

ORIGINAL RESEARCH PAPER

EXPERIENCES WITH LESSONS LEARNED METHOD IN IT PROJECTS

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ABSTRACT

The project manager plays a central role in project integration and successful project completion. Leadership skills, especially knowledge-based leadership skills, are critical to project success as they enable the effective creation, sharing and use of knowledge. Project managers' social cognitive, interpersonal and strategic skills contribute to effective knowledge sharing. The Lessons Learned method is generally recommended for knowledge transfer in projects, but its effectiveness and implementation are controversial. The aim of this study is to investigate project managers' experiences with the Lessons Learned method in IT project management. The focus is on how these experiences influence knowledge transfer in IT projects. A qualitative research design was used to gain insight into the experiences of project managers. Eleven experts responsible for IT projects were interviewed in guideline-based expert interviews. The collected data was analysed using content structuring qualitative content analysis. The study found that project managers are responsible for knowledge transfer, but often do not perceive this task. Different perceptions of knowledge transfer methods were observed between traditional and agile training. The Lessons Learned approach showed unsatisfactory results and project managers defined their own methods. To improve knowledge transfer, project management standards should include clear tasks and support decision making. Generic models need to be integrated in the project management standards to ensure consistent approaches in practice.

Keywords: Lessons Learned, Knowledge Transfer, Project Management, Role of the Project Manager



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Introduction

Organisations need to develop flexible action strategies, and in order to assert themselves as an organisation, knowledge-intensive services are coming to the fore (Steinle et al., 2008). According to Schelle and Linssen (2018), project work is a way to respond quickly to emerging opportunities and challenges in the organisational context. According to the standard for project management, the PMBOK® Guide (Project Management Institute, 2021), projects are used to support the achievement of business objectives and the implementation of strategy. Project work refers to the processes and execution of work that enable the project team to deliver the expected outputs and outcomes. Project management tasks - in addition to business and planning tasks - include developing a strategy for continuous learning within a project (Lucht, 2019). Organisations should develop strategies to increase the reusability of acquired knowledge and to promote knowledge acquired in previous projects so that it can be adopted by other project teams and continuously improved over time (Zhao et al., 2022).

As early as the 2000s, study results showed that the use of knowledge transfer methods adapted to the context and content of the organisation and projects increased project success (Koskinen, 2004; Landaeta, 2008; Strohmaier et al., 2007). In their actual study, Mariam et al. (2022) found a positive relationship between knowledge-based leadership and project success via team cohesion and the moderating role of valuing people and project complexity on this relationship. This finding by Mariam et al. (2022) is supported by the study conducted by Naseem and Abbas (2022). They also found that organisational leadership and management can benefit from a better understanding of cross-project knowledge transfer, knowledge assimilation and project performance to achieve strategic goals. Lucht (2019) takes this a step further, calling for knowledge management to be integrated into internal project management. The results of these studies show that, on the one hand, knowledge transfer is considered to be important for the success of a project and, on the other hand, that difficulties are to be expected in carrying out this knowledge transfer.

In this study, qualitative research methods were used to explore this area of tension and to analyse the concrete experiences of project managers with the Lessons Learned method. This

study focused on knowledge transfer in the form of Lessons Learned in IT project management.

The aim is to show existing and future project managers that knowledge transfer and the use of the lessons learned method need to be reconsidered and that successful knowledge transfer in IT projects depends on personal knowledge orientation. The empirical results of the interviews will be used to learn from the experiences of other project managers and project teams and to introduce recommendations into one's own organisational culture.

Theoretical Background

Role of project manager

The project manager plays a central integrating role within a project and is therefore the contact person for all other members of a project team. The project manager is responsible for the implementation of project management within the project and the successful completion of the project (Gareis & Gareis, 2018). In addition to project management competence, leadership skills are required for project success (Maqbool et al., 2017), including the ability to deal with the diversity, complexity and different personalities of team members in dynamic project environments. In this context, knowledge-based leadership promotes and strengthens the creation, sharing and use of knowledge to change thinking patterns and collective outcomes (Mabey et al., 2012). Extending this role description to include the aspect of concrete knowledge transfer, and taking into account Mittelmann's (2013) explanations on knowledge transfer, the project manager is responsible for defining a systematic knowledge transfer in the project and for managing the knowledge transfer. The study by Soroka-Potrzebna (2022) also confirms that project leadership is rightly highlighted as the role that often makes important decisions about the team's work, including knowledge management issues.

Li et al.'s (2022) study of knowledge sharing in project work identified three sets of skills among project managers that contribute to knowledge sharing: social cognitive skills, interpersonal skills, and strategic orientation skills. Social cognitive skills, as reported by the project managers and members participating in their study, refer to the ability of project managers to perceive knowledge differences between themselves and others, to

analyse different situations, and to develop means of reconciling the differences and achieving mutual understanding. Social cognitive skills involve project managers perceiving knowledge differences between participants to ensure that appropriate knowledge is shared in a timely manner. Project managers therefore need to analyse different situations, other project participants and the knowledge to be shared. When sharing analytical reflections and thoughts, when project managers are confronted with different interpretations from other project stakeholders, the interpersonal skill of clarification and articulation enables project managers to share their knowledge more effectively in order to be understood and to achieve shared meaning with the team. Another social-cognitive skill is the ability to select knowledge sharing channels and tools. This skill focuses on selecting appropriate knowledge sharing methods and tools to share knowledge effectively. This study therefore confirms the need for project managers to be responsible for selecting knowledge transfer methods, such as the Lessons Learned method.

Lessons Learned method for knowledge transfer in projects

The Lessons Learned method refers to learning from experience and analysing the results of past projects in order to gain important insights for future projects. This review can take place after a project has been completed, as well as during an ongoing project, and involves the analysis of documents such as status reports, meeting minutes, file notes and project diaries. The aim is to learn from the past and incorporate these lessons into future projects to reduce the risk of errors and problems and increase the chances of project success (Kotnour, 1999). According to Gareis (2006), the project completion report and experience-sharing workshops are also useful for transferring knowledge from one project to another. The data collected is kept within the organisation that carried out the project, as the team is usually disbanded at the end of the project and the knowledge holders rarely meet again in the same composition. By comparing experiences from different projects, new knowledge can also be gained across project-specific boundaries (Kotnour, 1999).

Lucht (2019) describes that Lessons Learned help the implementing organisation to access individual and collective experiences and enable the dissemination of best practices. However, there are also limitations to Lessons Learned, such as the fact

that experiences are not reliable indicators of future developments, that old knowledge is preserved and that events must always be considered in the context of specific, often non-reconstructible circumstances. In addition, later projects are never fully comparable with earlier ones. Despite these limitations, the concept of lessons learnt can still be useful, as experience can be critically examined and creatively used (Mainga, 2017).

Lessons Learned method in project management standards

For the transfer of knowledge from projects to the project-based organisation, there are recommendations in the Project Management Standards, which are briefly presented and then summarised below. These standards are applied in organisations in an adapted form and provide internationally recognised certifications that are seen as training in project management.

IPMA Individual Competence Baseline

The IPMA Individual Competence Baseline was created by the International Project Management Association in 1999 and is now in its fourth version. In this standard, in the sub-process of project completion, it is stated that "the transfer of the know-how gained (Lessons Learned) to the parent organisation implementing the project and to other projects" (International Project Management Association, 2018, p.18) is a task to be performed. In the IPM ICB4 (2018), project management is encouraged to "use appropriate methods to ensure that the knowledge and experience gained during project implementation [...] is already available during and especially in the project completion phase." (p. 62). Recommended methods include sharing experiences during project meetings, conducting debriefings and experience-sharing workshops, participating in and establishing knowledge communities, and publishing articles and making available project documentation and experience reports (International Project Management Association, 2018). The IPM ICB4 is not a textbook on project, programme and portfolio management. The main focus of this document is on the individual and therefore it is a standard that specifies the competencies required for individuals to function in these business areas and achieve the intended objectives and outcomes (International Project Management Association, 2018).

PRINCE2®

PRINCE2® is the acronym for Projects In Controlled Environments and is considered the leading project management methodology. PRINCE2® is currently in its sixth edition and is a tried and tested methodology (AXELOS, 2018). In PRINCE2® (2018), the knowledge transfer tasks are stated as follows:

“The experience gained should be shared at the end of the project. If Lessons Learned do not bring about change, they have failed in their purpose – nothing has been learned from them. Each project participant is responsible for gathering experience rather than waiting for others to provide it.”(p. 22).

PRINCE2® does not specify any techniques that implement this gathering and sharing of experience.

PMBOK® Guide

The PMBOK® Guide is now in its seventh edition. PMBOK is the abbreviation for Project Management Body of Knowledge and covers widespread and proven as well as innovative practices that occur in the project management discipline (Project Management Institute, 2021). Regarding knowledge transfer in projects, the PMBOK® Guide (2021) refers to its necessity in one paragraph with the following words:

“Paying attention to knowledge transfer serves the organisation by not only delivering the value for which the project was undertaken, but it also allows the organisation to gain knowledge from the experience of delivering projects.” (S. 78).

No specific tasks or techniques are mentioned to ensure knowledge transfer. There is also no indication of what the knowledge will be collected for and what it will be used for.

PM²

PM² is a project management method developed by the European Commission. The aim of the methodology is to help project leaders deliver improvements and solutions to their organisations through effective management of the whole life cycle of their project. PM² is designed specifically for the needs of EU institutions and projects, but is suitable for projects in any organisation. PM² is a lightweight and easy-to-implement methodology that project teams can tailor to their specific needs

(European Commission & Directorate-General for Informatics, 2021). On the topic of knowledge transfer, the PM² Guide (2021) cites the advantage of formalisation:

“Formalising Lessons Learned and post-project recommendations has many advantages. When project team members share their perspectives and provide feedback, this provides useful insights that the client side can use to make post-project activities more effective. Since all projects are different, the Lessons Learned process cannot be generalised.” (p. 65).

The PM² Guide (2021) provides concrete guidelines for the implementation of this recommendation. It is recommended that the Lessons Learned session be held as part of the Project Closure Meeting and facilitated by someone not closely involved in the project, so that project management can participate. The discussion should be structured using project phases and categories of activities as organising principles to cover all aspects of the project. The improvement ideas should be grouped so that the team can better visualise the next steps needed to implement them. In some cases, it may be useful to cover the Lessons Learned in several sessions, each dedicated to a different topic – for example, the technical issues or the business implementation. The project steering committee should be invited to the Lessons Learned sessions, as this allows members to transfer Lessons Learned to other projects.

Project management guidelines (ISO 21500:2012)

This international standard applies to all projects, regardless of their scale, complexity and duration. It provides guidelines for project management and can be used by public and private organisations alike. The standard provides general explanations of technical terms and project management procedures that are considered best practices (ÖNORM ISO 21500:2016 01 01, 2016). It is stated on the topic of knowledge transfer in the Project Management Guidelines (2016): “Throughout the project, the project team and key stakeholders identify Lessons Learned with regard to the technical, administrative and process aspects of the project. Lessons Learned should be captured, processed, formalised, stored, distributed and used throughout the project.” (p. 24).

The form and techniques by which these lessons should be collected, processed and disseminated are not specified in the standard.

Summary of transfer methods and responsibilities from project management standards and norms

Following the recommendations on the subject of knowledge transfer in project management standards, it can be said that there is no single approach to aim for. Rather, there are five different recommendations when considering five different project management standards and norms. To illustrate this, the recommendations are summarised in Table 1.

Table 1.
Summary of recommended transfer methods and responsibilities from project management standards and norms

Project management standard or norm	Recommended knowledge transfer method	Responsibility for knowledge transfer
IPMA Individual Competence Baseline	Lessons Learned	Project manager
PRINCE2®	None	Each project participant
PMBOK® Guide	None	None
PM² Guide	Lessons Learned	Project Steering Committee
Project management guidelines (ISO 21500:2012)	Lessons Learned	Project team and stakeholders

Note. The classification into transfer methods and responsibility was based on the standards and norms as interpreted by the author.

It is shown in this summary that the responsibility for the implementation of knowledge transfer is also seen in a different project role for each standard or norm. A total of three standards recommend knowledge transfer in the form of Lessons Learned.

Literature Review

Knowledge transfer in projects and from projects to project-based organizations is a complex evolutionary process with many influencing factors and changing circumstances. In the study by Zhou et al. (2022) the process of knowledge transfer from projects to project-based organizations was studied with simplified variables, but the development of complex dynamic models needs further discussion. In addition, their study focuses on knowledge transfer from projects to project-based organizations, but how project managers control knowledge transfer within projects to prepare knowledge transfer to the project-based organization was not investigated in their work. Zhou et al., (2022) state that further research should focus on other elements of knowledge generation or the whole process of knowledge management of project-based organizations. Project management standards usually recommend the Lessons Learned method for knowledge transfer from projects to the project-based organizations. In contrast, the study by Paver and Duffield, (2019) on the effectiveness of Lessons Learned systems in a project, program, and portfolio management environment shows that the practice of Lessons Learned falls short of expectations and that the theory, framework, and methods underlying the practice need to be refined or changed. Their study also found that the Lessons Learned identified are superficial and there is insufficient evidence that lessons have been learned. Furthermore, the study by Paver and Duffield (2019) on the effectiveness of Lessons Learned systems in a project, program, and portfolio management environment confirms that the methods currently used in practice are inadequate.

In their study, Mariam et al (2022) found a positive relationship between knowledge-oriented leadership and project success via team cohesion and the moderating role of valuing people and project complexity on this relationship. This study confirmed that project managers should not only be knowledge-oriented, but also explicitly recognise and encourage people by valuing their knowledge, expertise, experience and contribution. This sense of appreciation and recognition will further increase their commitment to project success through stronger knowledge-based team cohesion. This study has shown that project managers' knowledge orientation, appreciation of people and team cohesion in the context of knowledge-based dynamic capabilities are required as critical factors for project success. As

a result of the study, it is suggested that project managers focus on knowledge orientation in order to build knowledge-based cohesive teams that are more cooperative and committed to the tasks in order to achieve project success to the satisfaction of all stakeholders. Based on social learning theory, the research by Nauman et al. (2022) compared and tested how two different mediating mechanisms - collaborative culture and knowledge sharing - influence the relationship between servant leadership and project team performance. As a result of this research, Nauman et al. (2022) state that team performance is a shared phenomenon and servant leaders should promote shared responsibility for collaboration among team members. Team members should share responsibility by acknowledging their mistakes, failures and weaknesses throughout the project lifecycle. In addition, leaders should foster supportive relationships among team members by focusing on communicating support, help and shared responsibility for failure to project team members. This would help to identify problems in ongoing projects at an early stage and find ways to resolve them.

Mahura and Birollo (2021) stated in their study that formal knowledge transfer practices should be the preferred way to transfer explicit knowledge, while informal practices should be used to transfer tacit knowledge. It is crucial that the project-based organisation is responsible for creating, maintaining and improving these formal practices with the main objective of transferring knowledge across projects. In their study, Barbosa et al. (2022) identified measures to promote the sharing of tacit knowledge to mitigate the effects of project turnover and ephemerality. Better team training, modern office space, diversified team compositions and meetings that focus on lessons learned are initiatives that can promote knowledge transfer in project management. Moh'd et al. (2021) conducted an exploratory configural analysis of the factors that promote knowledge concealment in project teams and found that project team members sometimes inadvertently or unintentionally conceal knowledge from other colleagues. The project culture should therefore be built under the guidance of the organisational culture. When project teams accept the organisational culture and the subcultures within projects merge with it, the potential cultural barriers to knowledge transfer can be removed and the effectiveness of transfer can be improved accordingly (Ren et al., 2019). This is supported by Srisuksa et al.'s (2021) study on the

factors influencing knowledge transfer between project managers. Through this study, they found that the environment plays an important role in knowledge transfer. According to Srisuksa et al. (2022), project team members must also be motivated to transfer knowledge and have the intention to transfer knowledge. Tokede et al. (2022) therefore recommend that project managers take on the role of project facilitator to best address knowledge transfer issues in projects.

The current study

Aim and research question

The aim of this study was to collect and analyse the practical experiences of project managers in using the Lessons Learned method. The focus was on experiences in project management training and on practical experiences in the context of operational IT projects. Therefore, the current study was guided by the following research question:

- To what extent do project management experiences with lessons learned influence knowledge transfer in IT projects?

To answer this question, the epistemological interest of this research is the actual use of the Lessons Learned method by project managers in practice.

Methodology

To answer the research question, a qualitative research design was conducted to create an understanding of the experiences with Lessons Learned in IT projects. The study had an exploratory character, which is particularly appropriate when investigating a specific phenomenon that is only partially understood (Eisenhardt & Graebner, 2007). A qualitative method was preferred to a quantitative method because the former is better suited to provide insights into complex social processes (Eisenhardt & Graebner, 2007), such as the individual experiences of project managers. In addition, the rich, real-world context in which the Lessons Learned methodology takes place was to be explored. When deciding between the available methods of the qualitative research paradigm, aspects of research economics as well as aspects of the research interest and the specifics of the field - in this case IT project management - are taken into account. The interview offers many advantages, both for reasons of research economics and

especially with regard to the goal of the empirical investigation. By formulating questions in the guide, the research gaps derived in the theory part and particularly interesting aspects regarding the Lessons Learned are captured. The guideline thus ensures that the interview is focused on the research interest. The expert interviews were conducted in the form of explorative expert interviews according to Bogner et al., (2014), as this form of interview aims to collect information about the object of study and to understand the action contexts of experts. Taking into account aspects of research economics, the type of interview used was the online interview. Due to the researcher's familiarity with the research area, the interviewer as co-expert constellation was chosen as the interaction constellation for the expert interview. This resulted in a symmetrical interaction situation during the interviews, as the interviewee also had a command of the technical terminology and expertise in project management. This had the advantage of a high technical level and richness of facts, but the interviews remained in the professional frame of reference and had a high technical impact. This constellation of interactions lends itself to the exploratory approach of this research (Misoch, 2015). Depending on the underlying philosophical stance of the researcher, the interpretation of the results of the data analysis will vary, and therefore the results of the study can only be interpreted if the underlying philosophical stance is known and stated in the paper (Biedenbach & Müller, 2011). Consequently, the philosophical stance of the researcher can be described as phenomenalist, and therefore the analysis of the results of this research study aimed to create an understanding of the subjective worlds of the project managers.

Participants

The expert role is assigned by the researcher in the concrete research process. In this way, experts define themselves through their position and the knowledge attributed to them (Kaiser, 2021). In the context of this study, it can be concluded that experts are responsible for controlling IT projects and also have access to information about the project team and the decision-making processes in the project. Experts have special knowledge acquired through training, which is often documented by certificates, or by performing special activities in the organization (Misoch, 2015). To confirm the expert status of the respondents in this study, at least one valid certification from a recognized project management institute and at least five years of experience in managing

IT projects were required. The term IT projects includes software development projects, enterprise software integration and implementation projects, information systems projects, IT infrastructure projects, and strategic IT projects (Tiemeyer & Bauer, 2010). The sample size was fixed at eleven persons and the detailed information about their experience and certifications is shown in Table 2.

Based on the aspects described above, this study examined the experiences with Lessons

Table 2.
Information on the interviewed experts

Person, gender	Experience with IT projects	Experience (in years)	Certification(s)
Person 1, male	Digitalisation projects, cloud projects, software development projects, business software implementation projects	19	Project Manager, cPM (pma/IPMA® Level C) Scrum Master
Person 2, male	Implementation projects, digitalisation projects, strategic IT projects	26	Senior Project Manager, cSPM (pma/IPMA® Level B)
Person 3, female	Business software implementation projects	8	Project Manager, cPM (pma/IPMA® Level C) Scrum Master
Person 4, female	Business software implementation projects	8	Project Management Associate, cPMA (pma/IPMA® Level D)
Person 5, male	Software development projects	10	Project Management Associate, cPMA (pma/IPMA® Level D)
Person 6, male	Business software implementation projects	10	PMP® - Project Management Professional
Person 7, female	Business software implementation projects, Software development projects	13	Scrum Master
Person 8, female	Organisational strategy projects, IT projects, process optimisation projects	20	Project Manager, cPM (pma/IPMA® Level C) Scrum Master Product Owner Agile Coach
Person 9, female	Business software implementation projects, data management projects	8	Scrum Master
Person 10, male	Implementation projects, software development projects	19	Project Manager, cPM (pma/IPMA® Level C)
Person 11, male	Implementation projects, infrastructure projects	24	Project Manager, cPM (pma/IPMA® Level C) Scrum Master Product Owner

Note. By signing a consent form, the experts agreed that the anonymised data listed in Table 3 may be used.

Learned of project managers responsible for IT projects in organizations as experts as close as possible to the object of study, holistically and open to theory in the specific project and organizational context of the experts interviewed. With their experiences, the experts were the focus of the research interest (Misoch, 2015). Their expertise and especially their knowledge of experience and action were presented and interpreted in the sense of applied research (Diekmann, 2021). The appropriate sampling strategy for this research design in the context of this study was homogeneous random sampling (Misoch, 2015), as the interested target group could be addressed through one channel and was to be interviewed in person during the expert interviews.

Data collection

The chosen format of the guided expert interview makes it possible to fill the gaps identified in the theory by exploring professional and expert knowledge, as well as to generate subjective impressions and interpretative knowledge in the specific context (Döring & Bortz, 2016). The explorative interview design chosen for this study required a detailed and differentiated guide, but also allowed for enough openness in the interview situation to be able to respond adequately to the interviewees. The interview guide also ensured the comparability of the content in the subsequent content analysis. Following Bogner et al. (2014), the design and details of the guide were based on the research interests and the personal research and interview style of the interviewer. The specific sequence of questions was designed in such a way that basic biographical information (education, occupation, etc.) was asked at the beginning, so that the interviewer could get a picture of the interviewee and respond individually. This was followed by general questions about the research topic, which could be supplemented by detailed questions in the course of the interview shown in Table 3 (Döring & Bortz, 2016).

Table 3.

Interview guide

1. information phase

Brief introduction to the study, purpose of the interview

2. demographic data

Education (in project management)
Project management experience

3. Warm-up

What do you associate with the term project knowledge? (Differentiation of knowledge in, from and about projects).
Who do you think are knowledge carriers in projects?
In your opinion, what role does knowledge transfer play in project management?

4. main part

Experiences with Lessons Learned

What forms of knowledge transfer were you introduced to during your project management training?

What experience do you have with lessons learned?

Role of the project manager

To what extent do you feel responsible for managing knowledge transfer within your projects?

5. fade out

Is there anything else you would like to add or remove?

Note. The guide was used in the interview situation primarily as a memory aid and not as a reading template.

The interviews were conducted in March 2023, lasted an average of 43 minutes, and were conducted and recorded as individual interviews in Microsoft Teams. For recording, verifiable consent was obtained from each interviewee at the time of scheduling through a signed consent form. The video recordings were then transcribed using the Amberscript web platform with artificial intelligence (AI) support.

Data analysis

In order to be able to evaluate the data collected in the guided expert interviews in the form of transcripts, a content analysis was necessary. According to Kuckartz and Rädiker (2022), qualitative content analysis is "the systematic and methodically controlled scientific analysis of texts, images, films and other contents of communication" (p. 39). A distinction is made between three basic methods of qualitative content analysis: content-structuring, evaluative and type-forming qualitative content analysis. Since in the research design chosen in this research work no evaluation of the categories was to be carried out and no typology was to be created, the content structuring method was chosen. In a content-structuring qualitative content analysis, the content is structured by means of categories and subcategories (Kuckartz & Rädiker, 2022), which can be used for a structured presentation of the research findings. The content analysis category system was initially created deductively and then supplemented inductively based on the transcripts. The main categories were deductively derived from the interview guide, resulting in thematic categories

that corresponded to the structure of the interview guide (Kuckartz & Rädiker, 2022).

List of main thematic categories:

1. Lessons Learned
2. role of project manager

These main categories are closely related to the research question and reflect the aim of this study, where the role of project management and Lessons Learned were listed as a separate main category. In addition, these main categories can be used to formulate and structure the report on the findings. Type-forming content analysis can be effectively supported by QDA software (Kuckartz & Rädiker, 2022). For this reason, MAXQDA Standard 2022 was used for content analysis in this research. In the first coding process, the data material was examined according to the main categories and coded accordingly. Sub-categories within the main categories were then derived inductively on the basis of the available data. For this purpose, the main categories were differentiated by looking at all coded text passages of the main category and combining relevant dimensions into subcategories. The second coding process was then carried out according to these subcategories. Coding rules based on Kuckartz and Rädiker (2022) were used for coding. After the coding was completed, various forms of simple and complex analyses were carried out. For this purpose, category-based analyses were carried out along the main categories and correlations between the subcategories of a main category were indicated.

Results and Discussion

To present the results, the experts' statements in the categories are quoted from the content structure analysis.

Responsibility in the Role of project managers

There was unanimity on the question of whether the experts in the role of project management feel responsible for managing knowledge transfer within the framework of projects. All of the interviewees stated that as project managers they are primarily responsible for managing the transfer, as evidenced by the following statements: "I feel 100% responsible for this" (Transcript_P9, item 53). "That is, I feel 100% responsible for making sure people know, yes" (Transcript_P9, item 51). "If I am responsible for a project as a project manager,

then I am also responsible for knowledge transfer" (Transcript_P10, item 43). "Fully responsible in every aspect" (Transcript_P11, item 73). This perceived responsibility is only questioned by person 10, who additionally states: "I don't know if it is expected, but I already see it as my responsibility as project manager" (item 47).

However, a statement can not only be made about the question of responsibility, but the experts also named clear areas of responsibility that they associate with this responsibility. The first tasks to be carried out are seen in the "generation of knowledge and what is worked out in the project [...] and [...] then of course also in the anchoring of this knowledge in the respective department" (Transcript_P6, item 38). They see themselves as responsible for "distributing knowledge and making sure that everyone knows that" (Transcript_P2, item 21) and that "I [...] also initiate the project filing, the first structure, because I agree with the project team how we simply operate the communication [...] so that everyone knows how the knowledge is distributed" (Transcript_P3, item 41). In addition, it is determined how "the knowledge is written down or that one learns something from it and that it is also comprehensible what happened in the project [...]" (Transcript_P4, item 41). Person 8 describes herself "as a coordinator and as a hub" (item 40).

One interviewee stated during the interview that despite the perceived responsibility, he did not consciously take care of the management of knowledge transfer, which is evidenced by the following statement: "I would probably consider myself responsible to take care of it. Do I do it? No" (Transcript_P10, item 55). This shows that the tasks listed above are only fulfilled sporadically by the project managers and that it cannot be assumed that every project manager actually carries out the tasks in practice. During the interview, person 11 stated that it is possible for project managers to delegate these tasks: "So it is entirely up to the project manager whether he or she delegates this activity, i.e. these responsibilities, to others" (Transcript_P11, item 75).

As stated in the theoretical background, the project manager is responsible for establishing a systematic knowledge transfer in the project and for controlling the spontaneous knowledge transfer (Mittelman, 2013), which could be confirmed by the above-mentioned statements of the experts. All interviewed persons working in the role of project managers agreed that they have

the main responsibility for managing knowledge transfer within projects. However, it was found that knowledge transfer tasks are only occasionally performed by project managers, and it cannot be assumed that every project manager actually performs these tasks in practice. The question for future projects is therefore whether knowledge transfer tasks should be considered as independent project tasks or whether they should continue to be considered as part of the overall approach. For this reason, it would make sense to anchor this topic as a separate topic in the project management standards and to clearly define this task area. These findings illustrate the need to adapt the role and responsibilities of project management.

Real training situation on Lessons Learned

A change in the theoretical and methodological framework was mentioned in the expert interviews by individuals 1, 2 and 11, who stated that the usefulness of existing Lessons Learned methods needed to be questioned and that there was a lack of a clear approach to implementation in training, as the following quotes show:

Yes, of course in training we know Lessons Learned are one way that a company develops. How exactly this happens is hardly ever taught or described. [...] Lessons Learned has become a bit of a blah-blah phrase, that you just have to do it, yes. What for? No idea. You just do it like that." (Transcript_P1, item 36) and "the so-called project documentation. So you write it down on a piece of paper somewhere and forget about it. The classic handover of the business, but not described in detail what it should look like. (Transcript_P11, item 31)

Person 2 has addressed this missing training content in more detail by referring to the transfer of tacit project knowledge as follows:

I mean that [...] this standard documentation [...] has already been emphasised everywhere. And it has been said again and again here and there, but the interesting thing would be the other not so tangible area of knowledge. From my point of view [...], there is still far too little attention paid to that. (item 27)

This view is also shared by person 11, who states that the Project Management Association (PMA) does not offer a practicable solution, but rather a theoretical path without implementation instructions, reinforced by the following statement:

"In my opinion, PMA has made it too easy in the sense of yes, just take a knowledge database and that's it" (Transcript_P11, item 31).

This critical view of Lessons Learned contrasts with the results of the expert interviews with persons 6 and 7, who stated that Lessons Learned contribute to the implementing organisation's access to individual and collective experiences and enable the dissemination of best practices. Person 6 described the issue of Lessons Learned as an important part of project management training in the following terms:

That was the biggest point in the certification. That we [...] always referred to as Lessons Learned in this case, the Lessons Learned log is built up, which was not only kept at the end, but also during the entire project when things are not working so well or also when things working well, so that is what I always include, for example, that not only the things that working not well and also the things that have worked well are noted and then simply used for the next project. And that is actually also this working, that one should also adhere to such certification in order to carry out the project properly. (item 18)

Person 7 also mentioned concrete procedures that he was introduced to during the project management training: "We were introduced to various forms of knowledge transfer, how to document knowledge with various tools, like a documentation platform, a wiki, etc." (item 19).

A different perspective on the topic of methods learned in project management training was raised during the expert interviews by persons 3 and 7, who mentioned how knowledge transfer in the area of agile methods should be implemented. Person 7 stated the following:

In my last training as a Scrum Master, the answer is perhaps a little easier, because there it is supposed to be like this anyway, that the team, that is, in agile it is always the team, the whole thing where both the Scrum Master and the Product Owner actually manage the entire knowledge together, that is the principle. (pos. 19)

Likewise, person 3 stated: "In agile, of course, the daily scrum is important, for example. This daily stand-up meeting, I think, is a very important aspect for knowledge transfer. Simply because that's where the exchange and communication takes place" (item 17).

The results show that the experts have different perceptions of the knowledge transfer methods they have learned, which can be attributed to the type of training, classic or agile. In the area of classic methods, the perception is mainly unsatisfactory, whereas in the area of agile methods, the experts perceive the knowledge transfer to be more integrated into the project management procedures.

Experience with Lessons Learned

Regarding the experiences with Lessons Learned, almost all experts agreed that the method of Lessons Learned is very good in theory, but is not applied in practice, clearly formulated in the statements of person 5 and 11: "is certainly more firmly anchored in theory than it is actually applied in practice" (transcript_P5, item 23), but "the basic idea behind it is a great one" (transcript_P11, item 33). Similarly, person 10 and person 6 stated that theory and practice differed greatly. They stated that Lessons Learned "from experience, it is always a topic that is highly written in theory, but which is perhaps not always lived out in practice" (Transcript_P10, item 29) and "in fact, it does not work that way, especially when considered for the entire company" (Transcript_P6, item 20). This assessment was also confirmed by person 8. Person 8 has "unfortunately not had good experiences. Because it seeps away. It reaches the individual persons, but in the whole organisation, where there is actually a huge opportunity, it seeps away because nothing is done with it" (Transcript_P8, item 23). People 1 and 2 stated that putting the Lessons Learned method into practice has no added value. They stated that "if you [...] do it classically, there is no added value at all" (Transcript_P2, item 29) and "write down two more Lessons Learned, it's worthless" (Transcript_P8, item 23).

One possible reason for the failure of the Lessons Learned method in practice was mentioned by persons 1 and 6. They stated that in the project-based organisation there was no central steering point for the management of the Lessons Learned. Person 1 stated that "if there is no project management office in a company or someone who [...] takes care of knowledge management, then spare the Lessons Learned" (pos. 38) and for person 6 "the Lessons Learned transfer within the company [...] is rather to be judged as low, [...] but the reason is that there is not the corresponding central administration possibility to make Lessons Learned available to other areas here" (pos. 20).

Another reason for the method not working was given by person 5. According to person 5 it is

often in practice, these Lessons Learned may be very short, because then you are already in the next project and with small projects, [...] you don't take time for [...] Lessons Learned, but rush straight into [...] the next topic. (item 23)

Persons 3 and 11 stated that they had used the method of Lessons Learned several times, but person 11 "has never been in a company where these Lessons Learned were actually used" (item 33) and person 3 stated that they "make the documents available, we upload them to certain places where they are accessible, but what really happens to the knowledge afterwards is often unknown to me" (item 45). These statements show that when the method is used in practice, the theoretical procedure is satisfied in order to comply with project management standards and possible internal organisational requirements, but no benefit is apparent for the project management. Person 10 confirmed this interpretation by stating: "in the end it is actually lost knowledge" (item 29) and "that is certainly a huge deficit" (item 53).

Persons 7 and 8 stated that they had very good experiences with Lessons Learned "when the team culture is right" (Transcript_P7, item 23). Person 8 was the only interviewee who stated that they had "definitely always had positive experiences" (pos. 23), "because it is also a very excellent element for project completion" (pos. 23).

These results show that although the Lessons Learned method is used in practice, the majority of project managers do not see any added value. The Lessons Learned method taught in theoretical project management training is implemented in practice only to a limited extent, if at all, and does not deliver the added value for project-based organisations predicted by project management standards. These results also confirm the findings of Paver and Duffield (2019) on the effectiveness of Lessons Learned systems in a project, programme and portfolio management environment and show that the implementation of Lessons Learned has remained below theoretical expectations.

It can be concluded that the lack of a central administration and the lack of time are responsible for the failure of the Lessons Learned method. The experts confirmed that a knowledge-oriented organisational culture and a steering

project-based organisation are necessary in order to implement knowledge transfer through Lessons Learned.

Conclusions

Regarding the research question about the influence of project managers' experiences with Lessons Learned on knowledge transfer in IT projects, it can be stated that all project managers know the method and have already used it in practice. The majority of project managers have not had any positive experiences with Lessons Learned and do not see any added value in its application for IT projects. This has led to project managers defining their own methods for knowledge transfer. It can be deduced from this that no clear procedure on how to deal with knowledge transfer is implemented in IT projects, but that subjective decisions on knowledge transfer are made by the project manager. The project managers have found very individual and situational solutions to ensure knowledge transfer and to replace the Lessons Learned method. Accordingly, the experience gained with the method has a clearly recognisable influence on the management of knowledge transfer and the handling of knowledge in IT projects.

For consistent approaches to be applied in practice, generic models and frameworks need to be integrated into project management standards. The Lessons Learned approach, which is still taught in its current form and is part of certification exams, is outdated and has been shown not to deliver the desired results in practice. The Lessons Learned approach needs to be replaced by methods and procedures that include clear tasks for knowledge transfer and support project management in decisions such as the concrete distribution of knowledge. In addition, the standards need to identify possible measures for creating internal organizational guidelines and schemes for knowledge transfer within project-based organizations, and clarify their necessity for organizations. This would ensure that future organizations consider the associated knowledge transfer from the outset when implementing project management standards and processes, and do not priorities projects solely on the basis of content, cost and time.

Limitations and future directions

A limitation of this study is that the expert interviews were conducted with the interviewer as co-expert, which resulted in a strong technical bias.

Here, the interaction constellation of the interviewer as co-expert could have been chosen to increase trust with the experts and thus obtain more confidential process knowledge (Misoch, 2015). In addition, the researcher herself is part of the field under study, so prior knowledge influenced the research design and practical implementation. This may have led to certain phenomena being taken for granted and therefore not considered in the research design. Later research could clarify these ambiguities by having the interviews conducted by a person who is not part of the field, as this person's lack of knowledge can be used to obtain more comprehensive explanations from the experts.

The economic framework of the research limited the research findings in that the strategy of theoretical sampling could not be implemented due to time constraints, and therefore theoretical saturation was not achieved and the maximum theoretical insight value could not be obtained from the interviews. These limitations could be mitigated by conducting additional interviews to achieve representativeness of the findings in terms of content. From a methodological point of view, the work is characterized by paradigmatic aspects of the chosen qualitative content analysis and thus limited in its knowledge gain, especially from the point of view of the proponents of the quantitative paradigm. Another limitation is that this work focuses on the IT project management perspective. The results of this study are also limited by and related to the project management perspective. Only experts with experience in IT projects were interviewed. Further research could include the perspective of project management in other areas or the perspective of the various project stakeholders and the project-based organization.

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