

Overview of Knowledge Sharing Concepts in a Project Environment: A Systematic Literature Review

Anikó Csepregi¹ and Viktória Papp-Horváth²

¹ University of Pannonia, Veszprém, Hungary

² Corvinus University of Budapest, Budapest, Hungary

csepregi.aniko@gtk.uni-pannon.hu

viktoria.horvath@uni-corvinus.hu

Abstract: Projects are considered to be temporary organisations (Lundin & Söderholm, 1995), so the non-permanent nature of the projects makes it even more important for the organisations to put a significant emphasis on knowledge sharing (KS). This paper aims to present an overview of the KS concept in project management (PM) by involving selected top journals of this research field. Furthermore, to create a KS theory map introducing subject areas related to KS concept with their relationships. Scopus database was used as a source and articles published in four journals (Q1 and Q2 ranked) were chosen: International Journal of Project Management, Project Management Journal, and International Journal of Managing Projects in Business; International Journal on Information Systems and Project Management. Our primary search resulted in 49 records over a 20-year time-period (2003-2022). 'Knowledge sharing' was applied as our primary search-word and the document type was limited only to 'articles', and regarding language, source type and article 'English' 'journal' 'articles' were applied as filters concerning the database. Systematic literature review (SLR) was conducted based on the steps of Okoli (2015) and was visualized by a PRISMA flow chart. The final sample included 36 articles based on a three-criteria selection process. Descriptive analysis was conducted on this sample, and it was also content analysed based on multiple aspects. The main subject areas related to KS concept resulted in a theory map, which visualizes influencing and influenced factors of KS based on the analysis of the past 20 years' articles from the selected top PM journals. The analysis revealed the overlaps and interrelationship amongst the influencing factors, which enables us to group them. These findings are useful for PM academics to place their current and future research in this KS theory map, or to identify possible gaps in the literature in this field. By being aware of the complex nature of KS, practitioners could make more focused decisions to foster the KS mechanisms in their projects.

Keywords: Knowledge Sharing, Project Management, Systematic Literature Review

1. Introduction

Searching for journal articles in English about knowledge sharing (in the title, abstract or keywords) in the Scopus database within the 17 journals listing "knowledge" in their names, but without any limitation regarding the year of publication or the subject area, the results showed that the number of articles is above 1.200 records (1.284). This draws attention on the relevance of knowledge sharing (KS) in journals related to knowledge. However, focusing on the KS concept by involving selected top project management journals could show a completely different picture.

Since the mid 1990's there was a growing attention in the scientific community towards the temporary forms of working constellations focusing on a special result, namely towards the projects, which were defined as temporary organisations (Lundin and Schöderholm, 1995; Söderlund, 2004; Beaume et al. 2009). The temporary nature of this endeavours together with the fact that projects consider a unique, complex, one-time task within the organisation, called significant attention towards KS regarding projects. It could be important at personal, project or organisational level as well. In the organisational context KS is of high importance since it involves transforming knowledge into a usable form for others, facilitating innovation or growth within organization (e.g., Ipe, 2003; Tsai et al. 2014). It is also recognized as essential for both large companies and SMEs, emphasizing its strategic significance across different organizational sizes (e.g., Wang and Noe, 2010; Anand et al. 2021). While the critical role of knowledge sharing in enhancing project performance is well-recognized, there remains a notable research gap in exploring those factors which have an influence on KS and which are influenced by it in project management context.

This paper could be connected to those research initiatives which try to combine the two scientific fields, namely knowledge management and project management (Brookes et al., 2006; Gomes et al. 2008) to understand the challenges of knowledge management, and more specifically KS, in projects (temporary organisations).

Despite the increasing number of publications, *"it is difficult to systematically synthesize, interpret, and apply the knowledge about knowledge sharing to project management (and other fields)"* (Ramaprasad and Prakash, 2009, p.1). Our investigation revealed that no systematic literature reviews have been conducted previously based on the database of high-quality project management journals, specifically focusing on the concept of KS

and its relationship with PM. Thus, this paper aims to present an overview of the KS concept in project management by involving selected top journals of this research area, and to create a KS theory map. The primary focus of the study is directly on KS activities, processes, models and mechanisms while articles which mention this in an inherent manner are excluded.

The paper starts with the introduction of the related theoretical background focusing on a brief overview of project management and KS. Research methodology part introduces the description and the steps of the applied systematic literature review. Results are introduced in two sections; the first part includes the descriptive analysis of the sample, while the content analysis focuses on the identified, related subject areas. Before the conclusion, the limitations and the further research areas are listed.

2. Theoretical Background

2.1 Knowledge Sharing

KS can be considered an important element of knowledge management practices (Meher et al. 2024). In terms of definitions of KS, it is mainly described as an activity during which information or other important content is shared (Bartol and Srivastava, 2002; Möller and Svahn, 2004; Li, 2010). However, Ipe (2003) sees KS between individuals as a process in which knowledge is transformed into a form that other individuals can understand, accept and use. Furthermore, KS can be realized not only through written correspondence or personal communication, but also by establishing relationships with others, or by capturing, documenting, or organizing knowledge for others (Cummings 2004; Pulakos et al. 2003). KS can be considered important for any team (e.g. project team), group or organization, as it focuses on individual, group, social, organizational, and technological cohesion (Nguyen, 2020). Previous studies have shown that KS has become a fundamental driver of innovation and growth within large organizations (e.g. Tsai et al. 2014; Wang and Noe, 2010). At the same time, the strategic importance of KS in the SME context has also been revealed by previous studies (Anand et al. 2021). This shows that KS can be interpreted at various levels and could be investigated in case of different organizational size. Knowledge sharing models are frameworks that help understand and analyse the factors influencing the effective dissemination of knowledge within an organization. These models consider elements such as organizational culture, communication channels, technological support, and individual motivations and barriers (e.g., Lin, 2007; Wang and Noe, 2010).

2.2 Knowledge Sharing and Projects (Temporary Organizations)

Lundin and Schöderholm (1995) described projects as temporary organisations within a permanent organisation. Because of the temporary nature of projects, KS has a special significance on different levels; amongst individuals within the project team, and amongst projects within the client organisation.

Ramaprasad and Prakash (2009) prepared the ontology of KS in project management focusing on the following aspects: (1) KS fostering methods, (2) KS fostering factors (e.g. individual, organizational, societal), (3) KS fostering functions (e.g. facilitators, barriers), (4) knowledge types (e.g. problem recognition, formulation, analysis, solution, prevention), and (5) the KS methods (e.g. orally, in writing).

Project knowledge can be shared through various KS mechanisms, and inter-project KS behaviours are influenced by various organizational features (e.g. organizational culture) (Wiewiora et al. 2013; Wiewiora et al. 2014). Focusing on the individual level, e.g. on the leadership style, shared leadership through KS can enhance the success of projects (Imam and Zaheer, 2021). On the other hand, trust in the context of projects is also a widely researched topic and several contradictory results have been found (Buvik and Tvedt, 2017)

After the short theoretical background focusing on a brief overview of project management and KS, the paper continues with the applied systematic literature review regarding the KS concept in project management by involving selected top journals.

3. Research Methodology of the Literature Research (SLR)

Booth et al. (2012) distinguishes six forms of academic reviews: the literature review, the critical review, the integrative review, the mapping review/systematic map and the mixed studies review/ mixed methods. Templier and Paré (2015) only creates two forms; reviews which serve as background for an empirical study aiming to provide the theoretical context, and there are the stand alone reviews which could have the following purposes: describe, test, extend, and critique. Our review belongs to the combination of the literature and the mapping

review, and to the stand alone descriptive category. Four phases and eight steps of a successful systematic literature review (SL) are distinguished: PLANNING - (1) identify the purpose, (2) draft protocol and train the team, SELECTION – (3) apply practical screen, (4) search for literature, EXTRACTION (5) extract data, (6) appraise quality, EXECUTION (7) synthesize studies, (8) write the review (Okoli, 2015; Okoli and Schabam, 2010).

The Scimago Journal & Country ranking page's (<https://www.scimagojr.com/>) publications database served as a starting point for the journal selection. The newest list available was the 2022 publication list at the time of our research (as of January 2024). The following filtering criteria was specified to narrow down the publication database: only journals were involved in our review, the word “project” had to be a part of the journal title, the journal had to fall into the SJR (SCImago Journal Rank) Best Quartile (Q1 and Q2), and the category of the journal had to belong to Business and International Management or Management of Technology and Innovation or Strategy and Management within the subject area of Business, Management and Accounting. As a result of our screening, 4 journal remained in the focus of our investigation:

- International Journal of Project Management (Q1, Elsevier UK, H index: 167, Published since: 1983-),
- Project Management Journal (Q1, Sage USA, H index: 55, Published since: 1998-),
- International Journal of Managing Projects in Business (Q2, Emerald UK, H index: 43, Published since: 2008-)
- International Journal of Information Systems and Project Management (Q2, UMinho Editoria Portugal, H index: 20, Published since: 2013-)¹.

Limited to the 4 selected professional project management journals, the process of selecting articles dealing with ‘knowledge sharing’ was also prepared on the Scopus database. The search for the term “*knowledge sharing*” was conducted in the title, abstract and keywords for each journal separately, and we limited the selection of articles in each journal to English journal articles (language, source type, article). Our primary screening resulted in 49 records (18 papers in IJPM, 12 papers in PMJ, 15 papers in IJMPB and 4 papers in IJISPM) over a 20-year time-period (2003-2022).

After checking the results of the primary search, one record was excluded because the search words (‘knowledge sharing’) could not be found in the title/abstract/keywords, that modified the number of records to 48.

Several authors emphasized the importance of the rigor of the search process (Booth et al., 2012, Vom Brocke et al., 2009), so we applied a selection criteria , based on which our primary sample was narrow down to the final sample (Table 2). In line with the originally defined research aim the following selection criteria was formed (Table 2).

Table 1: The selection criteria of journal articles (own compilation)

Selection criteria		Description of the selection criteria
Closely related to the research aim		Focus is on KS. Focus is on phenomenon which is influenced by KS. Focus is on phenomenon which influences/has an effect on KS. Focus is on KS appearing at certain project type. Focus is on KS appearing at certain organizational levels.
Moderately related to the research aim	After revision remaining in the final sample	Focus is on sharing uncertain information. Focus is on tangible KS mechanism. KS is introduced as part of a complex KM model.
	After revision excluded from the final sample	KS does not appear as a concrete process or method, just in general in agile environment. KS does not appear as a concrete process or method, just in general in software development environment.

¹ Based on the journal homepages: <https://www.sciencedirect.com/journal/international-journal-of-project-management>, <https://journals.sagepub.com/home/pmx>, <https://www.emerald.com/insight/publication/issn/1753-8378>, <https://www.sciencesphere.org/ijispm/>

Selection criteria	Description of the selection criteria
Not related to the research aim	Focus is not directly on KS and papers investigate this phenomenon in an inherent manner: Focus is on knowledge base building (KS is mentioned related to the implication) Focus is on balanced sharing with protection or knowledge hiding. Focus is on knowledge exchange. Focus is on the advances of the community of practice. Focus is on information and communication design. Focus is on knowledge transfer.

Based on the primary selection criteria (closely related to the research aim) 33 records were immediately selected to the final sample. Then, we categorized 5 records after the analysis to be moderately related to the research aims. These records were revised based on an extended criteria list and 2 records were removed out of the 5 from the sample. As a result, the final sample consisted of 36 records (14 papers in IJPM, 11 papers in PMJ, 10 papers in IJMPB and 1 paper in IJISPM).

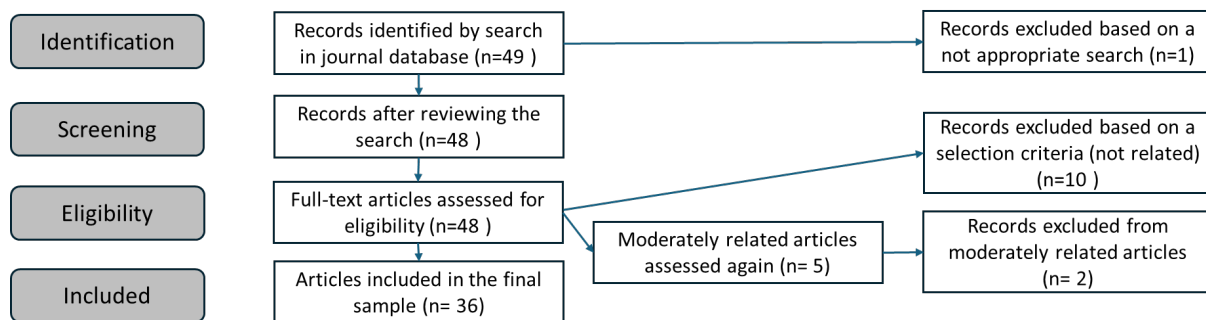


Figure 1: PRISMA flow chart of journal article selection (own compilation based on Gallagher et al., 2016, p.4)

4. Results

4.1 Descriptive Analysis

The earliest (3) articles in the literature selection were published in 2003, all in International Journal of Project Management. Comparing the two investigated decades we could see that there is a significant increase in the number of publications in this topic regarding the second decade: 8 articles between 2003 and 2012, 28 article from year 2013. The largest number of relevant papers, in the period under review, appeared in the year 2021 and 2022 immediately after the breakout of the pandemic with 5-5 articles. The popularity of the topic has increased in recent years, which highlight of investigating the background of this phenomenon (Table 3)

Table 2: Statistics based on publication interval (own compilation)

Year of publication	2003-2007	2008-2012	2013-2017	2018-2022
No. of publication	4	4	15	13

In the Q1 ranked journals altogether 25 articles were published in the investigated topic, compared to the 11 in the two Q2 ranked ones. Based on this, it could be claimed that this topic still belongs to the relevant research areas of the project management profession.

The most common author composition form was the two-author format with 15 records of the sample. Only five out of the 36 investigated papers were submitted by an individual author, so 31 was prepared in bigger or smaller research groups (3 authors in 8 cases, 4 authors in 6 cases, and 5 authors in 2 cases).

As of 9th January 2023, altogether 2066 citations were recorded in the Scopus database regarding the articles of our final sample. There were six articles with more than 100 citations. All of them were published in IJPM (Q1 ranked journal) between 2003 and 2014 by multi-author groups (Table 4).

Table 3: TOP6 most cited papers (own compilation)

Authors	Year	No of citations
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Koskinen, Pihlanto, Vanharanta	2003	283
Park, Lee	2014	228
Fernie, Green, Weller, Newcombe	2003	198
Liebowitz, Megbolugbe	2003	147
Wiewiora, Trigunarsyah, Murphy, Coffey	2013	140
Pemsel, Wiewiora	2013	132

The final sample consists of one SLR, two theoretical papers, nine case studies, the remaining presents results of qualitative (nine records) and quantitative studies (15 records).

4.2 Content Analysis

During our content analysis, the articles were reviewed with a special focus on the theoretical design of the research and the research findings. After a thorough reading of the articles, we collected those factors that the authors mentioned in their works due to their connection with KS.

KS is a complex phenomenon so revealing the exact relationship with other subject areas could be a difficult task, so we grouped the identified factors into two categories; those which have an effect on KS and those which are influenced by KS. Based on that our research resulted in a KS theory map.

4.2.1 Factors Having an Effect on the Knowledge Sharing in Project Management

In our research the identified subject areas are usually independent variables which have an impact on KS and only a few of them are mediating variables. Altogether three significant subject areas have emerged: (1) leadership, (2) trust and (3) organizational culture.

(1) Leadership related subject area

Four articles highlighted different forms of leadership which are contributing to KS. These are as follows: servant (article in our sample: #4, see Appendix 1.), shared (#28), ethical (#34) and knowledge leadership (#8). More articles focus on the project manager's KS attitude (#21). One article highlights that knowledge leadership could contribute to KS through social capital (#8). Social capital as an important factor was also mentioned in other two articles (#9, #22). It could be seen that many researchers draw a direct link between the project manager's leadership and KS within the project team. (e.g. Imam and Zaheer, 2021; Pemsel and Wiewiora, 2013)

(2) Trust related subject area

Trust was the most frequently appearing factor in the analysed articles. Its contribution to KS was highlighted five times by itself (#5, #25, #26, #29, #33) and three times together with other factors (#24, #27, #32), from which language (#24, #27) appeared twice. Trust, security and informal collaboration are forming a milieu, which enables KS (#27), and psychological safety was also mentioned as a factor in an article (#36). Together with trust the interpersonal relation as a factor (#24) is also described. Motivation was mentioned together with trust (#24) and the role of motivation was also highlighted in another article (#35). (e.g. Buvik and Tvedt, 2017; Park and Lee, 2014)

(3) Organizational culture related subject area

Organisational culture and organisational cultural characteristics were mentioned in four articles (#1, #3, #19, #29) as a contributing / enabling factor of KS. The cultural values' effect on the formal and especially on the informal KS practices are highlighted. One article used the competing values framework (#29) to underpin how different organisational culture types are supporting KS mechanisms (e.g. Mueller, 2015; Wiewiora et al., 2013).

4.2.2 Factors Being Influenced by Knowledge Sharing in Project Management

The literature treats the impact of KS on project team performance as a kind of evidence, which is underpinned by the fact that significantly less journal articles of the giving sample are dealing with the dependent variables which are influenced by KS. Eight articles were identified out of the final sample which investigated the KS's effects on another factor (dependent variable); two of them connected KS to the project success, one to the success and quality of the project portfolio and two to the project team performance. Although leadership is

usually an input factor of KS, but one article of the sample introduced KS's contribution (as an enabling factor) to distributed leadership through supporting the decision-making process within the project team. The quality of the project partnership and uncertainty management were both mentioned once.

So based on the final sample analysis it could be said that there is a significantly bigger interest in the scientific community towards those factors which influence KS than on those which are its output factors.

4.2.3 Knowledge Sharing Theory Map (in project management) and Discussion

Our content analysis resulted in a KS theory map introducing the main subject areas related to KS concept and their interrelationships, and our results were depicted on the following visual map (Figure 2).

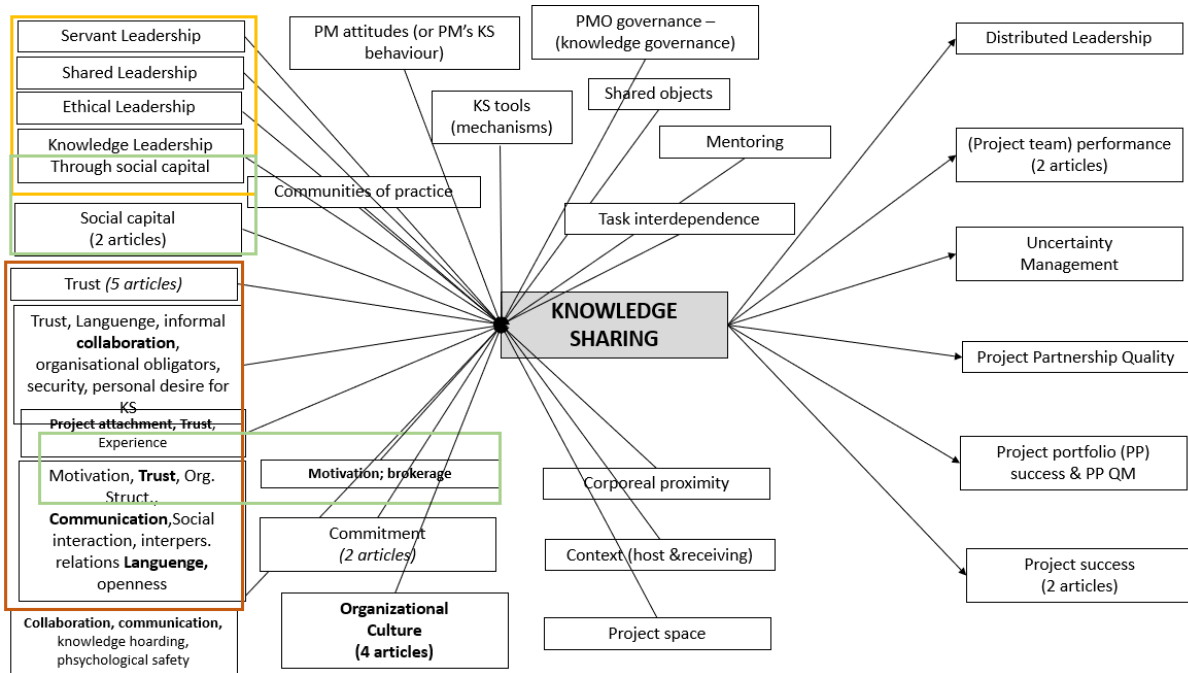


Figure 2: Knowledge Sharing Theory Map (own compilation)

Previous systematic literature reviews covered publications not only on KS but also involved innovation from 1973 to 2017 based on articles from the Scopus and Web of Science databases (Castaneda and Cuellar, 2020). While others focused on the SME context and involved knowledge transfer as well besides KS and investigated article between 1998 and 2018 based on the Scopus database (Anand et al. 2021). In project context, the number of SLR based publications in this topic is quite limited, although Zahedi et al. (2016) in their study were focusing on the challenges and practices of KS and they identified six themes connected to this topic: management, team structure, work processes/ practices, team cognition, social attributes, and technology.

5. Limitations and Further Research

The quality of the present study's methodology was ensured through the deliberate selection of high-ranking journals, confined to those classified within the top tiers of academic quality (Q1 and Q2 rankings). Consequently, there exists a tendency for publications within the scope of this study to experience delays. Conversely, forthcoming topics are frequently found in online articles or presented at conferences. Hence, to mitigate this limitation of the study in future research endeavours, it is advisable to broaden the database filter to include conference proceedings.

Expanding the sample size is of high importance, given that the current study only encompasses a 20-year timeframe (2003-2022), while publications both predate 2003 and extend beyond 2022.

This article primarily delves into elucidating the relationships between factors influencing KS. However, it is important to explore the interplay among these influencing factors further. Moreover, it may prove beneficial to categorize both influencing and influenced factors according to pertinent theoretical frameworks.

6. Conclusion

This paper aimed to provide an overview of the KS concept in project management covering the last two decades (2003-2022) focusing directly on KS activities, processes, models, and mechanisms. For the systematic literature review four top (Q1- and Q2-ranked) journals of project management were selected, and our final sample was narrowed down to 36 records based on our predefined selection criteria. After the conducted descriptive and content analysis, it can be highlighted that authors of the top PM journals have basically put more emphasis on examining the factors that promote and contribute to KS, and significantly less attention has been paid to the factors that are influenced by KS.

Based on the identified factors, three main subject areas were identified (leadership, trust, and organizational culture) which were most mentioned in the articles as factors having an influence on KS. Although there is a much smaller number of sample elements in the case of those factors, which are influenced by KS, but project success and the performance of the project team can be observed here as recurring subject areas. Our findings highlighted the most important subject areas and the KS theory map could serve as a guidance for future research to find the possible connections between related topics or to identify potential new research gaps.

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Appendix 1.

#	Authors	Title	Year	Source title
1	Mueller J.	Formal and informal practices of knowledge sharing between project teams and enacted cultural characteristics	2015	Project Management Journal
2	Martinez Sanz M.M.; Ortiz-Marcos I.	Dimensions of knowledge governance in a multi-PMO project context	2020	International Journal of Managing Projects in Business
3	Wiewiora A.; Trigunarsyah B.; Murphy G.; Coffey V.	Organizational culture and willingness to share knowledge: A competing values perspective in Australian context	2013	International Journal of Project Management
4	Nauman S.; Bhatti S.H.; Imam H.; Khan M.S.	How Servant Leadership Drives Project Team Performance Through Collaborative Culture and Knowledge Sharing	2022	Project Management Journal
5	Park J.-G.; Lee J.	Knowledge sharing in information systems development projects: Explicating the role of dependence and trust	2014	International Journal of Project Management
6	Terje Karlsen J.	Project owner involvement for information and knowledge sharing in uncertainty management	2010	International Journal of Managing Projects in Business
7	Alves J.L.; Nadae J.; Carvalho M.M.	Knowledge management enablers and barriers: exploring the moderating effect of communication barriers	2022	International Journal of Managing Projects in Business
8	Zhang L.; Cheng J.	Effect of knowledge leadership on knowledge sharing in engineering project design teams: The role of social capital	2015	Project Management Journal
9	Han J.; Hovav A.	To bridge or to bond? Diverse social connections in an IS project team	2013	International Journal of Project Management
10	Koskinen K.U.; Pihlanto P.; Vanharanta H.	Tacit knowledge acquisition and sharing in a project work context	2003	International Journal of Project Management
11	Liu G.H.W.; Huang Chua C.E.; Hu Y.	Partnership in Recruitment Process Outsourcing Projects: The Outsourcing Firm Perspective	2021	Project Management Journal
12	Vakkayil J.D.	Learning through shared objects in outsourced software development	2011	International Journal of Managing Projects in Business
13	Jugdev K.; Wishart P.	Mutual caring - Resolving habituation through awareness: Supporting meaningful learning from projects	2014	Project Management Journal
14	Solli-Sæther H.; Karlsen J.T.; Van Oorschot K.	Strategic and cultural misalignment: Knowledge sharing barriers in project networks	2015	Project Management Journal
15	Koskinen K.U.; Aramo-Immonen H.	Remembering with the help of personal notes in a project work context	2008	International Journal of Managing Projects in Business
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