

SYSTEMATIC APPROACH FOR THE LESSONS LEARNED SHARING

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Abstract. The global economic environment allows organizations to use widely-shared methods for the performance of their business activities. When activities are performed, experience is generated and this asset could also be shared with others. Teams or projects can all learn from experience, both from their own experience and from the experience of other teams, projects, or disciplines. This process is based on the principle of learning from our own mistakes and our own merits, from negative and positive experiences. This vision of the learning from experience is part of more approaches - the Lesson Learned method, further commonly used quality methods such as Kaizen, FMEA. These methods recommend the identification and analysis of error points. The gained experience can be an effective tool how to avoid repetitive mistakes thanks to targeted information and experience shared not only in areas of industrial companies. However, the gained experience is often isolated and is not further developed and handed over. On the one hand, knowledge is gained on the basis of specific approaches of various methods at different stages of the project. In addition, these experiences often only work within one project, as there are no conditions for sharing experiences across organization(s). It is necessary for the acquisition of knowledge to become a defined process. This process need combine the appropriate principles of different methods and has to be supported by a defined IT service. Only then, the principle of learning can lead to changes aimed at improving or increasing performance.

Keywords: lessons learned, experience sharing, IT service

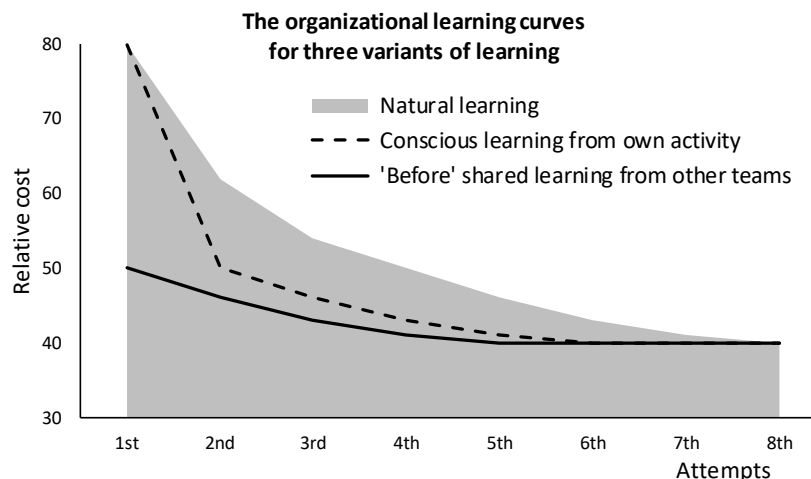
JEL Classification: D83, L15, L86

1. Introduction

The distinctive feature of the current global world is the increasing value of knowledge and the resulting need to work with knowledge. Companies have to respond to ever-evolving changes (social, technological, changes in management systems, etc.), so there is pressure for permanent learning. At the same time technological development (access to information and resources, distance elimination) also creates an environment for global sharing of experience, knowledge (Kopackova et al., 2007). Companies can share human, financial, informational or material resources. Resources sharing provide higher efficiency, lower costs and higher profits (Kundříková et al., 2016). Learning is a natural activity. Just as an individual can learn, so organisations can learn, teams can learn, disciplines and projects can learn. They can learn from experience, whether this is their own experience, or experience from other teams, other communities, or other functions and disciplines. It is the vision of learning from experience,

that if something does not go according to plan, then the company as a whole can reflect on what has happened, draw lessons from the past, and vow not to repeat them in future (Milton, 2010), (Kahun, 2016). The ability of organizational learning means the ability to perceive signals from the external environment, interpret and respond to them, and anticipate future needs (Lukasova & Klapalova, 2010).

Figure 1: The organization learning curves



Source: own processing, based on (Kahun, 2016)

The value in learning comes in avoiding repeating bad experiences and in repeating successful experiences (Milton, 2010). Figure 1 shows three variants of learning in an organization, three variants of work with experience – natural learning, conscious learning from own activity, and 'before' shared learning from other teams. If an organization can draw lessons from experience, can eliminate repeat mistakes, and can reproduce success, the result should be a continuous improvement in performance.

2. Methodological Framework

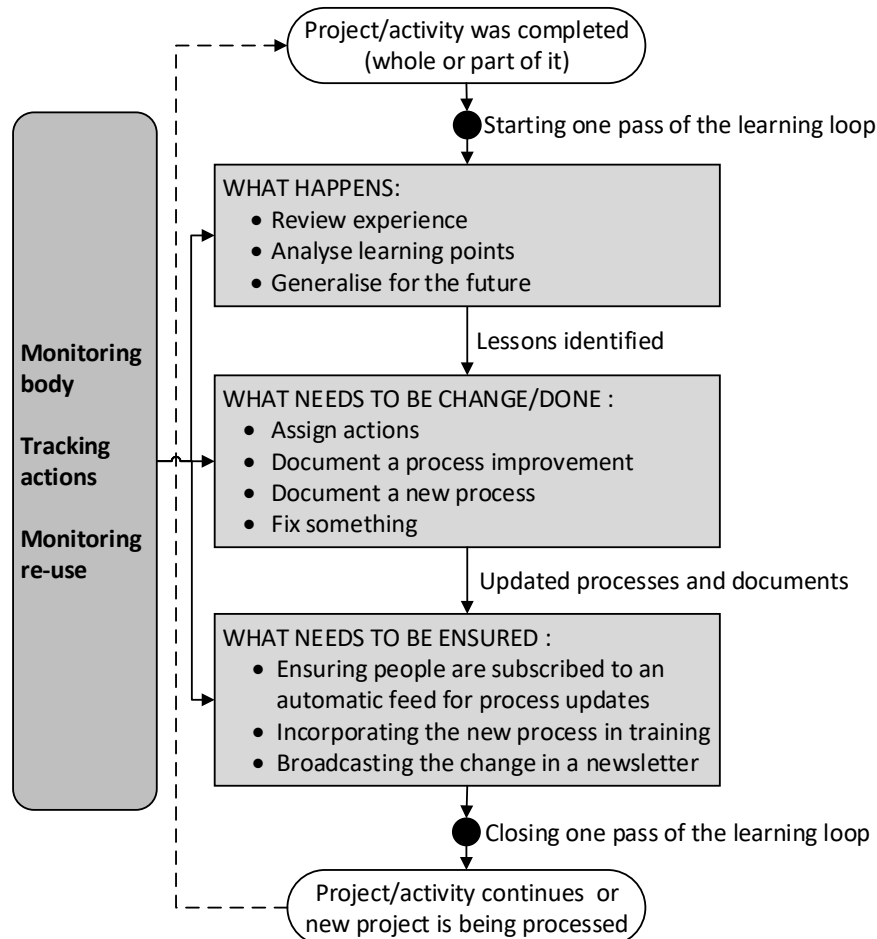
The need to use knowledge to improve the quality of an organization is embedded in various procedures and methods of the quality management in the organizations. These are specialized methods, such as Lessons Learned, or partial principles within quality methods.

2.1 Lessons Learned Method

A specialized method for acquiring and retaining knowledge (both positive and negative) is the Lessons Learned method. The term Lessons Learned refers to knowledge management and project learning, “ways of knowing” that have quality, value, or significance (Milton et al., 2006). Lessons Learned method is an efficient tool, how to avoid (repeated) mistakes due to the effective and targeted information and experience (Tessi & Chaves, 2017). The method, of course, is supported by technology. Technology is needed to help facilitate the lessons learned know-how, technology provides a knowledge library home, a communication medium, links to process/templates, links to where knowledge can be found in the organisation and learning development tools (Duffield, 2015). There are several main steps in learning a lesson - reviewing existing activity (project), identifying lessons learned, assigning countermeasures

and implementing changes (e.g., updating the production process). The learning loop is illustrated in Figure 2.

Figure 2: The steps of the lessons learned loop



Source: own processing, based on (Milton, 2010)

Identifying lessons from experience is the result of a process of reviewing, analysing and generalising, the content of these phases is (Milton, 2010):

- Review experience: an individual or a team looks back on a project or event and recalls what happened. Is detected where there is a difference between what was planned or expected, and what actually happened. This are a positive or negative difference – things may have gone better than expected, or worse than expected.
- Analysing: the individual or the team discusses the root causes behind what happened.
- Generalize for the future: At this stage is a lesson identified. It is set out how to proceed in the future to either repeat success or not repeat mistake. Thus, a lesson learned identifies is a recommendation, based on analysed experience, from which others can learn in order to improve their performance on a specific task or objective.

The lesson learned can require assigning countermeasures and implementing change/s (e.g. exchange of equipment, change of information flows) (Thomas, 2015). The lessons learned should be documented and, mainly, spread among employees and all concerned staff (publication, employee training).

2.2 Quality Management Methods and Principles

The approach of gaining experience, respectively improving activities and following permanently embedding this improvement by help of standardization, is the principle of many methods within the quality management. Sharing experience is thus reflected in the fact that the modified (improved and standardized) procedure is introduced to all similar workplaces within the organization. Methods and principles of improvement and standardization are applied basically by every company, whether by implementing the method as a whole or by implementing selected principles of the method/s.

The Six Sigma method is focused on increasing quality with emphasis on defect elimination. The method strives for production perfection, i.e. avoid mistakes; a mistake is perceived as any incompliance with customer wish, i.e. any state when the customer is dissatisfied. Performance improvement procedure of Six Sigma is known as DMAIC model, (define - measure - analyse - improvement - control) (Pyzdek, 2001). Integral part of Six Sigma improvement method is applying the gained knowledge, and then its anchoring and sharing it in the form of standardization.

Lean Production approach is focused on waste elimination, decreasing the extent of such activities which do not add value to the production. Lean method includes tools (Niederstadt, 2015) such as 5S tool (organization and standardization of changed activities), Standard Work (standardization of work focuses on reduction of process variability, reduction of mistake correction, easier reaction to problems). The method is a path that must be approached with lifelong learning (Rymaszewska, 2017). Also for Lean is valid that integral part is applying the gained knowledge, and its anchoring and sharing it in the form of standardization.

The Kaizen method represents continuous improvement approach; it is a flow of partial improvements on all levels (Masaaki, 2012). The central principle is a quick analysis of the small components of a problem and rapid implementation of a solution with ongoing, real-time reassessment (Knechtges & Decker, 2014). The Kaizen and Lean methods recommend improvement realization by sequence of phases, specifically in accordance with Deming's PDCA cycle (plan – do – control – act), including the need to standardize changes, inform others about process changes and make recommendations) (Liker & Franz, 2012). Important principles of the Kaizen concept include monitoring performance and quality levels and comparing these values with the level of competition, also problem sharing among employees and with employees (Richnák, 2015). Integral part is an Yokoten principle. It represents the horizontal expansion of successful results from Kaizen in one area by sharing the learning with people in other areas (Masaaki, 2012). Yokoten means horizontal deployment and refers to the practice of sharing good results of Kaizen from one plant to other plants (not sharing information from above to a lower level). The core is the sharing when the idea spontaneously spreads between departments. In addition, it is expected, that each department will add something to a new shared idea to further improve it. The basic idea of Yokoten is - the effect of one improvement is intensified when it spreads further (to the other departments).

As already stated in this text, the approach of gaining and sharing experience is the principle of many methods within the quality management. Sharing experience is thus reflected in the fact that the modified (improved and standardized) procedure is introduced to all similar workplaces within the organization. And the sharing of experience is also reflected in the targeted transfer of new knowledge.

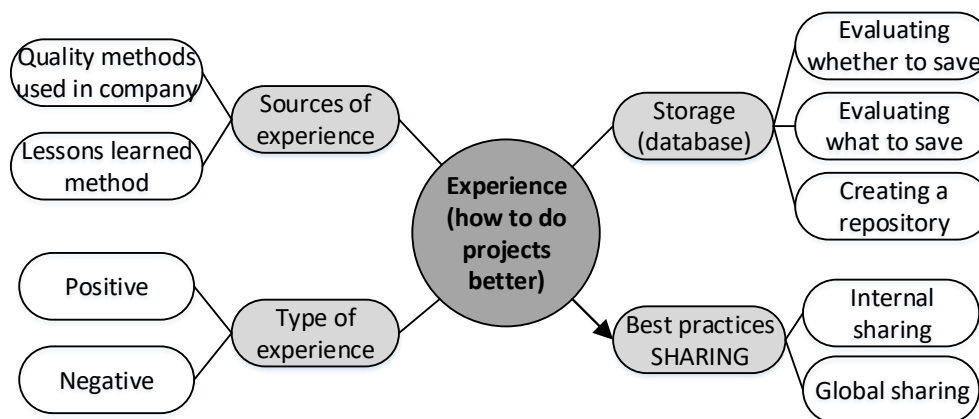
3. Systematic Approach For The Lessons Learned Sharing

The organizations try to set up some way of learning from experience. It is mostly part of the quality methods/principles that are applying within the organization. The authors refer in particular to large, often international, economic organizations. The authors used their personal experience to set typical characteristics of such an organization:

- It is an economic organization, where fully integrated quality principles are implemented. Thus, the organization has experience in managing production quality.
- Production is realized in comprehensive projects. One project, for example, represents a two-year production for a particular customer.
- The client is also a large, international, organization and has experience in managing production quality. Furthermore, the customer organization enters often actively into the project, it means customer is involved in a certain way in the project running.
- Each project has several stages, and the experience gained is used within the project stages. However, experience is no longer passed on to other similar projects.
- Production organization perceives the need to implement a lessons learned system from experience, including the sharing of experience.

Aspects for decision to implement the system shows Figure 3. Organization must identify appropriate resources for identifying experience (in accordance with the Lessons Learned method), choose appropriate information for storage, and create a database repository.

Figure 3: The initial characteristics of the lessons learned system



Source: own processing

Let us, as an example, use a particular economic organization. It is an international organization whose Czech branch produces equipment for automobile manufacturers. The aim was to strengthen “Lessons learned principles” in this organization. Therefore, the following procedure was established:

- 1) Identify appropriate resources from the point of view of Lessons Learned on the basis of an analysis of the current situation
- 2) Extension of another Lesson Learned principle
- 3) Design and management of the Lessons Learned Database

3.1 Identify appropriate resources from the point of view of Lessons Learned on the basis of an analysis of the current situation

In analysing the current state, it was found the following:

- During the start of new project, the Product Development Team (PDT) meets regularly at meetings (once a week). Risks are discussed, how to prevent them, what needs to be improved. The outcomes are action plans. Successful events from PDT meetings are not specifically registered and remain only as part of action plans. There is no further work on these outputs, apparently no one wants to search in many of action plans.
- Daily Quality Meetings (DQM) are regularly held (twice a day). The purpose is to solve problems, search for causes and identify countermeasures. Troubleshooting is documented using the Quality Trouble Report (QTR). Part of QTR is an obligation to assess whether countermeasures is relevant to other projects, i.e. Yokoten. These findings are applied only to current projects, not to future projects.
- The organization uses the Kaizen method. After applying the improvement, it is not investigated whether this change could be applied to other projects.

Based on a previous analysis of the current state, the following sources were determined for Lessons Learned identifying:

- a. Lessons defined in PDT discussions: countermeasures listed in Action Plans,
- b. Lessons defined in DQM discussions: countermeasures listed in QTRs and Yokotens,
- c. Lessons identified in the Kaizen improvements: generalized recommendations.

3.2 Extension of another Lesson Learned principle

The Lessons learned method recommends evaluation after each step of the project (AAR, post-action reviews), and also a revision at the end of the project (PPR, post-project review). There has not yet been a meeting in the company for an overall evaluation of the project after its completion. Therefore, the proposed extension of the Lessons Learned principle is:

- d. Lessons defined during PDT discussions at the PPR meeting (after the end of project).

3.3 Design and management of the Lesson Learned database

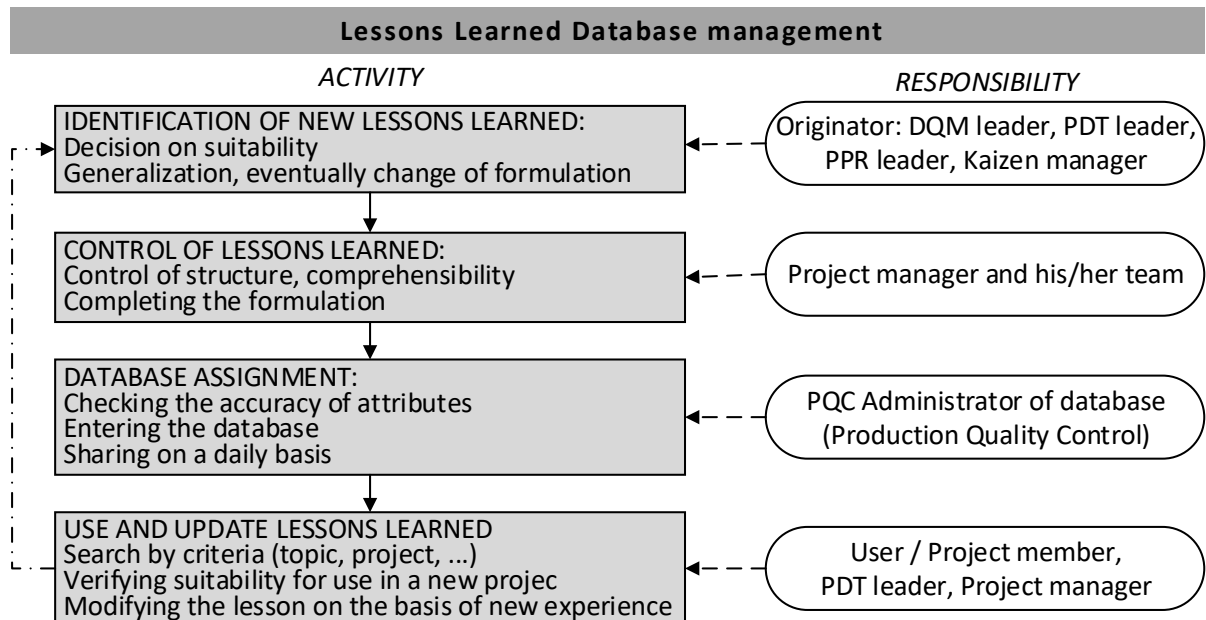
The default database requirements were - the database will contain filters for quick search, the database will be shared by email with relevant users (such as, for example, project leaders, project managers, quality engineers, process engineers, leader lines). Furthermore, the attributes that the designers decided to include in the planned database were discussed and later proposed (e.g. Problem/Success Description, Root Cause, Identified Lesson, Proposed Countermeasures, etc.). A plan for the training of the relevant staff was drawn up.

The basic phases of lessons learned database management are:

- lesson learned identification: decision on suitability, generalization, control of quality,
- database assignment: checking the accuracy of attributes, entering the database,
- database sharing: search and implementation in a new project, updating lesson learned based on new experiences.

Activities and responsibilities of Lessons Learned Database management shows Figure 4.

Figure 4: Activities and responsibilities within Lessons Learned Database management



Source: own processing

For future sharing of lessons, the quality of inputs is particularly important. It is necessary to consider and decide especially the suitability of inputs, well-formulated recommendations (understandable and feasible) and also check that lessons have been used for other projects.

4. Conclusion

The gained experience is an important tool how to avoid mistakes (avoid repeating them) due to the targeted information and experience transferred/shared among – among projects of one organization, among branches of one organization (in case of international companies), among different organizations (in a global sense). Of course, the question is to what extent to release and transmit own experience for global sharing among organizations.

A suitable approach to actively gathering and passing on experience is the Lessons Learned method. Appropriate resources in applying this method may be the experience gained from the activities that company performs in the quality control of its production. Important for introducing Lessons Learned approach is the targeted creation of a Lessons Learned system within the company, of course, with the support of technology (the management and sharing of Lessons Learned Database). The individual activities Lessons Learned system are in the responsibility of designated responsible persons in order to identify proper Lessons Learned, verify them in terms of clarity, check their usability and utilization, make their update based on feedback. Only such a system can serve to share experience effectively.

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