that enable the hypotheses to be formulated.

1.4.1. Study Question 1

How strongly do the organizations, that are performing self-assessment or having applied to quality award before, support QAP?

The organizations that are performing self-assessment or having applied to QAP before are assumed to be more committed to the QAP compared to other organizations. These organizations may support and encourage its members to act as assessors in this process voluntarily.

1.4.2. Study Question 2

What is the expected duration which elapses during each state of the assessor experience time line?

As it will be stated in detail in Chapter 2, assessors experience several assessment steps in QAP which are summarized below. This study aims to identify how much time an assessor spends in each of these assessment steps.

1. Having assessor training
2. Participating in self-assessment activities in their own organization
3. Carrying out individual assessment
4. Participating in a site visit
5. Acting as a lead assessor
6. Acting as an assessor in European Excellence Award Process (EEAP)
7. Acting as a lead assessor in EEAP

1.4.3. Study Question 3

What is the expected preparation time for an organization to apply for QAP after starting to perform self-assessment ?

The ultimate aim of self-assessment is to identify areas for improvement and to initiate action to incorporate these changes while being strategically aware of the business environment and becoming more proactive in regard to that environment. In this regard, self-assessment has an impact on organizational learning [39]. Self-assessment strengthens current practices in organizational performance, facilitates communication around a common set of standards with other businesses, and guides continual organizational learning. In addition to self-assessment, QAP accelerates the organization's improvement efforts by going beyond the internal self-assessment process and introducing a rigorous, objective and external view from the assessors. Therefore this study aims to identify the expected time for an organization to apply for such an award process after starting self-assessment studies in the organization.

1.4.4. Study Question 4

What are the prime motivations of becoming an assessor and continuing to be an assessor?

Individuals voluntarily apply to become assessors for a range of very different reasons. Getting acquainted with the excellence model, understanding the award process, gaining experience how to write the self-assessment document or witnessing the best practices of the applicant institutions as well as identifying areas of improvement are the major challenges to join the assessor pool. It is claimed that the process is an interactive learning environment in which everybody learns from each other.

Four possible reasons of being an assessor are identified as "Individual Learning", "Organizational Learning", "Social Networking" and "Social Responsibility". This study aims to show whether an identified reason plays the dominant role among the others. Once the assessors become experienced, the reasons of continuing this voluntary appointment may change. This study will also try to show whether the prime motivations of becoming an assessor change as they gain experience in their task.

1.4.5. Study Question 5

What are the learning impact of the Quality Award Process assessment steps?

The Quality Award Process assessment steps are “Training”, “Individual assessment”, “Consensus meeting after individual assessment carried out independently”, “Site visits” and “Consensus meeting following the site visits”. This study aims to identify the impact of these assessment steps on individual and organizational learning of the assessors.

1.4.6. Study Question 6

What is the relationship between QAP and individual and organizational learning of the assessors?

There may be a strong relationship between the QAP and learning. Therefore in this study, the impact of QAP on individual and organizational learning of the assessor are analyzed.

1.4.7. Study Question 7

Is there any significant difference between the impact of QAP on individual learning and organizational learning?

For the individual skills and competencies, “Individual Learning Score” and for the organizational contributions, “Organizational Learning Score”, which both show the impact of assessment process on learning will be calculated and compared to each other.

1.4.8. Study Question 8

Is the survey questionnaire reliable and valid for measuring the LO characteristics?

Survey questionnaire concerning the LO characteristics in the conceptual model of this study is a consolidation of the items from the relevant existing studies. Therefore, reliability and validity of the questionnaire will be checked to show the measure of internal consistency in the set of questionnaire items.

1.4.9. Study Question 9

Does performing self-assessment influence the “LO Score”?

As it will be presented in Chapter 3, the survey questionnaire regarding the LO characteristics of the survey will enable “Learning Organization (LO) Scores” to be calculated for each participating organization by averaging the 77 questionnaire items. By this analysis, the study aims to show that the organizations that are performing self-assessment also have significantly higher LO Scores than the other organizations.

1.4.10. Study Question 10

What is the relationships between the LO characteristics and knowledge sharing in an organization? Is there a significant positive relationship?

Knowledge sharing is witnessed as a primary contribution of the QAP, it is at the same time is defined as an important LO characteristics. In this study, it will be explored if there are significant relationships between the other 15 LO characteristic and knowledge sharing.

1.4.11. Study Question 11

What are the strongest and weakest LO characteristics of the targeted organizations? Is there any similar perception among the organizations?

The strongest and weakest LO characteristics will be determined based on the perceptions of the survey respondents from five organizations. Similar patterns will be identified and recommendations will be given on an organizational basis in Chapter 5.

The aforementioned questions are formally expressed as statistical hypotheses in Chapter 3. Consequently, data analysis is carried out for checking the statistical significance and validity in Chapter 4 and Chapter 5.

1.5. Significance of the Study

This study contributes to literature and extends the existing knowledge on QAP and its impact on individual and organizational learning of the assessors and their own organizations. Award process life cycle, assessor experience time line and “Learning Organization Scores” calculated in this study could be used as a “pre-test” for organizations considering to apply for the Quality Award Process and for individuals considering to act as assessors in this process.

1.6. Limitations of the Study

1. This study is based on the data collected by the survey instrument.
2. The characteristics of a LO adopted for this study have been distilled from a number of sources. Such a dissection into five main features has the potential to limit the overall, holistic understanding of the LO and can be construed as a limitation. However such a dissection can also assist in the clarification of those systemic parts of an organization that are particularly strong or need development.
3. The first phase of the survey study is restricted to the Turkish assessors working

for the National and/or European Quality Award Processes. The organizations will be evaluated based on the perceptions of the assessors. There are at most four assessors coming from the same organization. Hence, the sample sizes are not sufficient to develop LO scores for individual institutions. However, the assessors are more likely to be well informed, knowledgeable and interested in the matters raised in the questionnaire. The respondents' knowledge and expertise is an important factor in the interpretation of attitude data.

4. The second phase of the survey is administered only to employees of five targeted organizations. It is possible that different employees within the targeted organizations may have responded with different perceptions regarding the items representing the characteristics of a learning organization.

1.7. Overview of Following Chapters

Chapter 2 presents a literature review that investigates the definition and characteristics of a LO and diagnostic tools for measurement, the Quality Award Process and the roles of assessors.

Chapter 3 presents the conceptual model of the study and summarizes insights from the literature review for value adding. It also describes a methodology built to test the study hypotheses presented.

The statistical data analysis for the first and second phases of the survey are presented in Chapter 4 and 5 respectively. Chapter 6 draws the conclusions and includes further remarks about the study. Finally recommendations for future studies are stated.

2. LITERATURE REVIEW

2.1. Introduction

Chapter 2 reviews the literature to develop the propositions, definitions and tools to investigate the impact of quality award process on learning organizations.

It is organized in four sections. In section 2.2 Quality Award Process, roles of assessors are discussed in Section 2.3. Concept of “a learning organization” is reviewed in Section 2.4 and finally learning organization characteristics and diagnostic tools to measure them in an organization are illustrated in Section 2.5.

These four primary areas are then drawn together to develop a final conceptual model which is presented at the beginning of Chapter 3.

2.2. Quality Award Process

Quality Award Process (QAP) is a unique experience both for the applicant organizations and the assessors. The assessment is based on the EFQM Excellence Model and the RADAR scoring mechanism. In Turkey, this process has started in 1993, one year after the EFQM award process. The objective is to identify the world class performers which have implemented the principles of organizational excellence and demonstrate superior results and thus recognized to be clear role models and inspirational source for other organizations in the highly competitive world.

Assessors are the lifeblood of Quality Award Processes [9]. The dedication and commitment of assessors, who participate voluntarily in this intensive task requiring approximately 100 man hours individually, is a stimulating learning journey [10].

There are several reasons of becoming an assessor and continuing this duty for years. Many volunteers work in this process to learn more about the excellence model

since their own organizations use it for self-assessment or planning to enter an award process and want to learn how to write an appropriate submission document. Whatever the reasons are, organizational support is important and many organizations are also aware of the benefits to their employees of acting as an assessor on such an award process. Hagen [35] states that “award criteria can be used to train and motivate individuals to follow best practices, striving to become leaders in their field or key figures in the world of quality”. Assessors obtain through the assessment process, not only the individual skills or competencies such as leadership, communication skills and holistic view to an organization, but also obtain wider benefits such as management development and organizational learning and share their experience with their own organizations as well as with the participant assessed organizations.

The assessors are selected from an applicant pool of experienced practitioners who are competent in the excellence model. They are managers from all functions and disciplines with a solid background in industry. Because being an assessor is not solely about the practical and technical application of assessing and scoring a submitted document and verifying it through a site visit; but it is a task which requires a balance of excellent personal, interpersonal and operational skills which are listed below [36]:

- Being able to understand different thoughts and beliefs
- Being an effective team member in group studies
- Communicating effectively in both speaking and writing
- Handling conflict positively and creating solutions easily
- Making fair judgments
- Working independently
- Being able to give positive feedback in a constructive manner
- Being open-minded and innovative
- Having ability in analyzing detailed and complex information easily
- Having ability in decision making
- Having ability in translating verbal documents into written outcomes for assessment
- Having ability to view an organization holistically

Apart from the skills and competencies required for being an assessor, there are also a set of other requirements beyond the personal abilities such as:

- Practical experience and knowledge of the content and use of the EFQM Excellence Model
- A career of at least five years in a professional position
- Being over the age of 30
- Having a broad knowledge and experience of management
- Being able to obey the time schedules
- Being able to devote up to 10 days to the assessment process

2.2.1. Quality Award Process Assessment Steps

After the selection of assessors, there is a three day workshop where they receive training in assessment based on EFQM excellence model and scoring on a case study by utilizing RADAR scoring mechanism, as well as they acquire the skills and knowledge to effectively assess an organization as part of a team. This training program is an exceptional opportunity for individuals to get themselves ready for the assessment process. In most situations, those assigned to be on the assessment team have already undertaken the training in previous years. Therefore, most of the assessors are familiar with Quality Award Process criteria, conducting self-assessment, working in consensus groups and applying the assessment criteria on detailed and complex case studies. However, assessors are required to go through training every year since there might be amendments in some of the model criteria. It is also necessary to create a consistency in the assessor's understanding of the criteria, its interpretation and scoring.

After the training, they are allocated to highly focused and experienced teams which are composed of five to eight assessors. Teams' formation also serves as an excellent environment for learning at individual and organizational levels since the assessors are in a unique position for sharing and instructing knowledge. The assessment process enables the team to “develop and use new mental models which support learning and innovation” [36]. The lead assessor, who is an experienced assessor having partici-

pated in an assessment process in previous years, becomes the team leader. The other members of the team will consist of professionals from different backgrounds. Broad range of knowledge and backgrounds among the assessors are encouraged so that assessment teams can have different professions thus different perspectives which lead to the interactive development of new knowledge [36].

As the process of selecting the assessors continues, the candidate organizations submit their required 75 pages “Award Submission Document”, which are then individually assessed and scored by a team of assessors. This step is called “Individual assessment” in which, the submitted documents are assessed for “strengths” and “areas for improvement” and scored on a scale of 1,000 points. Having assessed individually, the team members then comes together to discuss their independent evaluations and a consensus view is reached with a pre-site visit score. This assessment step is called “Consensus meeting after individual assessments”.

Applications scoring in excess of a certain threshold value receive an approximately one week site visit and assessor team checks the validity of the information on the submitted documents and to ensure that the evidence presented matches with the real on-site situations and finally clarifying questions by interviews with the staff on a confidential basis. This step is called “Site visiting” in which it is expected that the organizational members are open and honest in expressing their thoughts to be accurately assessed.

Once the site visiting is over, assessor team reaches a final consensus and prepares their “Final assessment reports” which show key issues and lists of strengths and areas for improvement for each of the nine criteria of EFQM excellence model and contain a scoring profile at criteria level. This last assessment step is called as “Consensus meeting after site visiting”. The best practices witnessed in the applicant organization as strengths as well as the areas of improvement are carefully reported in these reports which are then sent to “award jury” and then the winners are announced in a special award ceremony.

As can be seen from the assessment steps, assessors have a direct role in determining the award recipients. Learning is realized throughout all phases of the process. Preparing the self-assessment report followed by pre-visit and site visit assessments offer invaluable opportunity for both the organization and the assessor team for learning. Besides improving their teamwork skills, assessors also gather invaluable knowledge of best practices for their own company. As pointed out by Kaylan [10], learning is realized through the interactions of assessors within the teams followed by the interactions of team members with the applicant company as well as reflections of observed best practices to their own work environments. Knowledge dissemination continues with the seminars, forums, annual winners' conferences pinpointing best practices and world class applications. If the excellence model is employed effectively, it may be instrumental to boost the competitiveness power and quality of life to turn the whole society ultimately into an inter-organizational learning environment. Kaylan [10] illustrates this as in Figure 2.1

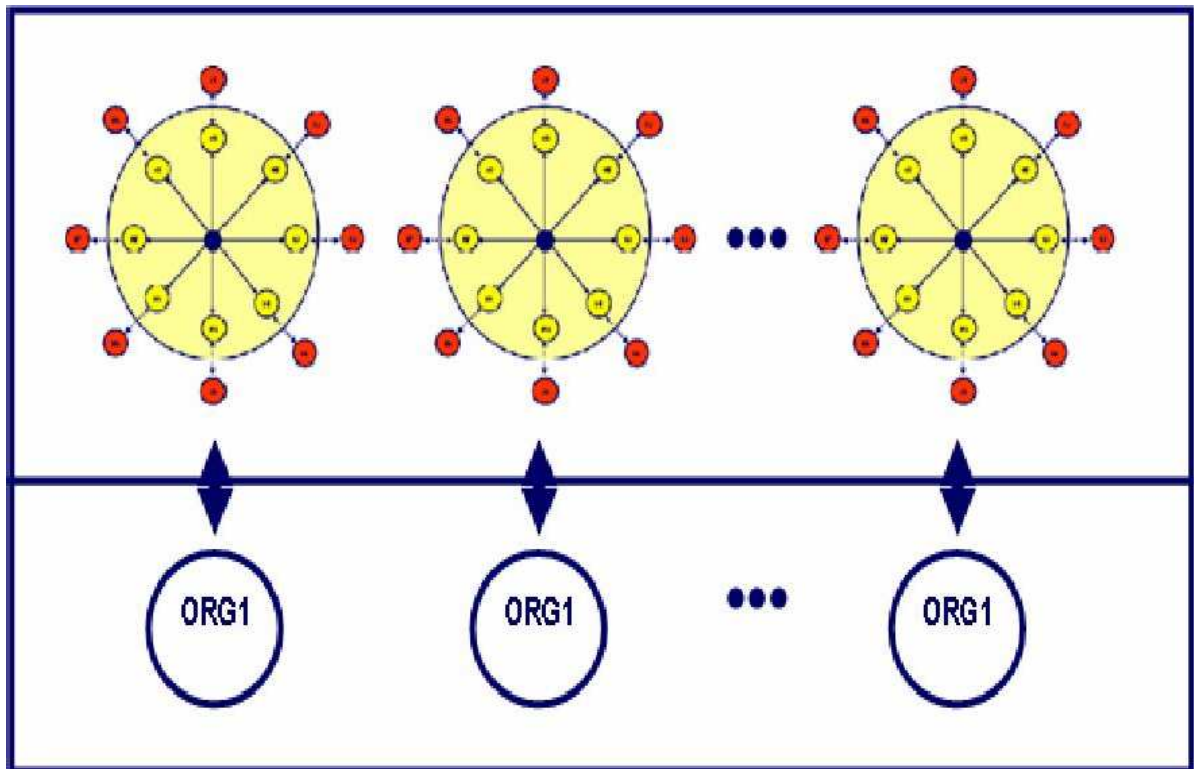


Figure 2.1. Learning Interaction of Organizations (Kaylan, 2007)

As mentioned previously, QAP is a valuable learning experience also for the assessed organizations. An organization performs self-assessment to improve not only

operational processes but also managerial and strategic processes. The ultimate aim of self-assessment is to identify areas for improvement and initiate action to incorporate these changes while being strategically aware of the business environment and becoming more proactive in regard to that environment. In this regard, self-assessment has an impact on organizational learning [36]. Self-assessment strengthens current practices in organizational performance, facilitates communication around a common set of standards with other businesses, and guides continual organizational learning.

QAP accelerates the organization's improvement efforts by going beyond the internal self-assessment process and introducing an objective and external view from the assessors. Assessors need to be aware of putting people at ease, and being open. They must consider how to address issues and questions, seeking out information and communicating the fact that their role ultimately is to help the participant organizations to improve and to create a learning environment. Former applicant organizations consistently report that they gain invaluable benefits from participating in the Quality Award Processes. Such benefits are:

- Learning from the feedback process since each applicant organization receives a written assessment report of its strengths and opportunities for improvement.
- Improving performance by the results of the process since they can help the organization determine its most critical performance measures and improve performance in key areas such as financial performance, customer satisfaction and loyalty, and process outcomes.
- Receiving public recognition for their efforts and achievements.
- Learning from the failures and successes of the other organizations.
- Having ability to benchmarking.
- Observing the best practices, tools and techniques.

2.3. Individual and Organizational Learning of Assessors

In this study, two distinct kinds of 'learning' of the assessors are discussed: individual and organizational. Individual learning is achieved through education, training,

and developmental opportunities that foster individual growth. Organizational learning includes both continuous improvement of existing management practices and adaptation to change by leading to new goals or approaches. Individuals should be aware of the benefits of becoming an assessor by individual learning to themselves and through organizational learning to their own organizations and the assessed organizations.

The experience in QAP is one of the most unique, practical and worthy forms of professional development for the assessors. According to Leonard [36], the individual skills and competencies that the assessors gain through this process is as follows:

- *Communication* by writing reports and giving presentations.
- *Group work* by teamwork and co-operation.
- *Personal* by independence, autonomy and self-assessment.
- *Interpersonal* by mentoring and interviewing.
- *Organizational* by time and project management.
- *Teaching and training* by coaching or peer tutoring.
- *Information gathering* by locating sources and interpretation of data.
- *Problem solving* by problem analysis, creative techniques and decision making.
- *Information technology* by word processing, using databases or e-mail.
- *Entrepreneurship* by taking initiatives and planning.

The entire process of training and working as an assessor involves many hours of work and dedication and the benefits provide invaluable opportunities for organizational learning. Organizational learning has tangible impacts on organizational performance and as found by Leonard [36], QAP results in organizational learning of the assessors. Organizations of the assessors need to be aware of how this impact gained from the assessment process can be strategically directed to the organizational performance and ultimately, developing people contributing to business success as well.

The role of an assessor provides experiencing the best practices and concepts of quality management focusing on the customer and continuous improvement. The process also highlights the need for focusing knowledge and making it easily and quickly

accessible which is also a core element of a LO [36]. In this regard assessors seem to be the knowledge agents since they obtain and transfer knowledge to others with whom they work. Therefore assessors should be recognized and their knowledge and insights should be transferred to the organizations since the experience of being an assessor may help to develop most of the characteristics of a LO.

The impact of QAP to the assessors and their organizations has value beyond the quality. If organizations are performing self-assessment and are linking it clearly to the corporate strategy then the assessor's learning will have a direct impact of organizational learning.

2.4. The Concept of “A Learning Organization”

In an increasingly complex and unpredictable business environment, it is clear that the core competency of the most effective organizations will be their capacity to learn. As Burdett [11] puts it forward that the learning process is a journey rather than a destination, and it is obviously becoming more confused and over complex to identify its fundamental characteristics and to measure the level of learning in an organization.

The concept of “Learning Organization” is becoming more widespread and has attracted considerable attention in modern organizations, from the largest multinationals to the smallest business enterprisers. Through the years many leading researchers have tried to accurately describe a “Learning Organization”. However most of them agree that the LO can not be exactly described because the existing conditions of each single organization are unique and therefore each of them should be given the necessary ability to develop its own version of a learning organization [12]. Besides a learning organization doesn't just happen, it is carefully and deliberately designed [6]. In the next section, definitions of a learning organization will be given from the perspectives of well known researchers studying this topic.

Change, complexity, and uncertainty are some of the most important aspects of the business environment for today's organizations, and it is required to identify new

ways to develop organizations that would be able to anticipate this business environment. As a result, the concept of a learning organization has evolved for anticipating, reacting and responding to the new business environment [6].

The concept was first appeared in the literature in the early 1950's. However, "Learning Organization" as a new terminology was first proposed by Garratt in 1987 to describe organizations that experiment with new ways of conducting business in order to survive in highly competitive environments [13]. The concept was then popularized by Senge [4] who is considered to be one of the most prominent authors of organizational learning [14]. He defines a learning organization as an organization "where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning to learn together". Several writers improves Senge's original concept to produce alternative theories about learning organizations.

Watkins and Marsick [7] provide a LO model which is more focused on people and practice. According to these authors, a learning organization is defined as an organization "that continuously learns and transforms itself to discordant information, avoids repeated mistakes, does not lose critical knowledge when key people leaves, and acts on what it knows".

Bennett and O'Brien [5] describe a learning organization as an organization that has "a continuous and enhanced capacity to learn, adapt and change, an organization that has values, policies, practices, programs, systems, and structures that support and accelerate organizational learning".

Another definition is given by Kline [15] who defines a learning organization as "an organization in which learning begins at the individual level, progresses through the team level, and is adopted, arranged and stored at the process and system levels which are well defined and established that everybody in the organization is able to participate in them in a consistent manner".

Goh [6] also identifies a learning organization as “an organization which has certain strategy building blocks, such as shared leadership and involvement, teamwork and cooperation, transfer of knowledge across organizational boundaries and an emphasis on mission and vision”.

Griego and Geroy [16] identify a learning organization as “one that facilitates the learning of all its members and continuously transforms itself”. They have also reviewed previously stated definitions of a learning organization and found that all suggest an important relationship between practices in the workplace and learning.

More recent thoughts come from Sun and Scott [18] who identify a learning organization such that “this is where learning takes place that moves an organization towards a desired state. Thus, learning must be transferred from individual(s) to collective(s), from organizational to inter-organizational, and vice versa, and ‘must’ result in changes in behavior. If it does not result in changes in behavior, then genuine transference has not taken place”. Moilanen [17] also defines a learning organization which is consciously managed with ‘learning’ as a fundamental component in its values, visions and goals, as well as in its daily operations and assessments and he suggests that “a learning organization eliminates structural obstacles of learning, creates enabling structures and takes care of assessing its learning and development” [17].

One of the today’s practitioners, Agarwal [19] defines a learning organization that “promotes a culture of learning, a community of learners, and ensures that individual learning is shared and used to enrich the organization”.

2.5. Learning Organization Characteristics and Their Measurement

It is essential to understand the practices and principles that make up a learning organization. Many authors have tried to identify the characteristics necessary for organizations to achieve being a learning organizations and it is also essential to enable these characteristics in practice [16]. Also, there seems to be a gap between practical and scientific work in diagnosing learning organizations. In addition to the LO

characteristics, a diagnostic tool is to be constructed to test and continuously monitor the progress of an organization in the development of a learning organization. The remainder of this section will discuss the numerous viewpoints related to the characteristics of a learning organization and the diagnostics tools to measure an organization as providing for evolution to a learning organization.

Although Senge does not have his own diagnostic tool, some other researchers used his theories in their measurement tools throughout the literature. He describes the building blocks of a learning organization in terms of five disciplines which are illustrated in Figure 2.2.

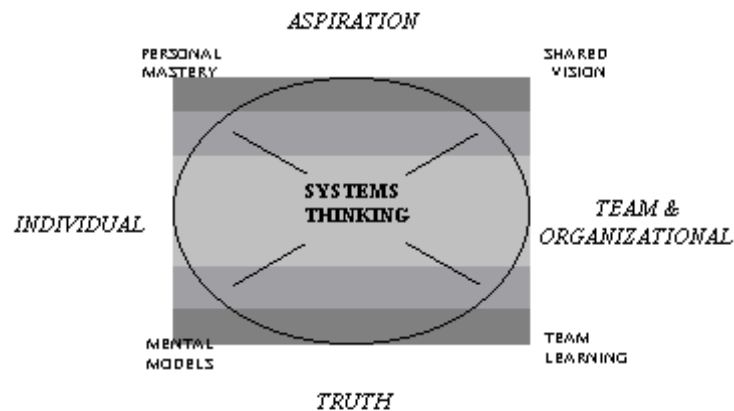


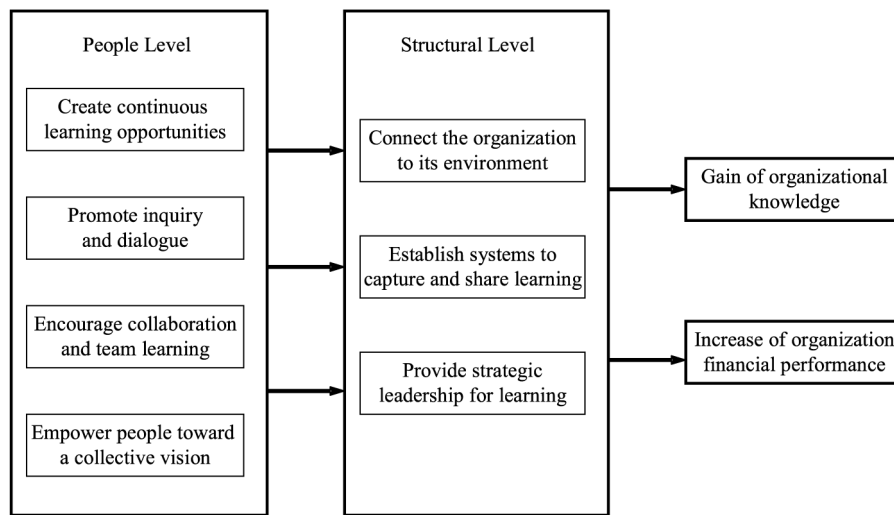
Figure 2.2. Learning Organization Model of Senge (1990)

The authors, Watkins and Marsick [7] argue that a learning organization should have the following characteristics:

1. Leaders who model calculated risk taking and experimentation
2. Decentralized decision-making and employee empowerment
3. Skill inventories for sharing learning and using it
4. Rewards and structures for employee initiatives
5. Consideration of long-term consequences and impact on the work of others
6. Frequent use of cross-functional work teams

7. Opportunities to learn from experience on a daily basis
8. A culture of feedback and disclosure

Their questionnaire has a scientific and empirically tested background, which is not a common situation with the other instruments in the literature. The questionnaire is organized in four sections addressing individual, team, organizational and global issues. The core of the instrument was presented with seven dimensions, which are illustrated in Figure 2.3.



Source: Watkins and Marsick (1993, 1996)

Figure 2.3. Learning Organization Model of Watkins and Marsick (1996)

Bennett and O'Brien [5] categorized the characteristics of a learning organization into 12 building blocks. These are strategy and vision, executive practices, managerial practices, climate; organization and job structure, information flow, individual and team practices, work processes; performance goals and feedback, training and education, individual and team development; and rewards and recognition. They are identified and tested in a survey.

Kline and Saunders [15] also express a set of characteristics of a learning organization. They believe the importance of having learner individuals across the organization, who can be lead function in such a way that the organization as a whole can learn from them [15]. In this regard, Kline and Saunders [15] propose “a ten step process” to become a learning organization. The ten steps are: a) assess your learning culture, b)

promote the positive, c) make the workplace safe for thinking, d) reward risk-taking, e) help people become resources for each other, f) put learning power to work, g) map out the vision, h) bring the vision to life, i) connect the systems, and j) get the show on the road. “Kline Learning Organization” assessment tool evaluates individual perceptions in an organization that would promote a learning organization.

Marquardt’s learning organization model has five components. His focus is mostly on the learning sub-system supported by the four other component sub-systems: knowledge, organization, technology and people which are illustrated in Figure 2.4. He also developed a questionnaire which has taken recognition in the related literature[12].

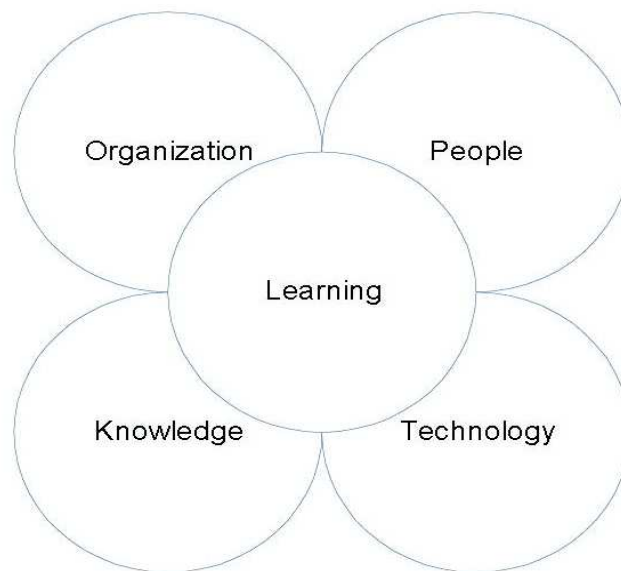


Figure 2.4. Learning Organization Model of Marquardt (1998)

Goh’s [6] objective is to identify a “bundle of managerial practice and organizational process that differentiate learning companies”. Goh [6] has identified and tested in a survey questionnaire of practices, processes, and designs that distinguish companies that learn with the building blocks of mission and vision, leadership, experimentation, transfer of knowledge, teamwork and cooperation.

Griego and Geroy’s [16] study is “an empirical study which looked at predictive practices that would enable organizations to achieve learning organization success”. Learning organization characteristics are identified by Griego and Geroy [16] as five

subsystems which were learning dynamics, organization transformation, people empowerment, knowledge management, and technology application. They applied two diagnostic tools to present key practices as predictors of a learning organization specifically, Marquardt's [12] learning organization profile and O'Brien's [5] learning organization practices profile. Originally Marquardt's [12] "Learning Organization Profile" has five subsystems. They include (1) learning dynamics: individual, group/team, and organizational; (2) organization transformation: vision, culture, strategy, and structure; (3) people empowerment: employee, manager, customer, alliances, partners, and community; (4) knowledge management: acquisition, creation, storage/retrieval, and transfer/utilization; and (5) technology application: information systems, technology based learning, and electronic performance support systems. O'Brien's [5] "Learning Organization Practices Profile" has 12 subsystems of which five were used in Griego and Geroy's study: (1) vision and strategy, (2) information flow, (3) individual and team development, (4) training and education, (5) rewards and recognition [16].

Finally, in Moilanen's [17] study, a diamond is chosen to visualize the basic ideas of a learning organization. Five elements are considered at individual and organizational levels: (1) managing and leading as driving forces, (2) finding purpose, (3) questioning, (4) empowering, (5) evaluating learning and learning organization. He developed an instrument and updated it in 2005 by administering in practice, and analyzing the LO portrayals of different groups.

Although viewpoints may differ, common themes continue to surface throughout the various articles cited. In Chapter 3, a conceptual model will be developed, which is a consolidation of the key learning organization characteristics described in this section.

3. PROPOSED MODEL AND METHODOLOGY

3.1. Conceptual Model for a Learning Organization

It is desired to structure a conceptual model composed of LO characteristics that are clearly defined, distinct and with minimal overlap. The reality is that such characteristics are not mutually exclusive, and there is some degree of interdependence between the characteristics.

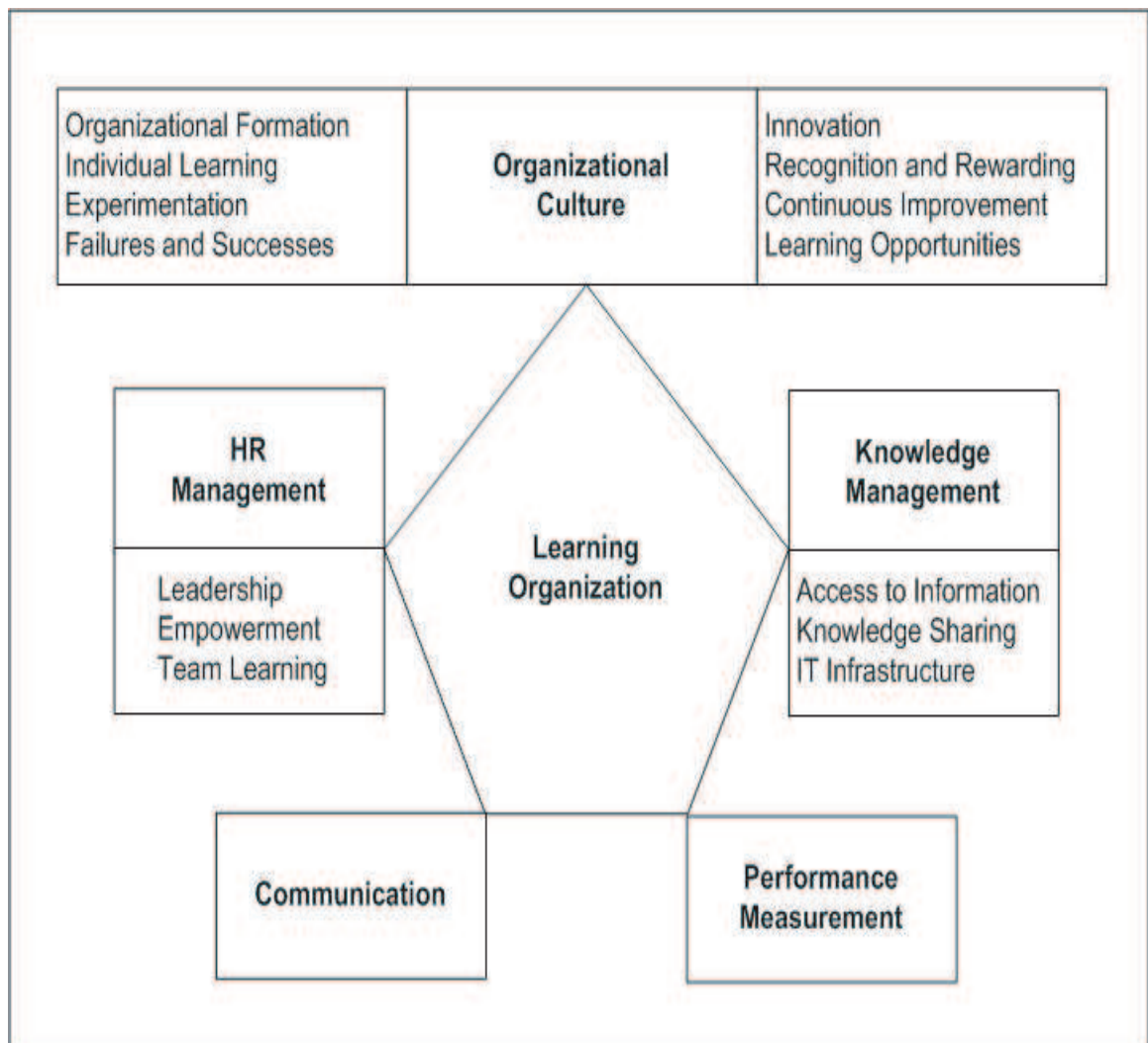


Figure 3.1. Conceptual Model of a Learning Organization

The proposed model includes five features and 16 characteristics of a learning organization as illustrated in Figure 3.1.

The following sections presents and discussed each feature and characteristics of the model in more details drawing on the literatu

3.2. Organizational Culture

Culture is defined as a set of values and guiding beliefs that are shared by all employees within an organization. It serves as a foundation for an organization's management system by reinforcing practices and organizational behaviors [21]. There is a very strong link between the values and norms and the actions of organizational members and how an organizational culture develops. Organizational culture is said to be formed from the collection of many sources such as the employee's background education, experiences gained from past events or personalities of the employees over time. In addition to time, the development of an appropriate organizational culture requires the implementation of a new set of commonly shared values.

Each organization which is normally influenced by its environment develops its own unique culture through its collected learning [22]. Organizational culture also defines organization's mission, vision and core values, encourages individual and collective learning by innovation, provides continuous learning opportunities to all members, emphasizes people involvement by recognition and rewards and experiments, and encourages collaboration and teamwork as well as learning from successes and failures. These characteristics are now discussed in more details.

3.2.1. Organizational Formation

In the context of this study, organizational formation means the mission, vision and values of an organization. According to Senge [4] information about the mission of an organization is critical to empowering employees and developing innovative organizations. Without this information, people will not extend themselves to take responsibilities or to introduce their creative energies. Likewise, Goh [6] states that having a mission and vision that are clear and understood by employees is essential because organizational formation empowers employees to perform in accordance with the

knowledge of priorities within the organization and when organizational formation is widely shared and understood by employees than they will feel more capable of taking initiatives.

3.2.2. Individual Learning

The literature on learning organizations frequently asserts that these organizations place a strong emphasis on the training and skill development of their employees. As Marsick *et al* [23] note that training as a tool for learning and development is a desired outcome that influences performance improvement and according to Bennett and O'Brien [5], learning organizations should seek ways to motivate their employees to develop individually.

3.2.3. Experimentation

Experimentation becomes effective when supported by the dominant coalition [5] which is defined as the social network of individuals who has an influence on the choice of an organization's strategies and goals. Managers should also be willing to encourage individuals and teams to continuously improve work processes and to try new ideas by experimentation which requires the questioning of the current status quo and how things are done, which allows employees to bring new knowledge.

3.2.4. Learning from Failures and Successes

In a LO, people learn from failures and successes, and use them as opportunities to improve systems, processes and structures. Learning organizations not only encourage learning from past experiences, but also have mechanisms or systems that will allow for this to happen. Garvin states that "companies must review their successes and failures, assess them systematically, and record the lessons in a form that employees find open and accessible". It is needed to view failures as opportunities for learning, by structuring the 'mistake' in a positive way for employees to learn [8].

3.2.5. Innovation

As Barker [24] debates organizations are dependent on both innovation and creativity of their employees. Dunn [25] also discusses that the most effective way to increase organizational performance is to increase innovation and creativity. Thus adaptability to change and openness to innovation needs to involve all functions and all levels of an organization, be valued and rewarded, and become an essential part of the organization's culture.

3.2.6. Recognition and Rewarding

Reward and recognition systems should be based on individual achievement and team performance. These systems improve performance, strengthen motivation, encourage individual learning and development, and promote job satisfaction. Working condition improvements, wage and position promotions, financial and non financial awards for innovative suggestions are such methods for recognition and reward [26]. Bennett and O'Brien [5] say that "reward and recognition systems must support and encourage individual and organizational learning which can take many forms, from honouring individual employees who take risks to offering a profit-sharing plan that benefits everyone when the organization learns and grows".

3.2.7. Continuous Improvement

It is highly dependent on information to diagnose problems and make decisions [8]. Continuous improvement and striving for excellence is driven by inspired members of an organization who have integrated work and according to Senge [4], learning and continuous improvement is an important imperative that keep the LO going in the highly competitive business environment.

3.2.8. Learning Opportunities

Watkins and Marsick [7] in their sketch of the LO, define creating continuous learning opportunities as a process for developing a LO. According to Kerka [27] “learning is valuable, continuous, and most effective when shared and that every experience is an opportunity to learn”.

3.3. Human Resources Management

Many scholars in the literature has pointed out that management support is essential in developing as a LO. In the next sections, leadership, empowerment and team learning will be stated fully based on the literature.

3.3.1. Leadership

According to Senge [4] learning organizations need a new leadership style where leaders are described as “designers, stewards and teachers”. A leader as a designer has the role of designing an organization’s strategy to integrate its vision and values, and to develop a shared vision in order to communicate a specific goal. A leader as a teacher has the role of not only teaching but also of supporting employees to learn and facilitating empowerment for employees to share knowledge openly and take risks. In the final role, a leader as a steward needs to see the ways such as individuals are dedicated to their work in expressing their own decisiveness and to provide resources, training, and rewards. Goh [6] mentions about the requirement of a “shared leadership” in a non-hierarchical organization, in order to encourage employees to be innovative and responsible. In his shared leadership concept, managers become “coaches, not controllers; level or rank is not as important as the ability of the individual to contribute to the organization’s performance”. Leaders need to be able to “facilitate change, provide feedback, involve employees in decision making, and accept criticism without being overly defensive” [6].

3.3.2. Empowerment

It is important for a LO that all members of an organization across all levels must take responsibility and be committed to their work [23]. For these reasons, the leaders should carry out the aim of empowering employees to take part in the organization's strategy. Waldersee [28] suggests that effective leaders should find ways to set goals and also help the employees to set their own goals. In addition, they should give feedback on their performance. As members become more empowered, they begin to understand and manage themselves and their outside boundaries better, moreover they are able to handle with uncertainties easily [28].

3.3.3. Team Learning

According to Senge [4], team learning takes place in each team when members are open to give and receive knowledge. Dialogue which freely allows employees to develop creative and innovative ideas that start learning, and the team begin to focus on the organizational perspective [5]. According to Bennett and O'Brien [5] learning organizations should search ways to encourage their employees to become individually developed and promote the growth of teamwork. Members of teams learn effectively by continuously reinventing their work. Goh [6] also discusses that for an effective team learning to occur in an organization, cross-functional teams having individuals from different functional areas should be formed. Goh states that "learning organizations invest in training experiences that develop entire teams or whole work units for the development of common experience".

3.4. Communication

According to Sudharatna *et al* [29], "communication as a characteristic of knowledge sharing should have a clear purpose and there should be a vision of how it can be achieved". The purpose of communication should be effectively dispersed to all members of the organization. As a result, they receive information and knowledge and are able to see that they are heading in the same direction. It can be communication

within the organization, between management and employees, among employees, or communication outside the organization which includes customers and competitors.

3.5. Knowledge Management

Knowledge management aims to integrate internal and external knowledge at all times in order to deal with environmental changes both within and outside the organization, to solve problems as well as to innovate for business development [30].

The elements of knowledge management in this study are access to information which should be available for everyone who needs it, knowledge sharing within the organizations and with the external shareholders and the availability of an information technology infrastructure to effectively and efficiently facilitate acquisition and sharing of knowledge. These characteristics will be discussed in the following sections.

3.5.1. Access to Information

Employees should have ready access to information so that they can be more efficient and productive since access to information promotes employee empowerment while nurturing an environment of trust. It is important that once knowledge is acquired then it should be stored in an open form of organizational memory where it is available for all employees when they need to access the current and accurate information within the organization [6].

3.5.2. Knowledge Sharing

Knowledge transfer arises when knowledge is dispersed from one individual to another. The transfer of knowledge provides opportunities for individuals or teams that they can continuously create enhanced products or services, and processes. To set up an organizational environment where knowledge sharing is a part of the organizational culture, it is important that employees feel confident to share knowledge with each other [31]. Certainly, for an organization which is to be a LO, there should be a

culture of teamwork, collaboration, and trust [32]. As such, learning is enhanced when information flows which is critical to organizational learning and success. Sun and Scott [18] also discuss that “inter-organizational learning occurs when learning is transferred between strategic partners”. Relationship with the outside parties such as competitors, customers, shareholders, suppliers or the public is important for gaining and transferring knowledge. Joint learning events such as seminar, workshops etc. facilitate these relationships to be built.

3.5.3. Information Technologies (IT) Infrastructure

Supporting technology applications by the organization have a major role in facilitating and sharing knowledge. Information systems, technology based learning, and electronic performance support systems, when fully utilized, positively improve performance [33]. Advanced technology and the web are suggested as the means to obtain and distribute information.

3.6. Performance Measurement

Organizational performance needs to be assessed to emphasize strengths and improvement opportunities. Ahmed *et al* [34] state that “effective measurement systems are ones which are balanced, integrated and designed to highlight the critical inputs, outputs, and process variables”. According to the authors, some of the performance measurement indicators are: investment in learning and development, learning application suitability and effectiveness, flexibility and openness to change, operational excellence, knowledge performance, employee satisfaction and customer satisfaction. Furthermore, Bennett and O’Brien [5] suggest benchmarking is an effective tool for measuring change through a continuous and systematic process of measuring products, services, and practices against other organizations considered to be superior [5]. Benchmarking is needed in order to determine whether an organization is on the right track [5].

3.7. Hypotheses To Be Tested

An hypothesis is defined as a logically conjectured relationship between two or more variables expressed in the form of testable statements [41]. The formulation of hypotheses enables the researcher to build a clear framework and guide for collecting, analyzing and interpreting the data. The study has the following hypotheses:

H1: Organizations that are performing self-assessment support the QAP more strongly than the organizations that are not performing self-assessment.

H2: Organizations that have applied to quality award before support the QAP more strongly than the organizations that have not applied to Quality Award yet.

H3: “Individual learning” is the prime motivation of becoming an assessor but its strength decreases as the assessors get experienced.

H4: “Site Visit” has significantly higher impact on individual and organizational learning than the other assessment steps.

H5: Having site visit or lead assessor experience has a significant impact on some of the individual contributions of QAP.

H6: Organizations that are performing self-assessment can benefit from QAP in terms of preparing themselves for the award.

H7: There is a significant difference between the impact of quality award process on individual learning and organizational learning.

H8: Organizations that are performing self-assessment obtain significantly higher “LO Scores”.

H9: Constructs of the survey questionnaire, both individually and collectively,

are reliable and valid for measuring the learning organization characteristics.

H10: There is a significant positive relationship between the LO characteristics and knowledge sharing in an organization.

These hypotheses are tested based on the data gathered from the survey held among the assessors for the first phase and among the employees of five targeted organizations for the second phase.

3.8. Design of the Survey Instrument

It is aimed to develop a questionnaire which is clearly organized, reliable, unambiguous, and valid that provides adequate coverage of the survey subjects. The instrument's design is also intended to be user-friendly and practical from the respondent's perspective to ensure a high level of response for the sampling results.

The instrument is a form of questionnaire which is developed based on the ideas, concepts, and models covered during the review of literature and reconstructed in the light of the interviews with experts who have a broad knowledge about the related topics. Following two sections will outline the approaches and the main criteria that underpinned the survey instrument first and second phase.

3.8.1. Survey Instrument in the First Phase

The survey employed in the first phase of the study has the purpose to identify the learning profiles of the assessors through the assessment process, as well as from the perspective of assessors to identify the level of LO characteristics formed in their organizations.

The first phase questionnaire has two parts. The first part has three separate sections, where the first section collects the personal data of the respondents. This section also searches for information about the current organizations of the respondents

in relation to the self-assessment studies and Quality Award Process application.

The second section of the first part is labeled as “Contribution to Individual Learning” which provides a table of individual skills and competencies that have been believed to be possibly developed by working in the QAP as an assessor. Similarly, the third section of the first part is labeled as “Contribution to Organizational Learning” which again provides a table of organizational contributions of the assessors to their own organizations through their experience acquired by working in the Quality Award Process. The respondents also have the chance to state any other individual skills, competencies and organizational contributions not listed in the questionnaire, if they are thought to be developed through the assessment process. At the end of the second section, there is an open-ended question which aims to reveal the methods and/or techniques that the respondents use to share their experience developed through the assessment process with their own organizations.

The second part of the questionnaire provides a good coverage of the LO characteristics which are expected to have the strongest influence on the development of a LO and identified in the conceptual model of this study. This part is designed to quantify each respondent’s perception related to his or her institution’s maturity level as a learning organization. LO score of an organization with an inventory of LO characteristics will be calculated for each of the respondent organization. In addition, from the perspectives of the assessors, the strongest and the weakest LO characteristics in an organization will be determined. The second part comprises five main headings, these are the LO features and these headings are further divided into 16 subheadings having 77 items which are the LO characteristics as shown in the conceptual model in Figure 3.1.

Each characteristic has a certain numbers of items. The item selection methodology is as follows:

1. Firstly six diagnostic tools which are believed to be the most comprehensive ones about the LO characteristics are chosen from the studies of the cited authors.

2. In each of the existing tool, there are different numbers of statements which are connected to different LO characteristics of the original study. All items are collected and the ones related to the scope of the conceptual model of this study are selected.
3. Items having the same content are subtracted from the list.
4. A short list of items is formed and content validity is checked.
5. The items are refined for validity, and suitability to the sample group.

3.8.2. Survey Instrument in the Second Phase

The second phase of the survey aims to obtain responses from employees of the targeted organizations that will be identified after the data analysis of the first phase. The second phase questionnaire has two parts. The first part collects the personal data of the respondents such as gender; level of education, total work experience and years of working in the current organization and with the immediate supervisor and the second part of the questionnaire is identical with the second part of the first phase questionnaire.

3.8.3. Nature of Survey Items

This section outlines the rationale for the selection of closed-format and open-ended components of the questionnaire. Since the first part of the first phase questionnaire has not been previously assessed empirically in the literature; an exploratory research design is adopted. The questions are answered by different scoring mechanisms such as by filling tables, selecting from multiple choices, or selecting from five point Likert interval scale ranging from “Strongly disagree” to “Strongly agree” .

The open-ended questions are used to validate the findings and provide additional insights into questionnaire responses and also allow respondents to express a broad range of opinions and personal differences. For the second part of the questionnaire, current status of an organization is scored by using a five-point Likert interval scale ranging from “Always” to “Never”. The use of a Likert-type scale has both strengths

and weaknesses. This type of scaling is chosen, first, to minimize the time required to complete the survey and, second, it is easy and efficient to apply and to facilitate coding. The major limitation in this approach is that respondents may have felt some pressure to respond dictated rather than as their own, individual opinion or belief.

3.8.4. Design Validity of the Survey

In this study, the reliability and face validity of the scales, whereby subjective judgement is made, is an important and difficult process. The difficulty appears since most part of the instrument used for this study has no precedents and has been developed specifically for this study. As such, its validity can not be cross-referenced against existing tools. As well, content validity aims to have a well-balanced sample of the content domain to be measured in each scale. Feedback from the expert individuals during the survey development is significant in this determination. The reliability of the scales and the whole questionnaire will be checked in Chapter 5.

3.9. Survey Administration

The first phase of the study is conducted within a sample of assessors in the QAP both in Turkey and in Europe. Assessors' role is the closest position to implementing the fundamentals necessary to enable a learning organization, more than any other position in an organization.

Ideally, organization-level concepts should be measured at the organizational level [42]. Logistically, surveys cannot be filled out by an organization, so higher-level data must be inferred from a single respondent. This approach is applied for the first phase of the survey since organizations will be evaluated according to the perceptions of their assessors participated to the survey. There are one to four assessors coming from a single respondent organization.

In total, 45 companies participate in the first phase and five organizations are selected as targeted organizations for the second phase of the survey. The rationale

for selecting these particular companies is two-fold: on the one hand as these organizations already display a variety of LO Scores according to their representatives, on the second hand these organizations are currently utilizing self-assessment for quality improvement. The selected organizations are mostly manufacturing companies.

3.10. Data Collection and Analysis

A pilot test of the questionnaire is conducted, and the intention is to review errors in the design and translating, and to refine the instrument for local contexts. After the pilot test, first of all, for the first phase of the survey; Turkish National Quality Award Assessors are invited to participate in the survey. Participants are given one month to complete the survey.

Assessors are advised that the interest of this survey is the opportunity to conduct research for the thesis study. There is no charge to participate in the research and all the responses are kept confidential. An additional benefit offered is the opportunity to see the contribution of being an assessor to developing their individual and organizational learning.

After the data analysis of the collected questionnaires, five of the participant organizations are chosen to further analysis by the second part of the questionnaire. The questionnaires are sent to the contact names and they are requested to distribute the questionnaires to 50 employees in their organizations. The second phase of data collection takes two weeks to collect the completed questionnaires. After the second phase is terminated, further data analysis is done and the results are presented Chapter 4 and Chapter 5 for the first and the second phase of the survey respectively.

Rigorous statistical tests are applied to test the study hypotheses. Different types of statistical tools are utilized using SPSS (Statistical Package for Social Sciences) version 14.0 and Microsoft Excel. One-way ANOVA, multiple comparison tests, two sample t-test, Z test, factorial design, Cronbach's alpha, linear regression and factor analysis are utilized.

4. DATA ANALYSIS: FIRST PHASE OF THE SURVEY

4.1. Survey Participant Demographics

The questionnaires are distributed to 178 assessors. However, responses are received from 59, yielding a 33.1% response rate. These 59 assessors represent 45 distinct companies, and males (64%) comprise the majority of survey respondents.

The minimum years of total professional experience is 5.0 years whereas the maximum is 36.0 years with an average of 16.8 years. The minimum years of current organization experience is 4.0 months whereas the maximum is 28 years with an average of 8.47 years. Detailed survey demographic result can be seen in Table A.1.

59 assessors are coming from 45 organizations, where the number of assessors coming from a single organization is changing from one to four. Table A.2 shows the number of assessors for every respondent organizations.

59 assessors have an average assessor experience of 6.19 years with a standard deviation of 4.30 years and minimum one and maximum 14 years. The number of assessors who are experienced in different assessment steps can be seen in Table A.3 and in Table A.4.

According to survey results, the average time to start individual assessment after assessor training is 0.7 year, which is 2.2 years to participate site visits, 4.2 years to act as a lead assessor, 6.8 years to act as an assessor in EEAP and 9.1 years to act as a lead assessor in EEAP. The assessor experience life cycle is illustrated in Figure 4.1

4.2. Self-assessment and Quality Award Process

According to survey results; 29 organizations out of 45 (64.4%) are performing self-assessment (SA). The number of organizations practising SA were just a few in

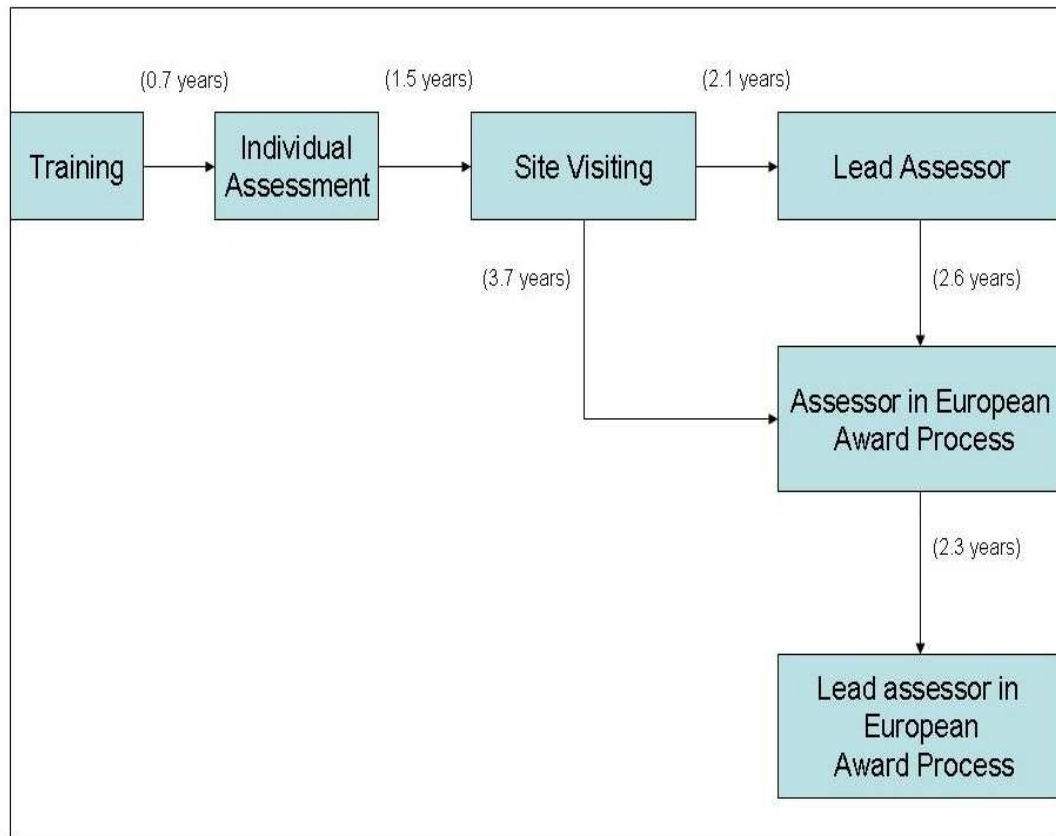


Figure 4.1. Assessor Experience Life Cycle

the first years. Only two organizations started in 1993. Most of them (20 out of 29) started to perform SA after 2000. Detailed information can be seen in Table A.5 in Appendix A.

22 organizations are performing SA once a year. Nine organizations have realized an interruption in their SA studies with the following reasons:

1. Change of senior management
2. Change in priorities and conditions after the earthquake in 1999 and financial crisis in 2001.
3. Deficiency in financial resources
4. Heavy work load of employees
5. Disbelief of its contribution by the senior management
6. Difficulty in constructing process teams

Only 13 organizations out of 45 have participated in the QAP before 2006. When the time elapsed from the SA starting year to QAP participation is investigated, the average duration is calculated as 2.1 years with a standard deviation of 2.3 years. If an organization manages to become a finalist, the average time after SA becomes 2.57 years with a SD of 1.7 years. Average time to win a prize is 2.8 years (SD = 0.8 years) and 3.3 years (SD = 3.5 years) for an award.

There are two organizations which have won European Excellence Awards out of the survey participants. Both started SA in 1993 and won the award in 1996 and 2003 after 3 and 10 years respectively.

16 out of 32 organizations are planning to apply for National QAP and only seven organizations for EEA in five years time. Table A.6 shows the target years of organizations to apply to Quality Award Processes in five years time.

4.3. Support to Quality Award Process

The assessors are asked about the number of assessors from their own organizations participating in the National or European Quality award processes in the last six years. Total number of assessors participating in the QAPs between the years of 2001 to 2006, has been increasing through the years. Total number of assessors in 45 organizations that have worked in QAPs previously was 92 with a minimum of 25 assessors in 2003 and with a maximum of 60 in 2006.

Total number of assessors participated in QAPs in organizations that are performing SA is 69 which is 3.2 times higher than the ones that are from organizations that are not performing SA as shown in Table A.7. The reason may be that these organizations plan to be involved in the QAP, may benefit from the experiences of their employees working as assessors in this processes.

This number in organizations that have participated in QAPs before is 37 which is 1.15 times higher than in other organizations as shown in Table A.7. The organizations

that have participated in QAP may benefit from these employees in enhancing their management practices and work processes by their experiences.

From the above findings, this section aims to verify organizations that are performing SA or participated in QAP previously support this process more strongly than the other organizations. Hence, this section aims to test the Hypothesis 1 and 2 in Section 3.7.

H^1 : Organizations that are performing SA support the QAP more strongly than the organizations that are not performing SA.

H^2 : Organizations that have applied to QAP before support this process more strongly than the organizations that have not applied to QAP as yet.

The most prominent factor indicating support and commitment to the QAP is selected as the dependent variable:

Y = Total number of distinct assessors from an organization who have worked in QAP in the last six years.

Two sample t-test examines whether a statistical difference exists between sample averages from the two populations. Under the null hypothesis, the mean of the differences μ is zero. Related hypotheses are formulated to test the difference in the means of Y for the two groups of organizations:

$$H_0: \mu_1 = \mu_2$$

$$H_1: \mu_1 \neq \mu_2$$

where population 1 stands for SA (organizations that are performing self-assessment) and QA (organizations that have participated in Quality Award Process) for the two

Hypotheses H^1 and H^2 respectively.

Under the assumption that both distributions are normal and $\sigma_1 = \sigma_2 = \sigma$, the *pooled t-test* is used. The test statistic, t , is defined as:

$$t_0 = \frac{(\bar{Y}_1 - \bar{Y}_2) - (\mu_1 - \mu_2)}{s_p \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}} \quad (4.1)$$

where

$$s_p^2 = \frac{s_1^2(n_1 - 1) + s_2^2(n_2 - 1)}{n_1 + n_2 - 2} \quad (4.2)$$

Table 4.1 shows the descriptive statistics for the organizations that are performing SA and having applied to QAP previously and the other organizations that are not performing SA and have not applied to QAP yet.

Table 4.1. Descriptive statistics for dependent variable Y

		N	M	SD	Min	Max
Y	SA	43	2.77	1.44	1	5
	NSA	11	1.73	1.62	0	6
Y	QA	19	3.37	1.54	1	5
	NQA	35	2.11	1.35	0	6

In calculation of the t-test, $df = 52$ and t_0 is computed as 2.11 and 2.93 and significance is found at $p = 0.040$ and $p = 0.003$ for SA and QAP respectively. Since t critical is 1.65 for the significance level of 0.05, H_0 and H_0 are rejected, the means differ significantly.

4.4. Reasons of Becoming and Continuing to Be An Assessor

Individuals who are motivated to voluntarily apply for a range of very different reasons. Four possible reasons of becoming and continuing to be an assessor are identified in this study as “Individual Learning”, “Organizational Learning”, “Social Networking” and “Social Responsibility”. This section aims to show whether an identified reason plays the dominant role among the others.

H3: “Individual Learning” is the prime motivation of becoming an assessor but its strength decreases as the assessors get experienced.

The weighted sum of the reasons $[X_i]$ are calculated for B (Becoming an assessor) and C (Continuing as an assessor).

$$X_i = \sum_{j=1}^4 w_j \cdot n_j$$

$$i = 1, 2, 3, 4$$

where j is the priority index and i is the assessor reason index

Totals and percentages of preferences are shown in Table 4.2 indicating “Individual Learning” as the prime motivation of becoming and continuing to be an assessor.

Table 4.2. Preferences of being and continuing to be an assessor

	Priority	1	2	3	4	Score	
	Weights	4	3	2	1	Totals	Percentages
Level 1: Become	Individual Learning	40	11	7	1	208	35%
	Organizational Learning	14	29	9	7	168	29%
	Social Networking	1	9	15	33	94	16%
	Social Responsibility	4	10	27	18	118	20%
Level 2: Continue	Individual Learning	25	20	9	5	183	32%
	Organizational Learning	17	19	10	13	158	27%
	Social Networking	6	9	15	19	100	17%
	Social Responsibility	11	11	25	12	139	24%

The other reasons in descending order are gaining “Organizational Learning”, having a “Social Responsibility” and “Social Networking”.

According to the survey results, the reasons of continuing to be an assessor seem not to change in order. (the prime reason is again “Individual Learning” and the others follow in the same order). However, when percentages of preferences are compared in becoming an assessor and continuing to be an assessor; the percentages of “Individual Learning” and “Organizational Learning” are decreasing and the percentages of “Social Networking” and “Social Responsibility” are increasing as the assessors gain experience.

Z-test is performed to identify the differences between the probability of “Individual Learning” for becoming and continuing to be an assessor.

P_{ik} : Proportion of choosing i as the prime motivation for the levels of k.

The following hypotheses are formulated:

$$H_0: P_{IB} = P_{IC}$$

$$H_1: P_{IB} \neq P_{IC}$$

The test statistic is stated as:

$$Z = \frac{(\hat{P}_1 - \hat{P}_2) - (p_1 - p_2)}{\sqrt{\frac{p_1 q_1}{n_1} + \frac{p_2 q_2}{n_2}}} \quad (4.3)$$

When H_0 is true, $p_1=p_2=p$ and $q_1=q_2=q$ can be substituted in Equation 4.3:

$$Z_0 = \frac{\hat{P}_1 - \hat{P}_2}{\sqrt{pq(\frac{1}{n_1} + \frac{1}{n_2})}} \quad (4.4)$$

The pooled estimate of the proportion p is: $\hat{p} = \frac{x_1+x_2}{n_1+n_2}$

The test statistic is computed as:

$$Z_0 = \frac{\frac{40}{59} - \frac{25}{59}}{\sqrt{\frac{65}{118} \cdot \frac{53}{118} (\frac{1}{59} + \frac{1}{59})}} = 2.78$$

$P = P(Z > 2.78) = 0.0028$ is calculated. The null hypothesis is rejected as $\alpha = 5\%$. The evidence in favor of H_1 is even stronger. Therefore **H3** is verified such that probability of “Individual Learning” for continuing to be an assessor is significantly lower than the probability for becoming an assessor. Thus, this indicates a loss of strength for “Individual Learning” in being the prime motivation as the assessor gets experienced.

4.5. Impact of Quality Award Process Assessment Steps on Learning

Since 17 out of 59 participant assessors have not done site visits yet, the contributions of QAP to their individual and organizational learning are analyzed separately for the participants that have done site visits and for the ones that have not done site visits yet. Table 4.3 shows the impact of assessment steps both on individual and organizational learning for the assessors experienced site visiting or not. This sections aims to verify that “Site Visit” has significantly more impact on individual and organizational learning of the assessors.

Table 4.3. Impact of quality award process assessment steps on learning

	Individual Learning				Organizational Learning			
	Site visit experience				Site visit experience			
	NO		YES		NO		YES	
Assessment Steps	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Training	33.92	13.55	19.15	10.66	32.4	13.17	16.81	9.35
Individual Assessment	31.27	9.67	18.37	8.12	34.02	18.57	17.36	6.49
Consensus after IA	34.8	14.82	18.56	5.82	37.71	13.74	16.11	7.47
Site Visiting	-	-	27.39	8.62	-	-	33.67	11.59
Consensus after SV	-	-	16.66	7.16	-	-	16.06	8.02

H4: “Site Visit” has significantly higher impact on individual and organizational learning than the other assessment steps.

According to Table 4.3, for the assessors that have not done site visit yet, the most contributing assessment step to their individual and organizational learning is “Consensus Meeting after Individual Assessment”.

To test the statistical differences, the following hypothesis is constructed for individual and organizational learning respectively where the index designates assessment steps of: 1: Training, 2: Individual Assessment, 3: Consensus Meeting after Individual Assessment.

$$H_0: \mu_1 = \mu_2 = \mu_3$$

H_1 : At least two of the means are not equal.

This hypothesis testing problem is investigated both for individual and organizational learning.

Table 4.4. ANOVA table for the impact of quality award assessment steps for no site visit experience

	Source of Variation	Sum of Squares	df	Mean Square	F	Sig.
Individual Learning	Between Groups	114.71	2	57.35	0.35	0.71
	Within Groups	7,951.96	48	165.67		
	Total	8,066.67	50			
Organizational Learning	Between Groups	237.615	2	118.807	0.499	0.61
	Within Groups	10949.57	46	238.034		
	Total	11187.18	48			

The ANOVA as the statistical method is employed for evaluation with $\alpha = 0.05$ level of significant difference. It shows there is no significance between the means, therefore the null hypothesis is accepted. In conclusion, it is stated that means are not significantly different.

To test the statistical differences for 42 assessors that have done site visit, impact on individual and organizational learning is tested similarly as:

$$H_0: \mu_1 = \mu_2 = \mu_3 = \mu_4 = \mu_5$$

H_1 : At least two of the means are not equal.

ANOVA Table 4.5 shows that there is a significant difference between the means (p value < 0.05). Therefore, the null hypothesis is rejected, and it is concluded as the means are significantly different. Levene statistics is significant at p values of 0.042 and 0.040 respectively, therefore, unequal variance is assumed and Tamhane's T2 test is performed for multiple comparisons.

Table 4.5. ANOVA table for the impact of quality award assessment steps for no site visit experience

	Source of Variation	Sum of Squares	df	Mean Square	F	Sig.
Individual Learning	Between Groups	2921.17	4	730.30	10.77	0.00
	Within Groups	13561.71	200	67.81		
	Total	16482.88	204			
Organizational Learning	Between Groups	8446.61	4	2,111.65	27.49	0.00
	Within Groups	13441.39	175	76.81		
	Total	21888	179			

Multiple comparison tests show that “Site Visit” has significantly higher impact on both individual and organizational learning than the other assessment steps. Hence, the analysis reveals that for the assessors who have not experience site visiting yet, there is no significant difference between the impacts of quality award assessment steps on their individual and organizational learning. However, for the assessors who have experienced site visiting, the highest impact on their individual and organizational learning is due to “Site Visit” among all of the assessment steps.

4.6. Assessors’ Individual Skills and Competencies

The means of 15 skills or competencies analyzed in the survey are shown in Table 4.6 noting that scaling range is from 5 (high) to 1 (nil). ANOVA is used for statistical differences among the means. Analysis reveals significance at $p \text{ value} \cong 0.00$, therefore Tamhane’s T2 test for multiple comparison is performed, since unequal variance is assumed with a $p \text{ value} = 0.002$ in Levene test. ANOVA table calculation can be seen Table A.8.

It is concluded that the highest mean is for “Different cultures” which is statistically the same with “Learning”, “Team work”, “Communication”, “Working with different people”, “Holistic view” and “Assessment”, and the lowest mean is for “Organizational management” which is also statistically the same with “Resource management”, “Analytical thinking”, “Stress”, “Leadership”, “Project management”, “Prob-

lem solving” and “Innovation”.

Table 4.6. Individual learning Developed in QAP

Individual Skills	N	Mean	SD
Different organizational cultures	58	4.69	0.57
Holistic view	58	4.62	0.56
Working with different people	58	4.53	0.71
Assessment	57	4.51	0.60
Team Work	59	4.49	0.63
Learning	59	4.37	0.69
Communication	58	4.34	0.74
Resource management	59	4.14	0.82
Analytical thinking	58	4.00	0.86
Stress	58	4.00	0.79
Leadership	57	3.95	0.77
Project management	58	3.78	0.80
Problem solving	58	3.72	0.89
Innovation	58	3.71	0.97
Organizational management	58	3.64	0.95

The open ended question under this section is “In your opinion, what other individual skills and/or competencies are developed by your role in the assessment process?” Below list summarizes the answers to this open ended question:

- Developing human relations
- Process benchmarking
- Fast report reading
- Ability in persuasion
- Understanding of different views
- Self-motivation
- Effective presentation skills
- Conflict management

This section aims to show that having site visit and lead assessor experience has significantly more impact on some of the individual skills and competencies.

H5: Having site visit or lead assessor experience has a significant impact on some of the individual contributions of QAP.

X = Average individual learning score indicating the impact of QAP on individual learning of the assessors.

Two sample t-tests are conducted to test the hypotheses which are formulated to check the difference in the means for the two groups of organizations:

where the first populations are taken as

SV: Individuals that have site visit experience

LA: Individuals that have lead assessor experience

After the tests are performed, it is concluded that significant difference between the two populations is only found for “Leadership” among 15 individual skills and competencies.

It indicates that respondents having site visit experience have significantly higher mean (4.15) on “Leadership” than respondents having no site visit experience (3.47) and similarly respondents acting as a lead assessor have significantly higher mean (4.29) than respondents having no experience as a lead assessor (3.80).

To further analyze the impact of site visit and lead assessor experience on the individual skill of “Leadership”, 2^2 factorial design with replications is modeled. The corresponding model can be expressed as:

$$Y = \mu + \tau + \beta + \epsilon \quad (4.5)$$

where,

μ = Mean

τ = Site Visit Effect

β = Lead Assessor Effect

ϵ = error \sim IIDN $(0, \sigma^2)$.

The analysis of the factorial design reveals that the structure of experimental layout has undesirable properties such as:

- There are different number of assessors having site visit and lead assessor experience, therefore, the experimental design becomes unbalanced where all cells do not have the same number of observations.
- Since the design is unbalanced and the effects of one factor does not sum to zero across the effect of the other factor, two vectors are not orthogonal (i.e. the sum of the products of their corresponding elements is not 0.)

Due to the reasons listed above, the sum of squares corresponding to the two factors being site visit and lead assessor can not be decomposed.

For this reasons, it is preferred to translate the design such that it can be analyzed using one-way ANOVA. The means are calculated as shown in Table 4.7 between subjects of site visit experience (S-yes, S-no) and lead assessor experience (L-yes, L-no). It is expected that assessors with site visit and lead assessor experience have

significantly higher mean scores on the skill of “Leadership”.

Table 4.7. Descriptive statistics for “Leadership”

		Lead Assessor Experience	
		L-yes	L-no
Site Visit Experience	S-yes	4.29	4.04
	S-no	X	3.47

One-way ANOVA calculation shows a significant difference among the means. Tukey HSD test (since Levene test does not show significance with p value = 0.161 > 0.05) is performed for multiple comparisons.

Multiple comparisons show that respondents with no site visit of lead assessor experience have significantly lower means on “Leadership” than the respondents having site visit and lead assessor experience and than the respondents having site visit experience but no lead assessor experience (p values are 0.003 and 0.036 respectively).

Thus, it is concluded that site visit experience has more impact on the development of “Leadership” skill through quality award processes than lead assessor experience according to the perceptions of the survey respondents.

4.7. Organizational Learning Impact

Five organizational contributions analyzed in the survey are shown in Table 4.8 in a descending order of their means calculated from the responses. ANOVA is used for statistical differences among the means. However there is no statistical significance found in the statistical analysis.

The most important benefit of acting as assessors in quality award processes for individuals is to share their experiences with their own organizations. Especially assessors working in the organizations that are performing self-assessment can benefit from the QAP on preparing them for the award. To test this statement, the following hypothesis is formulated:

Table 4.8. Organizational contributions of the assessment process

Organizational Contributions	N	M	SD
Learn and Apply Different Cultures	56	3.91	0.98
Learn and Use Tool and Techniques	56	3.84	0.91
Enhance self-assessment	54	3.83	1.23
Learn and Apply Best Practices	56	3.82	1.11
Prepare for Award	52	3.50	1.26

H6: Organizations that are performing self-assessment can benefit from QAP in terms of preparing themselves for the award.

X = Average organizational learning score indicating the impact of QAP on organizational learning of the assessors.

Two sample t-test tests are conducted to test the hypotheses which are formulated to test the difference in the means of X for the two groups of organizations:

where

SA: Individuals from organizations that are performing self-assessment

NSA: Individuals from organizations that are not performing self-assessment

Two sample t-test reveals significance with p value = 0.035, therefore, the null hypothesis is rejected such that respondents who are working in an organization that is performing self-assessment have significantly higher mean (3.70) than the respondents whose organizations are not performing self-assessment (2.83).

At the end of the first part of the questionnaire, respondents are asked the ways how they share their experience from the assessment process with their own organizations. Responses are listed below:

- Sharing both individual and organizational experiences with all employees in the organization
- Providing enhancement in the self-assessment activities
- Providing understanding and deployment of the EFQM Excellence Model across the organization
- Adapting best practices to the organization
- Providing deployment of holistic and strategic view across the organization
- Learning how to prepare the award submission document
- Suggesting assessed organizations as benchmarks

4.8. Impact of QAP on Individual and Organizational Learning

Having verified from the preceding sections, QAP has impacts both on individual and organizational learning. However, this section aims to compare the impact of QAP on individual and organizational learning.

H7: There is a significant difference between the impact of quality award process on individual learning and organizational learning.

Individual Learning Score (ILS) is defined as the impact of QAP on individual learning of the assessors and it is calculated by averaging the scores of each individual skills and competencies shown in Table 4.6.

Organizational Learning Score (OLS) is the impact of Quality Award Process on organizational learning of the assessors and it is calculated by averaging the scores of each organizational contribution shown in Table 4.8.

Table 4.9 shows the descriptive statistics of the two learning scores. The following hypotheses are formulated to test the difference in the means of the learning scores:

Table 4.9. Descriptive Statistics for Learning Scores

	N	M	SD
Individual Learning Score	59	4.17	0.47
Organizational Learning Score	56	3.79	0.87
Total	115	3.99	0.72

$$H_0: \mu_{ILS} = \mu_{OLS}$$

$$H_1: \mu_{ILS} \neq \mu_{OLS}$$

To test the hypothesis, two sample t-test is used as a method of data analysis. The analysis shows significance between the variables at a p value = 0.004 therefore, H_0 is rejected such that Individual Learning Score being 4.17 is significantly higher than the Organizational Learning Score being 3.79 which verifies **H7**.

4.9. LO Profiles of the Participant Organizations

This section shows the data analysis relating to the LO maturity levels of the participant organizations. Specific findings on each LO characteristics are analyzed and overall LO scores are computed and compared to show the LO maturity levels of the participant organizations.

The analysis of the LO items is more appropriate for the corporate organizations. Since five organizations are consulting firms, they are excluded from this study.

Table 4.10 shows the 16 LO characteristics in a descending order with respect to their means.

In calculation of ANOVA, significance is found between the means of LO characteristics. Under equal variance assumption, LSD test is performed for multiple comparisons. Three grouping of the LO characteristics are devised for the purpose of data analysis and discussion with a statistical basis. Groupings are also shown in Table 4.10.

Table 4.10. LO characteristics for 40 participant organizations

Support	Rank	LO Characteristics	M	SD
Strongly Supported	1	IT Infrastructure	4.24	0.75
	2	Organizational Formation	4.22	0.71
Moderately Supported	3	Access to Information	3.91	0.77
	4	Leadership	3.86	0.84
	5	Team Learning	3.78	0.88
	6	Experimentation	3.74	0.74
	7	Individual Learning	3.74	0.80
	8	Performance Measurement	3.73	0.81
	9	Knowledge Sharing	3.72	0.76
Weakly Supported	10	Learning Opportunities	3.71	0.82
	11	Continuous Improvement	3.67	0.81
	12	Learning from Failures and Successes	3.61	0.80
	13	Empowerment	3.56	0.89
	14	Innovation	3.55	0.80
	15	Communication	3.50	0.81
	16	Recognition and Rewarding	3.46	0.90

1. **Strongly supported** : LO characteristics with means which are statistically significant with the characteristic having the highest mean.
2. **Weakly supported** : LO characteristics with means which are statistically significant with the characteristic having the lowest mean.
3. **Moderately supported** : LO characteristics in between of ‘Strongly’ and ‘Weakly’ supported.

LO scores are calculated for each of the 40 organizations and sorted in a descending order. The full list can be seen in A.9 in Appendix B with anonymity. LO Scores of the participant organizations are changing from 4.89 being the highest to 1.78 being the lowest. Only six organization have LO Scores below 3.00, four of them have LO Scores over 4.50, 14 of them have LO Scores of 4.00-4.50 and lastly 16 of the organizations have LO Scores of 3.00-4.00. In calculation of ANOVA, significance is found

between the LO Scores of the participant organizations (p value < 0.05).

The overall LO Score for all of the forty organizations is **3.76**, it is compared for the demographic groups. There is significance for “Performing Self-assessment” such that organizations that are performing self-assessment have higher “LO Score” (3.90) than the organizations that are not performing self-assessment (3.18) which verifies **H8** being: Organizations that are performing self-assessment obtain significantly higher “LO Scores”.

4.9.1. Choosing the Targeted Organizations

Five organizations out of 40 are selected based on the selection criteria explained in Chapter 3. The targeted organizations are abbreviated as Company A (LO Score = 2.96), Company B (LO Score = 4.91), Company C (LO Score = 3.43), Company D (LO Score = 4.62) and Company E (LO Score = 4.24) for anonymity. Except Company A, all of them are currently performing self-assessment and having participated in National QAP and won an award before. From a statistically point of view, Company B and Company C, and Company D and Company E have significantly the same means, Company C and Company A have the lowest LO scores which are statistically different from any organization’s LO Score.

It is aimed to ascertain the extent to which they can be construed as learning organizations according to the perception of their employees, besides it is hypothesized those organizations which are using self-assessment at the same time display strong characteristics of learning organizations.

5. DATA ANALYSIS: SECOND PHASE OF THE SURVEY

5.1. Survey Instrument Reliability

Scale reliability should be carefully considered to ensure there is a measure of internal consistency in the set of scale items, and that there is purity and consistency of the measure. Cronbach's alpha is used for this study since it is adaptable for being used with instruments made up of items that can be scored with three or more possible values [41]. Its computation is based on the number of items on the survey (k) and the ratio of the average inter-item covariance to the average item variance which is calculated as follows:

$$\alpha = \frac{N \cdot \bar{r}}{1 + (N - 1) \cdot \bar{r}} \quad (5.1)$$

The closer Cronbach's alpha is to 1.00, the more reliable the scale is. The literature suggests that the lower cut-off point lies somewhere between 0.60 [43] and 0.70 [44]. A coefficient of 0.70 is taken as the minimum acceptability threshold for this study.

Cronbach's alpha of the whole survey is 0.988 indicating that the instrument is considered highly reliable. Cronbach's alpha for each LO characteristic (scales) and item-to-total correlations for all items in all scales are computed. There is no detection of a scale having a lower value than the threshold of 0.70. The scales are revalidated since all item-to-total correlations are higher than 0.35, the instrument is said to be highly reliable. The reliability analysis verifies H9 being "Constructs of the survey questionnaire, both individually and collectively, are reliable and valid for measuring the LO characteristics". Table 5.1 shows the summary of the reliability analysis. A detailed table can be seen in Table B.1.

Table 5.1. Summary of Reliability Analysis

LO Characteristics	Items	Cronbach Alpha	Mean	SD
Organizational Formation	6	0.852	4.46	0.49
Individual Learning	7	0.901	4.14	0.63
Experimentation	3	0.878	4.04	0.77
Learning from Failures and Successes	4	0.823	3.95	0.68
Innovation	7	0.921	4.01	0.74
Recognition and Rewarding	2	0.894	4.02	0.94
Continuous Improvement	4	0.874	4.23	0.67
Learning Opportunities	2	0.818	4.08	0.71
Leadership	11	0.940	4.24	0.64
Empowerment	2	0.789	3.89	0.76
Team Learning	5	0.910	4.23	0.70
Communication	7	0.924	3.99	0.74
Access to Information	4	0.898	4.24	0.74
Knowledge Sharing	6	0.859	4.10	0.67
IT Infrastructure	2	0.705	4.39	0.71
Performance Measurement	5	0.880	4.34	0.65
Total	77	0.988	4.15	0.59

5.2. Survey Demographics

For the second phase of the survey, it was aimed to collect 250 questionnaires. Five organizations are selected and 50 questionnaires are expected from each. However, 204 completed questionnaires are collected.

Self-assessment and award states about five organizations are portrayed in Table 5.2. Company A is a health care provider established in 1991. The others are manufacturing companies. Company B was established in 1980 and it is a manufacturer of group sockets, accessories, luminaries, distribution boxes, multi tariff electricity meters and lighting control modules. Company C is a manufacturer and trader of industrial yarn and tire cord fabric which was established in 1986 and Company D has been manufacturing innovative high-quality automotive technology, consumer goods and in-

dustrial technology products since 1967. Lastly Company E is a manufacturer and distributor of hospital products established in 1994.

Table 5.2. Self-assessment and Award States of Organizations

Activities	A	B	C	D	E
Self-assessment	Yes	Yes	Yes	Yes	Yes
Self-assessment Starting Year	2003	2003	1993	1996	1996
Quality Award Process	No	Yes	Yes	Yes	Yes
Award Winner	No	Yes	Yes	Yes	Yes

Professional demographics provide respondent individual information for gender, level of education, total work experience, years of working in the current organization and with the immediate supervisor from each of the targeted organizations. Table B.5 shows the professional demographics of the survey group.

5.3. Identification of LO Characteristics in the Pooled Data Set

In this section, the data analysis for the LO characteristics is carried out for the combined data. Means for sixteen characteristics are calculated and compared with each other. This study also shows data which sought to clarify whether the demographic groups surveyed displayed differences in their perception of the LO characteristics.

ANOVA computations reveal that there is a significant difference between LO characteristics. Since unequal variance is assumed, Tamhane's T2 test is performed for multiple comparisons. The groupings of the LO characteristics is shown in Table 5.3 from "Strongly Supported" to "Weakly Supported".

Table 5.3 shows in a descending order, the descriptive statistics of the LO characteristics calculated for the pooled data set. "Organizational Formation" has the highest mean of 4.46 indicating that respondents perceived that their organizations hold this core characteristic of a learning organization. "Empowerment" has the lowest mean of 3.89 indicating that respondents identified this characteristic as a weakly supported characteristic in their organizations.

Table 5.3. Learning Organization Characteristics for the pooled data set

Support	Rank	LO Characteristics	M	SD
Strongly Supported	1	Organizational Formation	4.46	0.49
	2	IT Infrastructure	4.40	0.70
	3	Performance Measurement	4.34	0.65
	4	Leadership	4.25	0.64
Moderately Supported	5	Access to Information	4.24	0.74
	6	Continuous Improvement	4.23	0.67
	7	Team Learning	4.23	0.70
	8	Individual Learning	4.14	0.63
Weakly Supported	9	Knowledge Sharing	4.10	0.67
	10	Learning Opportunities	4.08	0.71
	11	Experimentation	4.04	0.77
	12	Recognition and Rewarding	4.02	0.94
	13	Innovation	4.01	0.74
	14	Communication	4.00	0.74
	15	Failures and Successes	3.95	0.67
	16	Empowerment	3.89	0.76

5.4. Pearson's Correlations

The following hypotheses are formulated to test the significant relationship between LO characteristics and knowledge sharing in an organization:

H_i : LO characteristic i has a positive impact on knowledge sharing.

where i represents each of the 15 LO characteristics, i.e $i = 1$ for Organizational Formation, $i = 15$ for Performance Measurement.

Table 5.4 shows the Pearson's correlations (ranging from 0.572 to 0.802) between individual independent variables (15 LO characteristics) and the dependent variable (Knowledge Sharing). All correlations are statistically significant at $\alpha=5\%$ which verifies **H10** of the study.

Table 5.4. Pearson Correlations between LO Characteristics and Knowledge Sharing

Hypothesis	LO Characteristics	Pearson Correlation Coefficients
1	Organizational Formation	0.624
2	Individual Learning	0.715
3	Experimentation	0.715
4	Failures and Successes	0.676
5	Innovation	0.802
6	Recognition and Rewarding	0.701
7	Continuous Improvement	0.672
8	Learning Opportunities	0.694
9	Leadership	0.701
10	Empowerment	0.681
11	Team Learning	0.744
12	Communication	0.793
13	Access to Information	0.655
14	IT Infrastructure	0.572
15	Performance	0.748

5.5. Multiple Regression Analysis

Knowledge sharing is at the same time a primary contribution of the quality award processes. It is realized through the interactions of the assessors within the teams, among team members and with the applicant company as well as reflections of observed best practices to own organizations.

To identify the learning organization characteristics that are predictors of knowledge sharing, multiple regression analysis is employed. Regressions are estimated by using the following linear model 5.2:

High Level of Knowledge Sharing = Y such that:

$$Y = \beta_0 + \beta_1 Z_1 + \beta_2 Z_2 + \dots + \beta_k Z_k + \epsilon \quad (5.2)$$

where Z stands for the independent variables of learning organization characteristics excluding knowledge sharing.

During multiple regression analysis, one potential problem is multicollinearity among the set of predictor variables. It occurs when there are moderate to high intercorrelations among the predictors. According to Stevens [47], multicollinearity can have at least three effects. It severely limits the size of the multiple correlation coefficient (R^2), confounds the effects of the predictors due to their intercorrelations, and increases the variance of the regression coefficients which leads to unstable prediction equations.

To check multicollinearity, a procedure outlined by Stevens [47] is employed in which Variance Inflation Factors (VIF) are computed for each predictor variable. VIF is derived from *Tolerance* which is the proportion of a variable's variance not accounted for by other independent variables in the model. VIF is computed by using the formula of $VIF = \frac{1}{Tolerance}$.

Table 5.5 shows smaller VIF values which do not indicate a severe problem, there is not a degree of multicollinearity that could prevent the effective use of multiple regression.

Table 5.5. VIFs for the fifteen LO characteristics

	Collinearity Statistics	
LO Characteristics	Tolerance	VIF
Organizational Formation	0.315	3.175
Individual Learning	0.196	5.094
Experimentation	0.265	3.767
Failures and Successes	0.367	2.724
Innovation	0.177	5.655
Recognition and rewarding	0.347	2.882
Continuous Improvement	0.227	4.399
Learning Opportunities	0.305	3.275
Leadership	0.256	3.914
Empowerment	0.424	2.36
Team Learning	0.253	3.949
Communication	0.159	6.286
Access to Information	0.336	2.98
IT Infrastructure	0.471	2.123
Performance Measurement	0.237	4.218

Multiple regression analysis reveals that the model has an R^2 value of 0.744 which is significant at 5 %.

Table 5.6 shows 15 learning organization characteristics regressed on the dependent variable of knowledge sharing. Results reveal that five LO Characteristics namely “Learning from Failures and Successes”, “Innovation”, “Continuous Improvement”, “Empowerment” and “Performance Measurement” are proved to be the predictors of “Knowledge Sharing” where the regression coefficients are significant at 0.05.

Table 5.6. Multiple Regression Analysis Results

LO Characteristics	Model Coefficient	Beta	t	Sig.
Knowledge Sharing	β_0	0.000	2.788	0.006
Organizational Formation	β_1	-0.125	-1.968	0.051
Individual Learning	β_2	0.012	0.155	0.877
Experimentation	β_3	0.067	0.969	0.334
Failures and Successes	β_4	0.13	2.219	0.028 *
Innovation	β_5	0.361	4.257	0.000 *
Recognition and Rewarding	β_6	0.066	1.093	0.276
Continuous Improvement	β_7	-0.211	-2.818	0.005 *
Learning Opportunities	β_8	0.03	0.468	0.640
Leadership	β_9	-0.039	-0.550	0.583
Empowerment	β_{10}	0.127	2.314	0.022 *
Team Learning	β_{11}	0.098	1.391	0.166
Communication	β_{12}	0.155	1.738	0.084
Access to Information	β_{13}	0.025	0.413	0.680
IT Infrastructure	β_{14}	0.065	1.255	0.211
Performance Measurement	β_{15}	0.229	3.124	0.002 *
* significance at $p < 0.05$				

5.6. Analysis in Organizational Level

Section 5.3 represents the data analysis for the LO characteristics in the pooled data set. However, this section aims to analyze the LO characteristics for each of the participant organization.

For each organization, learning organization characteristics are sorted in descending order according to their means. ANOVA computations reveals that there is a significant difference between these characteristics. Therefore, multiple comparison tests are performed in order to group the characteristics based on the criteria explained in Section 4.9.

Table 5.7 shows in a descending order, means and standard deviations of the LO

characteristics calculated for Company A.

Table 5.7. Descriptive Statistics for LO Characteristics in Company A

Support	Rank	LO Characteristics	M	SD
Strongly Supported	1	Organizational Formation	4.02	0.57
	2	Performance Measurement	3.76	0.83
	3	Leadership	3.75	0.51
	4	IT Infrastructure	3.72	0.91
	5	Experimentation	3.57	0.77
	6	Access to Information	3.57	0.77
	7	Continuous Improvement	3.53	0.76
	8	Failures and Successes	3.52	0.72
Moderately Supported	9	Team Learning	3.50	0.56
	10	Knowledge Sharing	3.50	0.76
Weakly Supported	11	Innovation	3.47	0.87
	12	Individual Learning	3.45	0.65
	13	Learning Opportunities	3.36	0.82
	14	Communication	3.22	0.63
	15	Empowerment	3.03	0.87
	16	Recognition and Rewarding	2.97	1.12

By the similar approach, the LO characteristic means are calculated and grouped accordingly for the other companies. Related tables are shown in Appendix B.

5.7. Learning Organization Scores for Targeted Organizations

The final of goal of the research is to compare the “Learning Organization Scores” of the participant organizations for the second phase of the survey.

The overall LO score for the pooled data is 4.16 and LO scores of the respondent five organizations are shown in Table 5.8

The calculation of one-way ANOVA reveals that “LO Scores” of the organizations are significantly different from each other (p value < 0.05). Since equal variance is

Table 5.8. Comparison of the LO Scores of the companies

Company	N	Mean	SD
Company E	52	4.40	0.44
Company B	45	4.34	0.43
Pooled	204	4.16	0.58
Company D	50	4.14	0.60
Company C	39	3.95	0.64
Company A	18	3.54	0.54

assumed, Tukey HSD is performed for multiple comparisons. The tests show that Company E has an overall LO score which is statistically significant with Company B and Company D (p values are 0.976 and 0.089 respectively) and Company A has an overall score is statistically significant with Company C (p value = 0.057).

Collectively, three of the targeted organizations have high overall LO Scores (higher than 4.00) and the two of them have low scores (lower than 4.00) indicating that the majority of surveyed institutions demonstrate most of the characteristics of a learning organization. The results also shows that Company E, Company B and Company D are more mature than Company C and Company A in being a Learning Organization according to overall LO Scores.

When the individual responses are compared, Company E and Company B have significantly higher results on most of the learning organization characteristics. This indicates that the Company E and Company B have more fully developed these practices within their organizations. Company A, Company C and Company D still need to focus on the LO practices. However, it is found that the targeted organizations which are performing self-assessment and having participated or planning to participate in National and European quality award processes, all of which have a learning orientation, are enthusiastic and committed to becoming a LO at the time of survey. All of them have implemented many of the characteristics and exhibited many of the ideal attributes outlined in the conceptual model.

It is also concluded from the study that the best use for the learning organization tool developed is in its internal use in one organization, and not in comparing different organizations with one another.

5.8. Survey Instrument Refinement

As a further research, this section will present the preliminary analysis to refine the survey questionnaire. Some statistical approaches are as follows as suggested by Kim *et al* [51].

1. Cronbach's alpha of the sixteen LO characteristics is re-checked for the suitability of factor analysis.
2. Missing values are replaced by the scale means.
3. Principal Component Analysis with Varimax orthogonal rotation is adopted.
4. The Kaiser-Meyer-Olkin value is calculated and checked for a minimum of 0.60.
5. The Bartlett Test of Sphericity is tested with a significance value at 0.05.
6. An eigenvalue-one criterion is applied to keep or discard factors.
7. The derived factors are checked to explain 50% or more of the variance in each of communalities.
8. Variables with factor loading less than 0.40 are eliminated.
9. Variables with factor loadings on another scale above 0.40 are eliminated.
10. Factors with only one item are removed.
11. Reliability of the factors is checked using Cronbach's Alpha coefficients.

Churchill [45] suggests that reliability analysis should be the first measure done before preceding any factor analysis. This is considered necessary to remove those garbage items that tend to produce many more dimensions than can be conceptually identified. In Chapter 5, the reliability of the survey instrument is checked and concluded that all scales had a Cronbach's Alpha greater than 0.70 [44], and item to total correlations satisfied the minimum of 0.35 such as all of them are greater than the threshold as suggested by Bontis *et al* [46]. Therefore, it is confirmed that the data is suitable for factor analysis.

Factor analysis is a method for investigating whether a number of variables of interest Y_1, Y_2, \dots, Y_l , are linearly related to a smaller number of unobservable factors F_1, F_2, \dots, F_k .

It has been suggested that the characteristics are functions of underlying factors, F_k . It is assumed that each Y variable is linearly related to the factors, as follows:

$$Y_l = \beta_0 + \beta_{lk}F_k + e_l$$

The error terms e_l serve to indicate that the hypothesized relationships are not exact. The parameters β_{lk} are referred to factor loadings. For example, β_{12} is called the loading of variable Y_1 on factor F_2 .

Prior to performing PCA, the suitability of the data for factor analysis is assessed. Inspection of the correlation matrix reveals the presence of many coefficients of 0.30 and above. The Kaiser criterion states that it should be used a number of factors equal to the number of the eigenvalues of the correlation matrix that are greater than one. The Kaiser-Meyer-Olkin value was 0.95, which exceeded the recommended value of 0.60. The Bartlett Test of Sphericity reaches statistical significance, supporting the factorability of the correlation matrix.

PCA reveals the presence of 10 factors components with Eigen values exceeding one, which explain 49.89%, 3.35%, 3.03%, 2.49%, 2.07%, 1.87%, 1.75%, 1.57%, 1.47% and 1.42% of the variance respectively. To aid in the interpretation of these 10 factors, Varimax Rotation is performed. It is the best and most common orthogonal rotation procedure as suggested by Bontis [46]. The rotated solution concludes the presence of a simple structure showing a number of strong factor loadings.

Firstly, variables with factor loadings less than 0.40 (Item 13, Item 28, Item 30, Item 35, Item 36, Item 53, Item 54, Item 55, Item 56, Item 58, Item 67) are eliminated. Items which have factor loadings more than 0.40 on more than one factor are extracted. Therefore, Item 2, Item 9, Item 19, Item 20, Item 26, Item 37, Item 38, Item 40, Item

60, Item 71 and Item 77 from the original instrument of 77 items are eliminated by this approach.

After eliminating 22 items, it is seen that one factor has only one item. Therefore, Item 74 is also eliminated since it is hard to measure a characteristic by a single item.

In conclusion, the survey questionnaire is refined by eliminating 23 items. There appears nine factors that account for 64.5% of the total variance. These are the new LO characteristics of the survey questionnaire. The definitions for the new learning characteristics are given according to the contents of the relevant items involved. The new LO characteristics are summarized in Table 5.9. This new structure is different from the original characteristics of the conceptual model of this study. Cronbach's Alpha coefficients for the nine factors are computed and item-to-total correlations are checked for validity. There is no detection of factors having parameters under the suggested values by the literature. Therefore the refined instrument is said to be reliable with nine factors and 54 items.

Table 5.9. Summary of Reliability for the New Instrument

LO Characteristics	N	Items	Cronbach's Alpha
Innovation and Knowledge Sharing	13	14, 15, 21, 22, 23, 24, 25, 27, 33, 39, 65, 69, 70	0.949
Individual Learning	9	5, 6, 7, 8, 10, 11, 12, 32, 34	0.925
Leadership	6	41, 42, 43, 44, 45, 46	0.928
Access to Information	6	57, 59, 61, 62, 63, 64	0.917
Team Learning	6	29, 31, 49, 50, 51, 52	0.912
Failures and Successes	4	16, 17, 18, 68	0.785
Organizational Formation	3	1, 3, 4	0.749
Performance Measurement	4	72, 73, 75, 76	0.845
Empowerment	3	47, 48, 66	0.773

6. DISCUSSION AND RECOMMENDATIONS

6.1. Final Remarks

The purpose study is identified in the first chapter as to analyze the impact of QAP on individual and organizational learning of the assessors and to compare LO maturity levels of five organizations which are utilizing EFQM Excellence model for quality improvement. Chapter 2 presents an overview of the related research. It serves as a learning step into the research topic and portrays the driving forces essential to carry out the project. It creates familiarity with subject matter researchers, distinguishes their ideas, and reveals the existing points of views and serves as a frame of reference for the study of Quality Award Process as on the way of a learning organization.

Chapter 3 is a breakdown of the tools and techniques of the methodology employed in this study to accumulate the data necessary to achieve the research objectives. It provides a detailed explanation of the study hypotheses, methodology, questionnaire design, population selection, instrumentation, validation procedure, data collection goals and techniques and survey limitations. The survey is held in two subsequent phases. In the first phase, the population is chosen as the individuals acting as assessors in National and/ or European QAP. The instrument is designed around the primary themes of Quality Award Process and learning organizations uncovered in Chapter 2. It is an attempt to gain statistical data around specific subject matters. Five organizations from the sample of the first phase survey are selected as targeted organizations for which second phase of the survey is designed in order to evaluate their employees' perspectives for the organization's current status in being a learning organization.

Chapter 4 and Chapter 5 present the survey results of the first and second phase of the study respectively. Chapter 4 describes the demographics of survey participants and the descriptive statistical analysis of the survey questions related to individual and organizational learning of the assessors in relation with the QAP and the LO char-

acteristics of the participant organizations. The data of the first phase of the study covers numerous Turkish organizations, there were answers from 59 assessors from 45 distinct organizations. This is a very interesting starting point for analyzing the data, but also somewhat restricting, because the variety makes generalization difficult. In other words this data provides information about the organizations from the perspectives of their assessors involved the survey, by treating the response of an assessor as an organization-level indicator. LO Score for each of the participating organization is also calculated and some conclusions are drawn for these organizations. Comparisons of the organizations and some recommendations will be given in this chapter.

Chapter 5 describes the second phase of the survey covering five selected organizations. Demographics of targeted organizations' respondents, descriptive statistical analysis of the survey questions related to the each LO characteristic are presented. Inferential statistics such as one-way ANOVA and multiple comparisons tests are performed. LO Scores of the five participating organizations were calculated and compared and also validated by statistical tests. The analysis of results displayed in Chapter 5 reflects several factors as influential to the presence of LO characteristics within the five targeted organizations. Some of them are found to be strong, while others are revealed as moderate or weak.

This final chapter briefly summarizes significant details from each of the previous five, comments on inferences that correlate to each study hypothesis, to draws conclusions from the study, covering also limitations and contributions of the research, and to provides recommendations for further research around the applicability of a LO phenomenon in the workplace. As a basis for discussion, these inferences are unproven theory and findings extracted from data supplied by the sample group and based on individual's perspectives.

6.2. Contribution to Research

This research has developed an instrument which can help management to realize the impact of the Quality Award Process on learning.

It is shown in this study that quality award process has impacts on individual and organizational learning of assessors and the organizations in transformation into a learning organization. This study will guide organizations to support their employees become assessors to have learning opportunities. In addition, this study offers a tool for the organizations to systematically examine the levels of learning organization characteristics that are needed to be developed or prioritized in the organizations.

6.3. Conclusions for the First Phase of the Survey

Survey results show that organizations that are performing self-assessment and having participated in Quality Award Processes before support this process more strongly by encouraging their employees to act as assessors. The assessors spend approximately 100 man hours of their time in this process, and organizations that are performing self-assessment or having participated in QAPs are aware of the benefits of the assessors' in terms of acquiring new knowledge from their experiences, hence they support them to be involved in this process and be away from workplace for approximately 100 hours annually.

According to the survey results, the first two reasons of becoming an assessor are found as gaining "Individual Learning" and "Organizational Learning", these preferences change after the assessors get experienced in the assessment process, such that the percentages of preferences in choosing "Social Networking" and "Social Responsibility" increase. This indicates that individuals, at the beginning of their assessor career desire to get individual knowledge, such as information about the EFQM Excellence Model, RADAR Scoring System, best practices, useful tools and techniques. But after they become experienced, they have met many people from different organizations and constructed communication networks and began to see their roles as a

contribution to their own organization, to the assessed organizations, to the business sector and finally to the community. Therefore, building communication networks, and bearing social responsibility gain more significance to continue being an assessor.

According to the perceptions of the assessors who have not yet experienced site visiting yet, the assessment steps of training, individual assessment, and consensus meeting after individual assessments contribute the same to their individual and organizational learning. For the assessors who have experienced site visiting, the most valuable benefit to their individual and organizational learning comes from the assessment step of “Site Visit”. This indicates that assessors learn better when they see the information in the submitted documents on site, having met with the staff of the assessed organizations, build relationships, and clarify the questions arisen during the prior assessment steps. Besides, they have the opportunity to examine the practices, tools and techniques closely and understand the holistic system approach of the organizations which contribute to their organizational learning to some extent.

The individual skills or competencies that are mostly developed in the assessment process are assessing different organizational cultures, individual learning, and ability of working in assessor teams and enhancing the communication skills, applying a holistic approach to the organization and being experienced in assessment. The other skills or competencies, whilst still enjoying a degree of support, are not as strongly identified as the other skills, are project and resource management, analytical thinking and problem solving, working under stress, leadership and innovation.

For the individual skill of “Leadership”, respondents having site visit experience or being a lead assessor have significantly higher scores than the respondents having no site visit or lead assessor experience. This indicates that leadership is perceived to be significantly developed more on site visits and after being a lead assessor which means after leading the other assessors in teams. Further analysis shows that having a site visit experience has more impact on the “Leadership” than having a lead assessor experience.

For the impact of QAP on organizational learning, it is concluded from the survey results that the more impact of the assessment process is against “Recognizing different organization cultures and applying them to the own organization”. However, no significance is found among the organizational contributions. Hence it indicates a consistency among the respondents. For the contribution of “Prepare for Award”, respondents who are working in a company which is performing self-assessment have significantly higher perceptions than the other respondents from companies which are not performing self-assessment. This is meaningful because, the assessors who are working in an environment that is currently utilizing self-assessment try to get benefit from the QAP in order to prepare their company for being an applicant. They have the chance to learn how to write a rigorous submission document or how to get prepared for the site visits. When the impact of the quality award process on the assessors’ individual and organizational learning are compared, “Individual Learning” is found to be significantly higher than “Organizational Learning” which is compatible with the reasons of being an assessor. Thus, it is concluded that individuals try to get benefit from the assessment process first for their individual learning and development.

The responses from 59 assessors are pooled into a single data set to compare the LO characteristics for the respondent organizations. “IT Infrastructure” is found to be the strongest LO characteristics which indicates that the respondents perceived their own organizations have developed information technologies systems for the knowledge management and communication. Whereas “Recognition and Rewarding” is perceived to be the weakest LO characteristic. It is concluded that management in these organizations needs to improve this supporting culture in rewarding organizational members who promote cultural values.

Organizations performing self-assessment have higher “Learning Organization Scores” than the others. This conclusion inspired us to further analyze the LO maturity level of the organizations that are currently performing self-assessment. Hence, five organizations are selected as targeted organizations for the second phase of the survey based on the criteria described in Chapter 3.

The targeted organizations are abbreviated as Company A to Company E for an anonymous comparisons. According to the result of the first phase survey, Company B and D, and Company D and E have significantly same individual LO Scores, Company A and Company C have lower LO Scores which are statistically different from the other organizations' LO Scores.

6.4. Conclusions for the Second Phase of the Survey

At the beginning of the study, a conceptual model of a learning organization is constructed. The model explored the LO characteristics that can be implemented and continuously improved by an organization when transforming to a learning organization. The model includes five basic features: Organizational culture, HR management, Communication, Knowledge management and, Performance measurement.

A valid and reliable survey instrument to measure these LO characteristics in organizations is developed (as a consolidation of the previous research questionnaires). It is validated by two subsequent surveys. The first survey is employed among the assessors, whereas the second one is surveyed among the employees of five organizations. It is concluded that survey instrument is valid and reliable for assessing the development of the LO concept.

A series of statistical analysis is performed to test the study hypotheses stated in Chapter 3.

The major aim of the statistical tests in the second phase of the survey is to find out the strong and weak LO characteristics for the survey population. ANOVA and multiple comparisons tests reveal the LO characteristics which are weakly to strongly supported by the respondents in aggregate and organizational levels.

As a conclusion, LO characteristics presented in five companies are evaluated and compared to each other. From the perceptions of the employees of five selected organizations, "Organizational Formation", "IT Infrastructure" and "Performance Mea-

surement” are found to be strongly supported and “Empowerment”, “Learning from Failures and Successes”, “Communication” are found to be weakly supported. Organizational differences are made clear by analyzing each company individually and comparing the organizations collectively in pooled data set.

To find out the relationships among LO characteristics, Pearson correlation coefficients are calculated. The analysis indicates that most of the LO characteristics as independent variables have a significant positive correlation with each other. In addition, multiple regression analysis is performed to identify the predictor LO characteristics on knowledge sharing which is the one of the substantial LO characteristics developed through quality award process.

The analysis concludes that “Learning from Failures and successes”, “Innovation”, “Continuous improvement”, “Empowerment” and “Performance Measurement” are the significant predictors of “Knowledge sharing” in an organization. Consequently, companies should focus initially on these characteristics to aid in the transformation from the current status to that of a learning organization.

6.5. Comparison of Targeted Organizations

Figure 6.1 is a graphical representation of LO characteristics in descending order for the pooled data set. The following sections discuss the learning organization characteristics according to this classification illustrated by Figure 6.1, and by keeping the Rosengarten’s [48] conclusion that the characteristics can be ranked according to their impact on organizational learning.

6.5.1. Strongly Supported Characteristics

There are three characteristics that are found to be strongly supported for all the survey participants namely “Organizational Formation”, “IT Infrastructure” and “Performance Measurement”. Although analyzed as three separate entities, there might be a degree of inter-correlation and interdependence between these three characteristics.

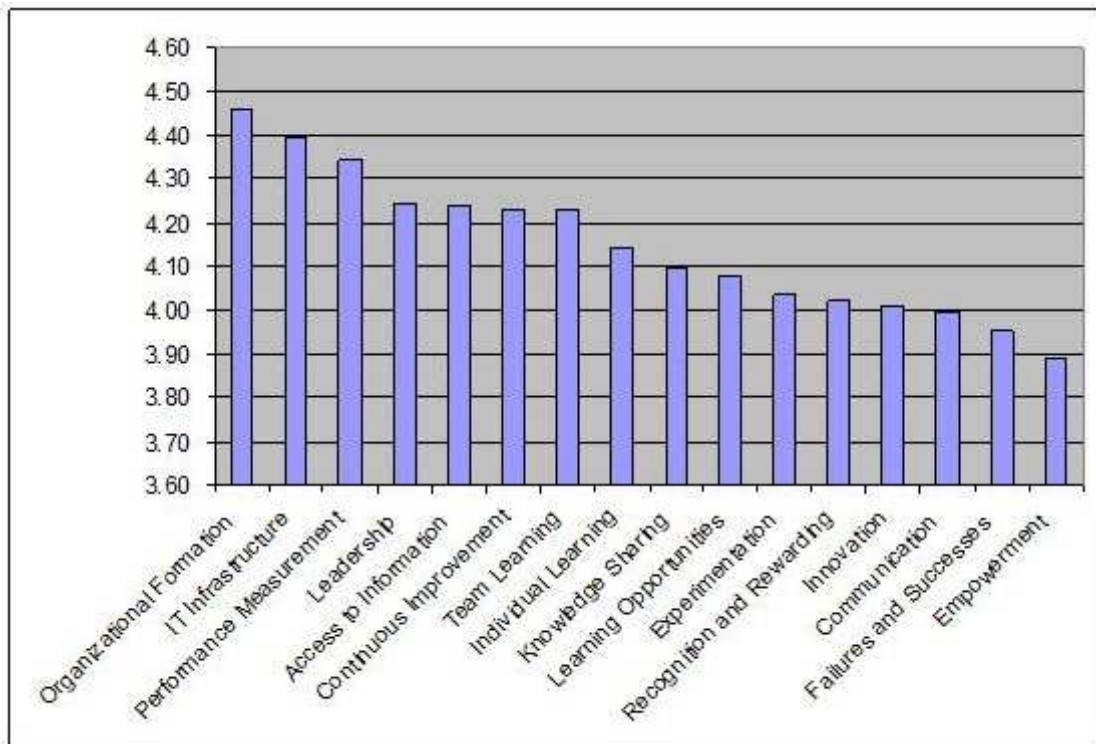


Figure 6.1. Descriptive statistics ranking the LO characteristics from highest to lowest mean per item

For example, performance is monitored effectively with the support of a strong systemic information technology infrastructure, whilst both operate within, and are focused by, the broad context of a shared vision, mission and organizational values.

When analyzed in organizational level, Company B and E have higher means than the overall averages on all of the strongly supported characteristics when compared with Company A, D and C. This indicated that Company B and E have fully developed these practices than the others. The comparison tables are shown in Table B.10, Table B.11 and Table B.12.

Comparison of companies indicates that the employees in Company B and E are much more aware of their organizations' mission, vision and values which are clearly defined and shared within the organization than the employees in Company A, C and D. Organizational Formation is suggested as essential for gathering learning outcomes. Many researchers argue that employees need to understand the mission, vision and goals of the organization and know how their work contributes to their attainment [6].

The importance of this focus on “Organizational Formation” is also consistent with the ideas of Senge [4] who claims that information about the mission of an organization and a shared vision is critical to empowering employees and developing innovative organizations, and without this information people will not extend themselves to take responsibilities. Therefore, this subject needs to be better communicated in Company A, C and D.

The results also show that Company B and E provide their employees better conditions on computer based information systems such as local area network and Internet to enhance their knowledge levels than Company A, D and C. IT Infrastructure is suggested by Bennett and O’Brein [5] that using advanced technology and to obtain and distribute knowledge by information technology is one of the key factors that influence the organization’s ability to learn and change.

In terms of Performance Measurement, again Company B and E have more clearly described financial and non-financial performance indicators, and compare their performance results with competitors and industry leaders than Company A, C and D. As suggested by Buckler [49] organizational performance needs to be assessed by a number of specific indicators. For performance assessment, benchmarking is one of the best tools. Garvin [8] also suggests that learning from the best practices of others or from benchmarking is one of the main LO issues. This study has however found that there is a lack of performance indicators in terms of comparison with the competitors in Company A, C and D. These organizations should better enhance the related activities to performance assessment and measurement.

6.5.2. Moderately Supported Characteristics

There are five moderately supported characteristics for all the survey participants namely, “Leadership”, “Access to Information”, “Continuous Improvement”, “Team Learning” and “Individual Learning”. The following sections discuss the moderately supported LO characteristics in detail. The comparison of companies are shown in Tables from B.13 to B.17.

Analysis of these characteristics show similar results such that these characteristics are more perceived to be fully developed in Company E and B than in Company A, D and C.

For “Leadership”, the results indicates that leaders in Company E and Company B are more accessible, trusted and supporter of change in the organization and they frequently involve employees in decisions and support their employees self development than the leaders in Company A, Company C and Company D. Gephart and Marsick [23] suggest that leaders at all companies need to support learning and development of employees. This study shows that in Company A, C and D, leadership should be encouraged.

For “Access to Information”, it is also concluded that in Company E and B, individuals more easily access accurate and updated information to work more efficiently and effectively than in Company A, C and D.

“Continuous Improvement” analysis results show that Company E, B and D set their short and long term organization goals and adopts continuous improvement throughout the organization than Company A and C in which this characteristics should be enhanced through management practices.

Analysis of “Team Learning” also concludes that Company B and E support team work and team learning to solve problems than Company A, C and D. Team building is one of the fundamentals of a LO as Senge [4] identifies team learning and advocates that the ability of teams is comprised of the ability of its individual members. Team learning takes place when members are open to give and receive information. This study shows Company A, C and D should address team work and team learning in order to enhance their positions on the way of becoming a learning organization.

As the last moderately supported characteristics, “Individual learning” is perceived mostly developed in Company B, D and E which support their employees more frequently to continuously enhance and develop their individual knowledge, skills, com-

petencies and education by providing resources such as training, time and money than Company A and C. This characteristic is suggested by Welch (1993) such that one way to upgrade employee's competencies is through intensive and continuous training. This discussion is in line with Bennett and O'Brien's [5] idea that learning and training is essential for organizational change and expansion. In addition, organizational members not only need to learn, learn how to learn but also how to think innovative. Therefore Company A and C should address this characteristic in order to be a learning organization.

6.5.3. Weakly Supported Characteristics

According to the grouping criteria established for this study, "Empowerment", "Learning from Failures and Successes", "Communication", "Innovation", "Recognition and Rewarding", "Experimentation", "Learning Opportunities" and "Knowledge Sharing" are found to be "Weakly Supported" LO characteristics for the participating organizations. The comparison of companies are shown in the Tables from B.18 to B.25.

Similar to the other groupings of characteristics described, Company E and B also have higher scores on these characteristics.

For "Knowledge Sharing", the results mean that in Company E and B, individuals are more encouraged and actively supported to share knowledge with others from in and outside the organization than in Company A, C and D. As Nonaka [5] suggests that to develop learning organizations employees are a main source of organizational knowledge such that employees should be take part in sharing knowledge, which will benefit other members as well as the organization as a whole. This finding is also suggested by Garvin [8] who advises that knowledge transfer is one of the building blocks for a LO and knowledge needs to be distributes quickly and effectively across the organizations. This study revealed that knowledge sharing should be addressed by Company A, C and D if they want to become a learning organization.

For “Learning Opportunities”, Company E, B and D more continuously provide learning opportunities such as “learning by doing” than Company A and C.

For “Experimentation”, Company B and E more strongly support all the individuals across the organization to experiment new ideas which are considered to have a high impact on the organization than Company A, C and D.

For “Recognition and Rewarding”, Company B and E more frequently recognize and reward learning and knowledge sharing and being innovative than Company A, C and D. As suggested by Bennett O’Brein [5] reward and recognition systems either in financial or non financial terms encourage the development of a LO. Therefore Company A, C and D needs to be focused on to move the organization towards a learning organization.

For “Innovation”, Company B and E more frequently transfer and provide opportunities to practice the innovative methods and techniques, support their employees from all levels to be innovative and regularly put new ideas and services/products into practice than Company A, C and D. Literature review also suggests that in a LO, employees should be free to try new ideas even if the chance of succeeding is not high [34]. However in this study, such a culture is not found to be strong in Company A and C. Therefore an implication for practices here is that management needs to review how to encourage employees to accept failures and to be innovation, to speak out openly and be honest in order to enforce a learning culture in organizations.

For “Communication”, it indicates that in Company B and E there is a clear and accurate communication between the employees in the organizations, and employees also communicate freely with external shareholders than in Company A, C and D. As Garvin [8] recommends knowledge needs to be transferred quickly and efficiently through the organization and Hill also points out that it is essential for learning organizations to have free and open communication channels with the external parties. Research findings in this study show that knowledge is not communicated quickly and clearly in Company A, C and D at a desired level.

For “Learning from Failures and Successes”, it concludes that Company D and E provides opportunities for employees to learn and share their own experiences from failures and successes as well as failures and successes of others’ in and outside the organization than Company A, B and C. As Gephart and Marsick [23] recommend that a learning culture enables members to share mistakes and view them as opportunities for learning, in addition organizational members in learning organizations should spend time in analyzing competitors’ successes and failures and always reviewing ideas put forward by their suppliers. This study revealed that this characteristic is lacking at most of the companies. However the analysis of successes and failures is an issue that management of all of the companies needs to be focused on to move the organization towards a learning organization.

For the weakest learning organizations characteristic namely “Empowerment” , the results indicate Company E and B have more fully developed these practices within the organizations than the other companies. It means that Company E and B provide resources and support their employees to put their learning into practice by taking risks than Company A, C and D. This study has found that employees are not usually decided what they need to do in their job in all companies. This is congruence with the view of Waldersee [28] who views that self-regulation of employees should start with self-goal-setting, followed by provision of feedback on performance. Therefore management of all of the companies needs to be focused on “Empowerment” to move their organizations towards a learning organization.

6.6. Suggestions for Further Research

This study collects and analyzes data that can be used to identify the impact of quality award assessment process on individual and organizational learning of the assessors and compared LO characteristics in the organizations by classifying them strongly of weakly perceived. Further research could add to that foundation:

1. There are 77 items in the questionnaire which may be considered rather long. It may, therefore, benefit from further refinement and simplification in practice.

2. The preliminary refinement of the survey instrument should be interpreted with some degree of caution. With the discarding of certain questions, certain characteristics have only two or three questions to be measured. Clearly, additional questions need to be identified, included, and re-tested.
3. In the first phase of the survey, the data covers Turkish organizations very widely, because there are answers from 45 distinct organizations. Thus, the data provides information about the perceptions of the assessors in these organizations, but not necessarily as whole organizations.
4. This study could be repeated with using the same organizations in three to five years. The findings from such a study could be compared to the findings of this study to determine if the self-assessment process positively affects the Learning Organization Scores. The results of this study could infer that the self-assessment process is a tool that enhances an institution's maturity level as a learning organization.
5. This study could be conducted among the employees in different industry sectors or in higher education. Replicating this study in other environments will help to determine the extent to which the presented results can be generalized to other settings as well.

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APPENDIX A: First Phase of the Survey

Table A.1. Demographics for the First Phase of the Survey

	Total Experience		Current Organization Experience	
	Number of Respondents	Percent of Respondents (%)	Number of Respondents	Percent of Respondents (%)
0-5 years	1	1.7	23	39
6-10 years	16	27.1	20	33.9
11-15 years	10	16.9	7	11.9
16-20 years	13	22	5	8.5
21-25 years	8	13.6	3	5.1
Over 25 years	10	16.9	1	1.7
Missing	1	1.7	-	-
Total	59	100	59	100

The highest number of respondents from the same organization is four, 36 organizations have only one representative, five organizations have two and the remaining three organizations have three representatives in the sample group of 59 assessors. There are 18 assessors who have been a lead assessor and 42 assessors who have worked in the assessment step of “Site Visiting” before.

Table A.2. Number of Organizations and Respondents

Organizations	Number of Assessors	Organizations	Number of Assessors
1	2	25	1
2	1	26	1
3	1	27	3
4	3	28	2
5	1	29	1
6	3	30	1
7	1	31	1
8	1	32	1
9	1	33	1
10	1	34	1
11	1	35	1
12	1	36	1
13	2	37	1
14	1	38	1
15	1	39	1
16	1	40	1
17	1	41	1
18	4	42	1
19	1	43	1
20	1	44	1
21	1	45	1
22	2	Total	35
23	2	Mean	1.46
24	1	SD	0.83

Table A.3. Assessor Experience

Experience	N	Percentage
1-5 years	29	49.20%
5-10 years	18	30.50%
Over 10 years	12	20.30%
Total	59	100.00%

Table A.4. Assessors in Different Assessment Steps

Assessor Experience	Number
Training	59
Self assessment in the organization	48
Individual assessment	55
Site visiting	42
Being a lead assessor	18
Being an assessor in Europe	9
Being a lead assessor in Europe	3

Table A.5. Self-assessment Starting Year

Starting Year	Number of Organizations
1993	2
1994	0
1995	0
1996	3
1997	1
1998	1
1999	2
2000	3
2001	1
2002	0
2003	3
2004	5
2005	3
2006	5
Total	29

Table A.6. Quality Award Process Application Plans

	National Award Process	European Award Process
Years	Number of Organizations	Number of Organizations
2008	6	1
2009	3	3
2010	4	2
2011	2	1
2012	1	0
Total	16	7

Table A.7. Number of Assessors Participated in Quality Award Process

	SA		QAP	
	Yes	No	Yes	No
2001	22	17	14	8
2002	21	8	12	9
2003	16	9	7	9
2004	33	9	15	18
2005	35	10	15	20
2006	47	13	25	22
Total	69	23	37	32

Table A.8. ANOVA for Individual Skills and Competencies

Source of Variation	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	107.626	14	7.688	13.077	0.000
Within Groups	503.235	856	0.588		
Total	610.861	870			

Table A.9. LO Scores of 40 Participant Organizations

Organization Number	LOS	Number of Assessors	Organization Number	LOS	Number of Assessors
1	4.89	1	22	3.90	3.00
2	4.83	1	23	3.80	1.00
3	4.63	1	24	3.58	1.00
4	4.58	1	25	3.54	1.00
5	4.43	1	26	3.51	2.00
6	4.36	4	27	3.50	3.00
7	4.35	1	28	3.48	1.00
8	4.35	1	29	3.31	1.00
9	4.25	2	30	3.26	3.00
10	4.23	1	31	3.16	1.00
11	4.19	1	32	3.06	1.00
12	4.18	1	33	3.04	1.00
13	4.16	2	34	2.98	1.00
14	4.10	2	35	2.73	1.00
15	4.08	1	36	2.61	1.00
16	4.06	1	37	2.50	1.00
17	4.04	2	38	2.38	1.00
18	4.00	1	39	2.05	1.00
19	3.97	1	40	1.78	1.00
20	3.95	1	Mean	3.69	1.35
21	3.93	1	SD	0.75	1.36

APPENDIX B: Second Phase of the Survey

Table B.1. Reliability Analysis

LO Characteristics	Alpha	Items	Item-total Correlation
Organizational Formation	0.852	1	0.584
		2	0.670
		3	0.613
		4	0.717
		5	0.668
		6	0.645
Individual Learning	0.901	7	0.718
		8	0.770
		9	0.624
		10	0.675
		11	0.741
		12	0.757
		13	0.709
Experimentation	0.878	14	0.753
		15	0.813
		16	0.742
Failures and Successes	0.823	17	0.657
		18	0.721
		19	0.634
		20	0.585
Innovation	0.921	21	0.759
		22	0.819
		23	0.691
		24	0.752
		25	0.812
		26	0.738
		27	0.712

LO Characteristics	Alpha	Items	Item-total Correlation
Recognition and rewarding	0.894	28	0.809
		29	0.809
Continuous Improvement	0.874	30	0.655
		31	0.746
		32	0.789
		33	0.740
Learning opportunities	0.818	34	0.692
		35	0.692
Leadership	0.940	36	0.684
		37	0.732
		38	0.770
		39	0.741
		40	0.790
		41	0.778
		42	0.780
		43	0.778
		44	0.597
		45	0.736
		46	0.792
Empowerment	0.789	47	0.663
		48	0.663
Team Learning	0.910	49	0.798
		50	0.831
		51	0.812
		52	0.748
		53	0.674

LO Characteristics	Alpha	Items	Item-total Correlation
Communication	0.924	54	0.741
		55	0.806
		56	0.761
		57	0.806
		58	0.656
		59	0.802
		60	0.780
Access to Information	0.898	61	0.784
		62	0.766
		63	0.802
		64	0.749
Knowledge Sharing	0.859	65	0.727
		66	0.626
		67	0.690
		68	0.487
		69	0.685
		70	0.703
IT Infrastructure	0.705	71	0.545
		72	0.545
Performance Measurement	0.880	73	0.736
		74	0.641
		75	0.801
		76	0.776
		77	0.660

Table B.5. Demographics for the Second Phase of the Survey

		Aggregate	A	B	C	D	E
		%	%	%	%	%	%
Gender	Missing	11.80	22.20	6.70	15.40	14.00	7.70
	Female	30.90	66.70	15.60	30.80	18.00	44.20
	Male	57.40	11.10	77.80	53.80	68.00	48.10
Education	Missing	2.50	0.00	4.40	5.10	0.00	1.90
	High School	14.70	11.10	11.10	12.80	32.00	3.80
	Academy	13.70	16.70	20.00	12.80	10.00	11.50
	Bachelor	48.00	38.90	53.30	41.00	40.00	59.60
	Master	17.20	22.20	8.90	20.50	18.00	19.20
	PHD	3.90	11.10	2.20	7.70	0.00	3.80
Total Experience	Missing	5.90	5.60	4.40	7.70	6.00	5.80
	0-5 years	19.60	27.80	13.30	20.50	28.00	13.50
	6-10 years	25.50	33.30	24.40	23.10	24.00	26.90
	11-15 years	20.10	11.10	31.10	5.10	20.00	25.00
	16 +	28.90	22.20	26.70	43.60	22.00	28.80
Current Organization	Missing	3.90	5.60	4.40	5.10	2.00	3.80
Work Experience	0-5 years	43.10	66.70	55.60	28.20	44.00	34.60
	6-10 years	27.50	22.20	35.60	20.50	32.00	23.10
	11-15 years	14.20	5.60	4.40	10.30	12.00	30.80
	16 +	11.30	0.00	0.00	35.90	10.00	7.70
Immediate Supervisor	Missing	6.90	5.60	6.70	10.30	6.00	5.80
Work Experience	0-1 year	28.40	27.80	20.00	23.10	36.00	32.70
	2-5 years	46.60	55.60	60.00	43.60	48.00	32.70
	6-10 years	14.70	11.10	13.30	23.10	10.00	15.40
	11 +	3.40	0.00	0.00	0.00	0.00	13.50

Analysis in Company B

Table B.6 shows in a descending order, means and standard deviations of the LO characteristics calculated for Company B.

Table B.6. Descriptive Statistics for LO Characteristics in Company B

Support	Rank	LO Characteristics	M	SD
Strongly Supported	1	IT Infrastructure	4.73	0.50
	2	Performance Measurement	4.61	0.47
	3	Organizational Formation	4.53	0.38
	4	Recognition and Rewarding	4.52	0.61
	5	Team Learning	4.49	0.54
	6	Continuous Improvement	4.41	0.53
	7	Access to Information	4.41	0.58
	8	Leadership	4.41	0.49
Weakly Supported	9	Communication	4.30	0.55
	10	Individual Learning	4.27	0.52
	11	Learning Opportunities	4.25	0.66
	12	Knowledge Sharing	4.25	0.59
	13	Experimentation	4.17	0.70
	14	Innovation	4.12	0.59
	15	Empowerment	4.07	0.65
	16	Failures and Successes	3.92	0.62

In the calculation of ANOVA, significance is found between the LO characteristics (p value = 0.009). Tamhane's T2 test is performed for multiple comparisons. After the data analysis, the groupings of characteristics are shown in the Table B.6 from "Strongly Supported" to "Weakly Supported". It is found that the means of LO characteristics of Company B are higher than the means of the pooled data.

Analysis in Company C

Table B.7 shows in a descending order, means and standard deviations of the LO characteristics calculated for Company C.

Table B.7. Descriptive Statistics for LO Characteristics in Company C

Support	Rank	LO Characteristics	M	SD
Strongly Supported	1	IT Infrastructure	4.32	0.63
	2	Organizational Formation	4.24	0.56
	3	Access to Information	4.09	0.78
	4	Performance Measurement	4.05	0.68
	5	Team Learning	4.02	0.71
	6	Leadership	4.01	0.78
Weakly Supported	7	Knowledge Sharing	3.99	0.71
	8	Continuous Improvement	3.97	0.69
	9	Individual Learning	3.89	0.66
	10	Recognition and Rewarding	3.83	0.91
	11	Learning Opportunities	3.83	0.68
	12	Empowerment	3.81	0.79
	13	Failures and Successes	3.79	0.71
	14	Experimentation	3.79	0.88
	15	Innovation	3.78	0.86
	16	Communication	3.78	0.78

In ANOVA, significance is found between the characteristics (p value = 0.016). LSD test is performed for multiple comparisons; a presumptive approach is adopted such that means over 4.00 are added to the “Strongly Supported” group although they are statistically same with “Communication”. The groupings of the LO characteristics for Company C are shown in the Table B.7 from “Strongly Supported” to “Weakly Supported”. In all of the LO characteristics, the scale means of Company C are lower than the means of the pooled data.

Analysis in Company D

Table B.8 shows in a descending order, means and standard deviations of the LO characteristics calculated for Company D.

Table B.8. Descriptive Statistics for LO Characteristics in Company D

Support	Rank	LO Characteristics	M	SD
Strongly Supported	1	Organizational Formation	4.46	0.47
	2	Performance Measurement	4.30	0.62
	3	Continuous Improvement	4.30	0.65
	4	IT Infrastructure	4.23	0.74
	5	Individual Learning	4.21	0.58
	6	Learning Opportunities	4.20	0.61
	7	Team Learning	4.20	0.75
Moderately Supported	8	Access to Information	4.15	0.72
	9	Leadership	4.13	0.68
Weakly Supported	10	Failures and Successes	4.09	0.70
	11	Knowledge Sharing	4.07	0.68
	12	Innovation	4.00	0.72
	13	Experimentation	3.98	0.77
	14	Communication	3.93	0.75
	15	Recognition and Rewarding	3.90	0.93
	16	Empowerment	3.85	0.66

In ANOVA, significance is found between the characteristics (p value = 0.016). LSD test is performed for multiple comparisons and the groupings of the LO characteristics for Company D are shown in the Table B.8 from “Strongly Supported” to “Weakly Supported”. In most of the LO characteristics (12/16), the scale means of Company D are lower than the means of the pooled data.

Analysis in Company E

Table B.9 shows in a descending order, means and standard deviations of the LO characteristics calculated for Company E.

Table B.9. Descriptive Statistics for LO Characteristics in Company E

Support	Rank	LO Characteristics	M	SD
Strongly Supported	1	Organizational Formation	4.71	0.34
	2	Performance Measurement	4.57	0.51
	3	IT Infrastructure	4.56	0.58
	4	Leadership	4.56	0.44
	5	Access to Information	4.53	0.64
	6	Team Learning	4.45	0.57
	7	Continuous Improvement	4.45	0.56
Weakly Supported	8	Individual Learning	4.39	0.50
	9	Experimentation	4.31	0.60
	10	Innovation	4.28	0.57
	11	Knowledge Sharing	4.28	0.53
	12	Learning Opportunities	4.26	0.61
	13	Communication	4.23	0.63
	14	Recognition and Rewarding	4.22	0.79
	15	Empowerment	4.13	0.67
	16	Failures and Successes	4.13	0.57

In ANOVA, significance is found between the characteristics (p value = 0.00). Tamhane's T2 is performed for multiple comparisons. A presumptive approach is used such that means over 4.50 are added to the "Strongly Supported" characteristics. The groupings of the LO characteristics for Company E are shown in the Table B.9 from "Strongly Supported" to "Weakly Supported". In all of the LO characteristics, the scale means of Company E are higher than the means of pooled data.

Comparison of LO characteristics among organizations

The following tables show the frequency of responses and descriptive statistics of organizations for each of the LO characteristics by ascending order according to their means among companies and the pooled data set.

by ANOVA and multiple comparison tests, it is found that, for all the characteristics, companies that have characteristic means above the pooled data set are found to statistically same with each other. Similarly, companies that have means below the pooled data set are also statistically same with each other.

Table B.10. LO Characteristic: Organizational Formation

Score	1	2	3	4	5	Missing			
	%	%	%	%	%	%	N	M	SD
Company A	0.90	3.70	25.00	32.40	37.00	0.90	18	4.02	0.57
Company C	0.40	1.30	12.00	44.90	40.20	1.30	39	4.24	0.56
Pooled	0.20	0.70	8.30	34.60	55.60	0.70	204	4.46	0.49
Company D	0.00	0.00	8.00	37.30	54.30	0.30	50	4.46	0.47
Company B	0.00	0.40	4.80	36.30	57.40	1.10	45	4.53	0.38
Company E	0.00	0.00	2.90	23.40	73.40	0.30	52	4.71	0.34

Table B.11. LO Characteristic: IT Infrastructure

Score	1	2	3	4	5	Missing			
	%	%	%	%	%	%	N	M	SD
Company A	2.80	8.30	27.80	36.10	25.00	0.00	18	3.72	0.91
Company D	1.00	3.00	13.00	38.00	45.00	0.00	50	4.23	0.74
Company C	0.00	2.60	11.50	37.20	48.70	0.00	39	4.32	0.63
Pooled	0.50	2.70	9.30	30.90	56.40	0.20	204	4.40	0.71
Company E	0.00	1.90	3.80	30.80	63.50	0.00	52	4.56	0.58
Company B	0.00	1.10	2.20	17.80	77.80	1.10	45	4.73	0.50

Table B.12. LO Characteristic: Performance Measurement

Score	1	2	3	4	5	Missing			
	%	%	%	%	%	%	N	M	SD
Company A	2.20	8.90	23.30	26.70	27.80	11.10	18	3.76	0.83
Company C	0.50	4.60	16.40	45.10	31.80	1.50	39	4.05	0.68
Company D	0.40	2.80	8.40	42.80	45.60	0.00	50	4.30	0.63
Pooled	0.40	2.60	10.00	34.60	50.40	2.00	204	4.34	0.66
Company E	0.00	0.40	7.30	26.90	64.60	0.80	52	4.57	0.51
Company B	0.00	0.90	2.70	29.80	64.40	2.20	45	4.61	0.48

Table B.13. LO Characteristic: Leadership

Score	1	2	3	4	5	Missing			
	%	%	%	%	%	%	N	M	SD
Company A	1.50	4.00	30.30	44.40	18.70	1.00	18	3.75	0.51
Company C	1.90	6.80	15.90	39.40	35.90	0.20	39	4.01	0.78
Company D	0.50	3.50	17.10	39.80	38.70	0.40	50	4.13	0.68
Pooled	0.60	2.80	13.50	37.30	45.10	0.60	204	4.25	0.64
Company B	0.00	0.40	8.10	40.80	50.10	0.60	45	4.41	0.49
Company E	0.00	0.70	6.60	28.80	62.80	1.00	52	4.56	0.44

Table B.14. LO Characteristic: Access to Information

Score	1	2	3	4	5	Missing			
	%	%	%	%	%	%	N	M	SD
Company A	2.80	11.10	30.60	36.10	18.10	1.40	18	3.57	0.77
Company C	0.60	4.50	16.00	42.30	35.90	0.60	39	4.09	0.78
Company D	0.50	3.50	14.00	45.00	37.00	0.00	50	4.15	0.72
Pooled	0.50	3.20	13.50	36.80	45.20	0.90	203	4.24	0.74
Company B	0.00	0.60	9.40	36.70	51.10	2.20	44	4.41	0.58
Company E	0.00	1.40	8.70	25.00	64.40	0.50	52	4.53	0.64

Table B.15. LO Characteristic: Continuous Improvement

Score	1	2	3	4	5	Missing			
	%	%	%	%	%	%	N	M	SD
Company A	1.40	12.50	31.90	38.90	13.90	1.40	18	3.53	0.76
Company C	1.30	4.50	20.50	42.90	30.80	0.00	39	3.97	0.69
Pooled	0.40	3.90	13.40	37.60	44.40	0.40	204	4.23	0.67
Company D	0.00	3.50	11.50	37.00	48.00	0.00	50	4.30	0.65
Company B	0.00	0.00	11.10	36.10	52.20	0.60	45	4.41	0.53
Company E	0.00	2.40	6.30	35.60	55.30	0.50	52	4.45	0.56

Table B.16. LO Characteristic: Team Learning

Score	1	2	3	4	5	Missing			
	%	%	%	%	%	%	N	M	SD
Company A	2.20	6.70	34.40	48.90	6.70	1.10	18	3.50	0.56
Company C	0.00	3.60	22.60	40.00	32.80	1.00	39	4.02	0.71
Company D	1.20	2.40	14.40	39.60	42.40	0.00	50	4.20	0.75
Pooled	0.50	2.50	14.40	38.40	43.80	0.30	204	4.23	0.70
Company E	0.00	0.00	8.50	38.10	53.50	0.00	52	4.45	0.57
Company B	0.00	1.80	6.20	32.90	59.10	0.00	45	4.49	0.54

Table B.17. LO Characteristic: Individual Learning

Score	1	2	3	4	5	Missing			
	%	%	%	%	%	%	N	M	SD
Company A	0.80	12.70	38.10	35.70	11.10	1.60	18	3.45	0.65
Company C	1.50	4.00	23.80	44.30	25.60	0.70	39	3.89	0.66
Pooled	0.40	3.30	16.40	41.90	37.40	0.60	204	4.14	0.63
Company D	0.00	2.30	14.00	44.00	39.70	0.00	50	4.21	0.58
Company B	0.00	1.60	12.70	42.90	42.50	0.30	45	4.27	0.52
Company E	0.00	0.50	8.80	40.70	48.90	1.10	52	4.39	0.50

Table B.18. LO Characteristic: Knowledge Sharing

Score	1	2	3	4	5	Missing			
	%	%	%	%	%	%	N	M	SD
Company A	1.90	14.80	23.10	36.10	15.70	8.30	18	3.50	0.76
Company C	0.90	5.10	19.20	43.60	31.20	0.00	39	3.99	0.71
Company D	1.70	5.00	12.70	45.00	35.00	0.70	50	4.07	0.69
Pooled	0.90	4.50	14.40	42.30	36.00	1.90	204	4.10	0.67
Company B	0.40	2.20	11.50	42.20	39.60	4.10	45	4.25	0.59
Company E	0.30	1.90	12.20	40.40	44.90	0.30	52	4.28	0.53

Table B.19. LO Characteristic: Learning Opportunities

Score	1	2	3	4	5	Missing			
	%	%	%	%	%	%	N	M	SD
Company A	0.00	16.70	41.70	30.60	11.10	0.00	18	3.36	0.82
Company C	0.00	5.10	23.10	55.10	16.70	0.00	39	3.83	0.68
Pooled	0.00	3.40	15.90	49.50	30.10	1.00	203	4.08	0.71
Company D	0.00	1.00	11.00	55.00	33.00	0.00	50	4.20	0.61
Company B	0.00	1.10	12.20	45.60	37.80	3.30	44	4.25	0.66
Company E	0.00	1.00	8.70	51.90	37.50	1.00	52	4.26	0.61

Table B.20. LO Characteristic: Experimentation

Score	1	2	3	4	5	Missing			
	%	%	%	%	%	%	N	M	SD
Company A	0.00	13.00	29.60	40.70	13.00	3.70	18	3.57	0.77
Company C	1.70	6.80	26.50	40.20	24.80	0.00	39	3.79	0.88
Company D	2.00	3.30	17.30	49.30	28.00	0.00	50	3.98	0.77
Pooled	0.80	4.20	19.00	42.60	32.20	1.10	204	4.04	0.77
Company B	0.00	2.20	17.80	40.00	36.30	3.70	45	4.17	0.70
Company E	0.00	0.60	12.20	42.30	44.90	0.00	52	4.31	0.60

Table B.21. LO Characteristic: Recognition and Rewarding

Score	1	2	3	4	5	Missing			
	%	%	%	%	%	%	N	M	SD
Company A	11.10	25.00	25.00	33.30	5.60	0.00	18	2.97	1.12
Company C	0.00	9.00	28.20	33.30	29.50	0.00	39	3.83	0.91
Company D	1.00	10.00	17.00	42.00	30.00	0.00	50	3.90	0.93
Pooled	1.70	7.40	16.70	35.50	38.00	0.70	203	4.02	0.94
Company E	1.00	1.90	16.30	34.60	45.20	1.00	52	4.22	0.79
Company B	2.20	1.10	5.60	32.20	58.90	2.20	44	4.52	0.61

Table B.22. LO Characteristic: Innovation

Score	1	2	3	4	5	Missing			
	%	%	%	%	%	%	N	M	SD
Company A	3.20	14.30	31.00	33.30	17.50	0.80	18	3.47	0.87
Company C	2.20	7.30	26.40	38.10	26.00	0.00	39	3.78	0.86
Company D	1.40	3.70	18.00	47.10	29.40	0.30	50	4.00	0.72
Pooled	1.10	4.90	19.10	41.70	32.80	0.30	204	4.01	0.74
Company B	0.00	1.90	19.40	43.20	35.20	0.30	45	4.12	0.59
Company E	0.00	2.70	11.30	40.90	45.10	0.00	52	4.28	0.57

Table B.23. LO Characteristic: Communication

Score	1	2	3	4	5	Missing			
	%	%	%	%	%	%	N	M	SD
Company A	4.80	9.50	43.70	36.50	1.60	4.00	18	3.22	0.63
Company C	1.80	5.90	28.60	39.90	23.40	0.40	39	3.78	0.78
Company D	0.90	6.60	19.40	43.70	28.90	0.60	50	3.93	0.75
Pooled	1.10	4.60	20.00	41.60	32.00	0.80	204	4.00	0.74
Company E	0.30	3.30	12.40	41.50	42.30	0.30	52	4.23	0.63
Company B	0.00	0.60	12.40	43.20	43.50	0.30	45	4.30	0.55

Table B.24. LO Characteristic: Learning from Failures and Successes

Score	1	2	3	4	5	Missing			
	%	%	%	%	%	%	N	M	SD
Company A	0.00	0.10	0.30	0.60	0.40	0.00	18	3.52	0.72
Company C	0.00	6.40	30.80	39.10	23.10	0.60	39	3.79	0.71
Company B	0.60	2.80	23.30	48.90	22.80	1.70	45	3.92	0.62
Pooled	0.70	3.70	22.90	44.50	27.20	1.00	204	3.95	0.68
Company D	1.50	2.00	18.00	43.00	34.50	1.00	50	4.09	0.70
Company E	0.00	1.40	17.30	48.60	32.70	0.00	52	4.13	0.57

Table B.25. LO Characteristic: Empowerment

Score	1	2	3	4	5	Missing			
	%	%	%	%	%	%	N	M	SD
Company A	8.30	11.10	50.00	30.60	0.00	0.00	18	3.03	0.87
Company C	1.30	2.60	33.30	39.70	23.10	0.00	39	3.81	0.79
Company D	0.00	4.00	26.00	51.00	19.00	0.00	50	3.85	0.66
Pooled	1.00	3.70	25.70	45.10	24.50	0.00	204	3.89	0.76
Company B	0.00	1.10	21.10	47.80	30.00	0.00	45	4.07	0.65
Company E	0.00	3.80	13.50	48.10	34.60	0.00	52	4.13	0.67

APPENDIX C: Survey questionnaire