

A Study on Usage of Formal Knowledge Sharing Systems in Project-Based Organizations

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Abstract: Projects are one-time activities that have time and resource limitations. Projects are considered as arenas for learning. There are opportunities for creating new knowledge and utilizing existing knowledge in projects. Since projects are per definition unique, there is at least some degree of uniqueness associated with each project. This uniqueness provides opportunities to learn something new in each project. The known element in projects – such as existing solutions that have been proven to produce good results – can be shared and utilized to avoid using time and resources to create the same or similar solutions from scratch. Knowledge sharing and learning can play a notable role in improving the ability of project-based organizations to carry out their projects successfully and contributing to obtain higher productivity, profitability and sustainable competitive advantage. However, there are several challenges. This paper looks at one of the challenges, namely ineffective usage of formal knowledge sharing systems in project-based organizations. In this regard, the following two research questions are considered: (1) What are the challenges of using formal knowledge sharing systems? (2) How can the challenges be addressed? Formal knowledge sharing systems play an important role in supporting knowledge sharing and learning in organizations. Technological development has created many possibilities to enhance functions as well as benefits of such systems. However, there are several factors that are to be taken into consideration in order to make sure an effective usage of formal knowledge sharing systems in project-based organizations. This paper presents six factors in this regard and emphasizes the need to have a strategic view and a top management perspective of knowledge sharing and learning in project-based organizations. The study on which this paper is based, is of qualitative nature. In this regard, interviews have been conducted to gather information from five public project-based organizations in Norway.

Keywords: Knowledge Sharing, Learning, Project, Organizational Culture, Organizational Structure, Strategic Focus

1. Introduction

Projects are a popular form of work in organizations to achieve a clear goal within a certain time-period and cost. Projects are considered an arena for learning. Since projects are by definition unique, they have at least a certain degree of uniqueness that will lead to acquisition of new knowledge. At the same time, projects also include some known elements - for example known methods and solutions - which give the opportunity to utilize the existing knowledge. In other words, new knowledge can be developed (knowledge exploration) and existing knowledge can be shared (knowledge exploitation) in projects.

Exploring and exploiting knowledge can have positive effects on project-based organizations (PBOs) and the projects that they carry out. There are many benefits from sharing knowledge and focusing on learning in projects. Figure 1 shows some of the gains.

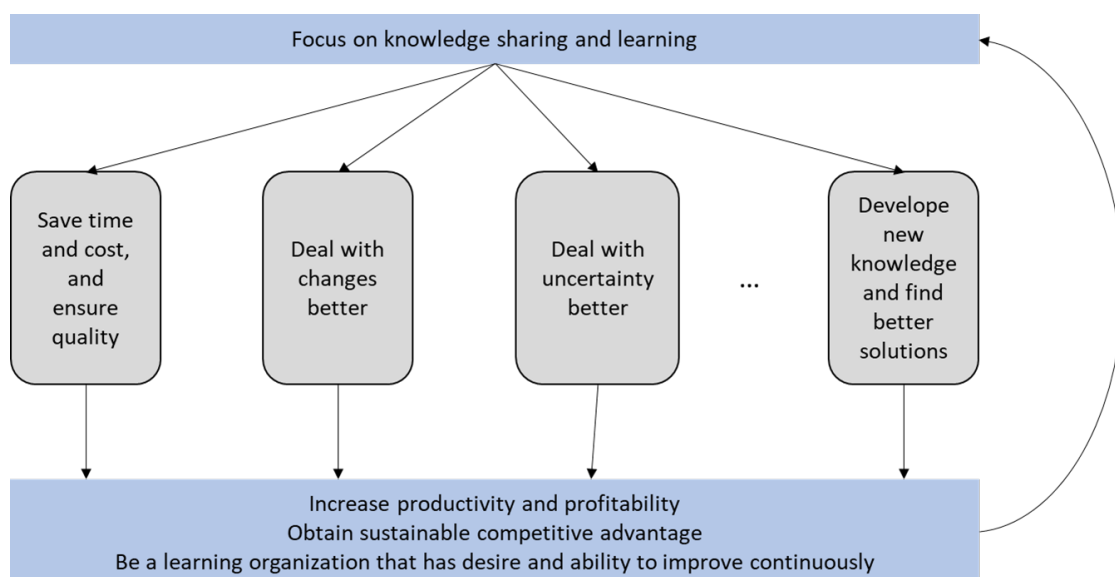


Figure 1: Positive effects knowledge sharing and learning

But the question is: Do project-based organizations get these benefits?

"If HP knew what HP knows, we would be three times as profitable." – A manager at Hewlett Packard (HP) mentioned this several years ago (Boshyk, 2000). Researchers also point out the importance of knowledge sharing and learning in project-based organizations and its positive effects. (Abdellatif et al., 2019; Mahura & Birollo, 2021; Kvålshaugen et al., 2021; Zhang et al., 2024). Although many measures have been implemented, PBOs still experience challenges related to knowledge sharing and learning. It is not always easy to share knowledge from projects to the base organization / the permanent organization (Williams, 2008; Duffield & Whitty, 2015; Evers & Chappin, 2020).

What prevents PBOs from achieving the benefits of knowledge sharing and learning? What are the barriers? How can the barriers be dealt with? A pre-project called *Experience sharing and learning in project-based organizations* (ELPO) – on which this paper is based – attempts to address this matter. This paper looks at one of the aspects of this research pre-project, namely usage of formal knowledge sharing systems in PBOs. The research questions hence are:

- What are the challenges of using formal knowledge sharing systems?
- How can the challenges be addressed?

The structure of the paper is as follows: After the introduction, background information including research method that is applied in this study is provided, followed by relevant concepts. And then, results, analysis and discussion are presented. Finally, concluding remarks wind up the whole discussion.

2. Background Information and Research Method

The pre-project ELPO is financed by Project Norway (<https://prosjektnorge.no/>). Project Norway is a national arena for the exchange of knowledge and experiences, where new knowledge about projects is developed through research-based collaboration with Norwegian business and industry.

This study applied qualitative research methods. Fourteen interviews were conducted in five public PBOs in Norway during 2023 to collect information. The interviews were semi-structured – having an overarching, flexible structure, and encouraging natural dialogue and discussion. The duration of the interviews varied between 1 and 1.5 hours. Those who were interviewed are anonymized and identified through a code (Respondent 1, 2, etc.). The respondents have experience of performing roles such as project member, project manager, project owner and department manager.

3. Relevant Concepts

3.1 Knowledge

Davenport & Prusak (1998, page 5) define knowledge as follows:

"Knowledge is a fluid mix of framed experience, values, contextual information and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of knowers. In organizations, it often becomes embedded not only in documents or repositories but also in organizational routines, processes, practices and norms."

This definition points out that knowledge provides a framework for evaluating, interpreting and gaining new experiences and information.

Another relevant term is experiential learning. Experience-based learning, introduced by Kolb, suggests that concrete experiences provide a basis for observation, reflection and abstract conceptualization. Kolb's experiential learning model is composed of four stages that go in a spiral (Kolb, 1984):

1. Concrete experience
2. Observation and reflection on that experience
3. Formation of abstract concepts after that reflection
4. Testing the new concepts

Figure 2 illustrates it.

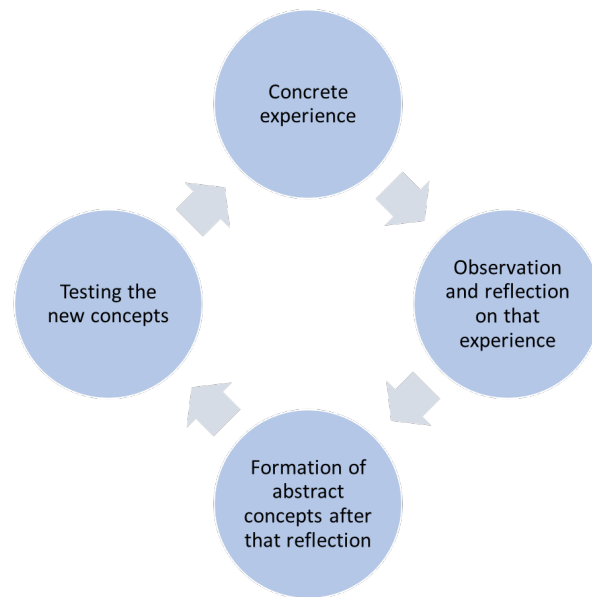


Figure 2: Experience-based learning (Kolb, 1984)

Knowledge sharing and learning can be addressed in organizations, not only at project level or operational level, but also at strategic level. In this connection, it is relevant to look at the term 'knowledge governance'.

Pemsel (2012) says that an organization can define means and support for knowledge-creating processes and activities. However, the creation of knowledge takes place through individual and collective interaction and reflection, which can be independent of such means and support. Organizations therefore need strategies for how to handle knowledge and learning effectively. Strategies are created through knowledge governance in an organization and are implemented through the management of knowledge.

According to Zhang et al. (2024), Knowledge governance can be defined as a governance mechanism to manage and influence knowledge management processes, for example knowledge acquisition, storage, transfer and creation.

Aslam et al. (2024) also point out that knowledge governance uses a broader perspective to address issues related to knowledge sharing and learning, and also has a strategic focus on managing knowledge sharing and learning in organizations – rather than finding simple solutions to individual problems.

3.2 The Iron Triangle

Projects are by definition unique. They are one-time activities that have time and resource constraints. Traditionally, project success was measured by taking into account how the project handled the use of time and costs, and quality (Navarre & Schaan, 1990; Ika & Pinto 2022; Karlsen, 2023). These 3 aspects form the so-called iron triangle of the project.

Citing Ika & Pinto (2022), Karlsen (2023, page 365) describes the components of the iron triangle:

- Cost: That the project is completed within the budget.
- Time: That the project is finished within the deadlines.
- Quality: That all deliveries meet the required quality standards.

Although other aspects that define project success have become prominent (such as stakeholder management and safety, health and environment), the iron triangle still influences the practical world of project management, at least to some extent.

3.3 Motivation

The degree of motivation, which individuals have, to carry out a task can be linked to their attitudes and behavior towards carrying out the task. Motivation plays an important role in knowledge sharing and learning. Motivation can be categorized as extrinsic motivation (for example praise, public recognition, money and promotion) and

intrinsic motivation, for example inner joy, interest and satisfaction in performing a task (Skyttermoen & Vaagaasar, 2015).

Incentive mechanisms can be used to motivate – to provide both extrinsic and intrinsic motivation to – organizational members to share knowledge. Karlsen (2023, page 175) presents some of the significant factors that can create job satisfaction and motivation for project team members:

- Meaningful work: When team members feel that their work is meaningful and contributes to a greater goal, they are more likely to be motivated and satisfied.
- Well-defined goal: When team members understand what they are working towards and what is expected of them, they are more likely to be motivated and have a sense of achievement when they achieve their milestones and goals.
- Autonomy: When team members are given autonomy and are trusted to make decisions, they are more likely to be motivated and have a sense of ownership over their work.
- Feedback: When team members receive positive feedback for their work, they are more likely to feel motivated and engaged.
- Recognition: When team members feel that their work is recognized and appreciated, they are more likely to be motivated and satisfied.
- Opportunities for learning and development: When team members have opportunities to learn new skills and take on new challenges, they are more likely to be motivated and feel meaningful about their work.
- Supportive team culture: When team members feel they are trusted and supported by their colleagues and have a positive team culture, they are more likely to be motivated and satisfied.

4. Results, Analysis and Discussion

Here, our primary focus is on formal systems that have been implemented in PBOs to support knowledge sharing; for example, knowledge databases, lessons learned reports, project evaluation reports and knowledge registers. Such systems are used to register and obtain knowledge and experiences. Results from the interviews show that there are challenges of using the systems effectively, and indicate how the challenges can be dealt with.

4.1 Challenges

First, we will look at six key challenges that hinder effective use of formal knowledge sharing systems in PBOs.

4.1.1 Attitudes and Culture

If one's personality and attitudes towards sharing knowledge and learning are negative, then this will become a barrier. Several of the respondents mention this as one of the central barriers. Respondent 4 mentions that there are different personalities and attitudes, and not all of them support knowledge sharing and learning. Respondent 2 gives an example of this:

"[...] perhaps it is also because I have been project manager for 10, 15 projects. So I know this from A to Z, and I don't need someone to teach me my profession – When you have that attitude, it becomes a barrier to learning."

Respondent 8 says that it is difficult to motivate people who really do not want to use systems that were implemented to promote knowledge sharing and learning. Respondent 12 says:

"Knowledge is not registered all the time. There can be several reasons for this. There is a structure to register knowledge, but not a sufficient culture or attitudes to do so."

Respondent 6 says that if a project manager prioritizes knowledge sharing and learning in his / her projects, then that project manager will facilitate it. This depends on the person, clarifies respondent 6. Based on own experiences, respondent 8 says:

"Managers who focus on or prioritize knowledge sharing allocate time for knowledge sharing in project meetings. However, it depends much on individuals and their choice [...]. There is a lack of culture for learning."

Kjeilen (2021), Mahura & Birollo (2021), Alves et al. (2022) also points out the importance of culture for learning.

Respondent 13 says that not everyone is curious about learning something new and sharing their knowledge. Respondent 2 says the following:

"It's not everyone who really sees the importance. You either forget about sharing knowledge or don't prioritize it".

Here it is relevant to refer to one of the barriers to knowledge sharing and learning that Maryse & Chappin (2020) mention: Lack of interest in other projects and not understanding the necessity for sharing knowledge with other projects.

Lack of motivation can also be due to negative attitudes towards the use of formal knowledge sharing systems. In connection with this, respondent 8 says the following:

"It's hard to motivate people who really don't want to. I don't think it's just a lack of knowledge that they can't do it here. But a lot depends on personality and will. You have people who want to learn new things, use new systems, see new opportunities and just jump at it. You also have some people who see problems (in knowledge sharing systems) and just focus on the problems and stop there. They don't want anything more to do with the systems."

This statement points out the importance of developing a positive organizational culture which helps to create positive attitudes towards knowledge sharing and the use of formal knowledge sharing systems.

Personality and attitudes can affect motivation. Several respondents say that a lack of motivation among people to work with or participate in activities related to knowledge sharing and learning in projects is one of the barriers. In this context, respondent 13 says that there is a lack of curiosity among project members.

4.1.2 Training

Respondent 12 says that although there are very good procedures, there is a lack of motivation to use knowledge sharing systems. There could be several reasons for that. One of them is attitudes and culture that we have seen earlier. Another is a lack of knowledge about how to use the systems. Respondent 8 mentions that a low level of knowledge on how to use the knowledge sharing systems effectively in projects is one of the barriers. In this context, it is relevant to look at another barrier that respondent 4 mentions: Lack of training related to the use of systems. Training programs can provide knowledge and guidance that are necessary for effective use of knowledge sharing systems.

4.1.3 Awareness of the Usefulness of the Systems

In addition to providing the necessary knowledge on using formal knowledge sharing systems, it is also important to raise awareness of the usefulness of the systems. Respondent 14 mentions a lack of this awareness as one of the barriers to knowledge sharing. Furthermore, respondent 14 mentions that creating commitment and motivation is extremely important in this context. One of the factors that can influence motivation to use knowledge sharing systems is the systems' user-friendliness.

4.1.4 User-Friendliness

Respondent 2 says that it is cumbersome to register 'lessons learned' in knowledge sharing systems. Respondent 13 points out a lack of structure that can guide what and how one should register in such systems. This respondent further says that one may not see the value of registering one's experiences / knowledge in such systems. We'll look at this matter more in Chapter 4.2.2.

Those who want to acquire knowledge may also experience certain challenges. Respondent 2 mentions that it is difficult to find topics / the needed solutions because of too much information (information overload). This type of challenges can lead to little use of lessons learned reports according to respondent 1. Respondent 4 says:

"If you have a database or a system in which it is very difficult to find the needed knowledge, then I think that the system will be very poorly utilized. If you want to obtain knowledge from such difficult systems, then you try a little, and then you don't want to spend so much time on it before giving up."

4.1.5 Incentive Mechanisms

Motivation can be created in several ways. One possibility is to implement relevant reward systems. Respondent 11 mentions a lack of reward systems / incentive mechanisms as one of the barriers to knowledge sharing and

learning. Filstad's (2010) study also points this out. Incentive mechanisms can motivate project members to use formal knowledge sharing systems and participate in activities that promote knowledge sharing and learning in organizations. Some important factors that can create motivation are presented in chapter 3.3.

4.1.6 Adequate Time and Priority

One of the topics that is connected to motivation is performance measurement. This is about what a project member and manager are measured against. In this context, it is relevant to see a statement from respondent 7:

"It's very nice to say that everyone should register their knowledge and experiences in the knowledge databases and everyone should talk to someone to gain or share knowledge. But, it's never followed up. No. It's clear that in a busy day-to-day work in projects, you prioritize (to do) what you're measured against."

This statement indicates that knowledge sharing and learning is not a usual criterium to measure performance of project managers and project members. Project managers (and project members) are normally measured in terms of their ability to deliver the project within the agreed deadline (time), cost and quality. Here, we look at projects from a project delivery perspective or a project manager perspective. The priority is project delivery, not knowledge sharing and learning in the project. In this regard, it is relevant to refer to the iron triangle that we have seen in Chapter 3.2.

The above statement from respondent 7 also shows that there is a need to use a higher perspective (for example top management perspective / senior management perspective) than a project manager perspective or a project delivery perspective to address knowledge sharing and learning in PBOs effectively. Several respondents mention involvement, commitment and support from top management / project owners / senior managers in this context. We will look more at this topic in chapter 4.2.

4.2 Improving the Usage of Formal Knowledge Sharing Systems

Many factors can be considered when one tries to find possibilities for improving the usage of formal knowledge sharing systems in PBOs. In this regard, we will look at one of the overarching factors: Involvement and support from the top management.

As we have seen in Chapter 4.1.6, there is a need for using a higher perspective (for example top management perspective / senior management perspective) than a project manager perspective or a project delivery perspective to address knowledge sharing and learning in PBOs effectively. Several respondents mention involvement, commitment and support from top management / project owners / senior managers in this context. The top management perspective provides a strategic view of knowledge sharing and learning in PBOs – that is, considering knowledge sharing and learning as a means to increase productivity, effectiveness, profit and competitive advantage (refer Figure 1 in Chapter 1). The concept called knowledge governance that we have seen in Chapter 3.1 can be considered here in this regard.

Top management's involvement and support can be seen in two dimensions: Organizational structure and culture.

4.2.1 The Structural Dimension

Top management can make sure – with the practical assistance from project managers – that project members (as well as project managers) get adequate time for knowledge sharing and learning in projects. It is important to note that project managers may not have the mandate / authority / priority to allocate time and resources for knowledge sharing and learning in their projects. Several respondents point out that the time aspect / time restriction is one of the barriers to knowledge sharing and learning in PBOs. More on this matter can be found in Ekambaram (2024). In addition, other recent scientific literature (scientific articles and reports) also mentions this barrier – for example, Kjeilen (2021), Sunnemark et al. (2024), Iftikhar & Lions (2022), Alves et al. (2022), and Pinkhasik & Herrmann (2021).

As respondent 5 indicates, obtaining knowledge from a source (for example, from a task, a colleague or a report) itself may not automatically lead to learning. There may probably be a need for reflection (refer Kolb's model on experience-based learning in Chapter 3.1). And reflection requires a certain amount of time. Therefore, there should be adequate time and priority for knowledge sharing and learning, and ensured by the top management.

Top management can also contribute to making sure effective use of knowledge sharing systems by investing in obtaining knowledge sharing systems that are not only relevant, but also user-friendly. Top management can ensure that the organization has user-friendly formal knowledge sharing systems that can help project managers and project members to find information about knowledge sources (where to find the needed knowledge) and obtain the knowledge that they need. Knowledge sharing systems can also provide clear instructions and guidance for registering and finding knowledge so that the knowledge can easily be found, understood and applied by future knowledge seekers in a proper way.

Another contribution from the top management can be establishing appropriate training programs that provide the needed knowledge and competence to the users, so that they can use the knowledge sharing system effectively. In connection with user-friendly systems, respondent 4 mentions an important point regarding the effective use of knowledge sharing systems: It is necessary to provide employees with sufficient training to ensure effective use of (recently introduced) knowledge sharing systems. A strategic focus on the implementation of training programs for employees can help to create a common understanding of how to use a knowledge sharing system and thus lead to common work practices, increase productivity and achieve competitive advantage. Here it is relevant to mention a statement from respondent 8:

"There is an incredibly big difference in how people perceive working in such a system (a knowledge sharing system)."

This statement emphasizes the importance of creating a common understanding of the use of formal knowledge sharing systems.

When management implements measures to promote knowledge sharing and learning, it is important to ensure that project members actually use / practice the measures and follow up on the measures. Respondents 2 and 7 mention that the follow-up plays a significant role in the effective use of knowledge sharing systems. Kjeilen (2021) also says that work with knowledge sharing requires management to follow it up.

4.2.2 *The Cultural Dimension*

With the strategic focus on knowledge sharing and learning, the top management can greatly influence creating an organizational culture (that encompasses components such as attitudes, norms, values and behavior) that encourages and promotes knowledge sharing and learning in the organization. A clear communication of the strategy (that focuses on knowledge sharing and learning in and between projects in the organization) and why this strategy is important, action-plan for implementing the strategy as well as concrete measures, and the signals (emphasizing the importance of knowledge sharing and learning) that are sent by the top management regularly can play an important role in developing a positive culture for knowledge sharing and learning in PBOs.

Another measure that top management can take in connection with the use of knowledge sharing systems is to motivate organizational members to use knowledge sharing systems actively and effectively. There are several ways to motivate organizational members by providing extrinsic and intrinsic motivation (see Chapter 3.3). One way to create intrinsic motivation, according to some of the respondents, is to highlight the benefits of registering valuable knowledge in a formal knowledge sharing system. If a project member knows that his / her knowledge has helped someone else in the organization, it will bring some kind of recognition and joy to the project member. Sanboskani & Srour (2022) also mention this type of measure and positive effect of it in their study. Many of the motivating factors presented in chapter 3.3 – in particular, meaningful work, feedback, recognition, opportunities for learning and development, and supportive team culture – can contribute to creating a positive effect. This (that is, making visible the positive effect of using the knowledge sharing system) can encourage that project member (who has helped others), and possibly other organizational members to use the knowledge sharing system actively. They can then clearly know that the time they spend registering their knowledge is valuable, and that the registering activity actually helps their colleagues and the organization.

Pinkhasik & Hermann (2021) and Iftikhar & Lions (2022) mention the importance of motivation and incentive mechanisms to promote knowledge sharing and learning. Several respondents mention that it is important to motivate project members and managers to share knowledge. One of the reasons for this is that project members are not measured on knowledge sharing, says respondent 7. Respondent 9 points out that knowledge sharing is not seen as a key performance indicator. Project members do not naturally get motivated to spend time and energy on sharing knowledge due to busy everyday life in projects and the prioritization of completing project tasks. If the top management / project owners motivate project members and managers in the organization by using relevant incentive mechanisms (reward systems), then the situation can change.

Respondents 6, 11 and 13 mention that rewarding those who share knowledge with others can make a positive difference in knowledge sharing and learning in project-based organizations. Factors that provide motivation, which we have seen earlier in chapter 3.3, can be referred to here.

5. Concluding Remarks

This paper looks at one of the barriers to knowledge sharing and learning in PBOs, namely ineffective formal knowledge sharing systems. Six key challenges that hinder effective use of formal knowledge sharing systems in PBOs are described, and the importance of top management's involvement and support can address the challenges are discussed.

Top management's support and contribution to promote knowledge sharing and learning in PBOs should be operationalized at all professional levels in PBOs (for example, top management, project owners, project managers, project members, etc.). In order to do the operationalization effectively, both the structural and cultural aspects of organizations are to be taken into consideration.

Further study can include focusing on the research questions (presented in Chapter 1) in one or more case projects in order to get a detailed and context-specific understanding of the topic of consideration.

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