Available online at www.sciencedirect.com

ScienceDirect

Procedia Computer Science 219 (2023) 1705–1712

Procedia Computer Science

www.elsevier.com/locate/procedia

CENTERIS - International Conference on ENTERprise Information Systems / ProjMAN - International Conference on Project MANagement / HCist - International Conference on Health and Social Care Information Systems and Technologies 2022

Project Managers soft skills influence in knowledge sharing

Inês Avença[a]*, Luísa Domingues[a], Helena Carvalho[b]

[a]*Instituto Universitário de Lisboa (ISCTE-IUL), ISTAR, Lisboa, Portugal*

[b]*Instituto Universitário de Lisboa (ISCTE-IUL), CIES-IUL, Lisboa, Portugal*

Technological evolution allowed a more significant focus on software development projects however, these always showed high failure rates [1] [2]. Project manager role has also gained increasing importance. In the last decade, several studies concluded a positive link between project managers' skills, such as communication, leadership and problem-solving skills, with project success. With the technological evolution and the increasing information availability and knowledge, the knowledge management role in a project environment has become indispensable. However, employees' lack of time or resistance is considered a barrier to knowledge sharing [3]. A survey was developed and delivered to development team members. The results obtained allowed us to conclude that the project manager's leadership positively influences team members' knowledge sharing in information systems. It was also concluded that the project manager's leadership positively influence knowledge sharing through socialization processes and face-to-face conversations, which refers to tacit knowledge sharing.

Keywords: Project Manager, Soft skills, Knowledge Management, Knowledge Sharing

* Corresponding author. Tel.: +0-000-000-0000 ; fax: +0-000-000-0000 .
E-mail address: isaao@iscte-iul.pt

10.1016/j.procs.2023.01.464

1. Introduction

The focus on projects began to increase when their economic and strategic value within organizations was understood. However, its high failure rates have always been a significant cause for concern, leading to intense research on projects' main success factors [1] [2]. The value given to employee skills, namely to project managers, has also suffered significant changes in recent decades. For many years, technical skills were considered a critical aspect to be developed as a project manager [4] [5]. However, several studies found a positive link between competencies such as communication, leadership and problem-solving skills with project success [4] [5] [6].

Besides the amount of information possible through technological evolution, the growing number of projects has also generated more knowledge. Documenting good practices, lessons learned, and knowledge gained during the project life cycle are assets to the entire organization, enabling future reuse of previously acquired knowledge [7]. Transference and knowledge sharing became fundamental processes to improve projects development, allowing organizations to benefit from their positive results [8]. However, employees' lack of time or resistance are considered a barrier to knowledge sharing within the organization. Knowledge management unsuccess within project environments led to the search of factors that can positively influence knowledge sharing [3].

Considering the fundamental role that the project managers' soft skills play on projects' success and considering that knowledge management influence in the project management area can be improved, this investigation aims to study the impact of the Project Manager's soft skills on tacit and explicit knowledge sharing.

2. Literature Review

2.1. Project Management and Project Manager Soft Skills

Projects play an increasingly important role in the organizations, contributing to their economic development. They have been the target of great concern as their low success rates show that adaptation to this fast-changing environment has not been easy [9]. The search for project success factors has remained a crucial research topic, with several studies pointing to good project management as a crucial factor. Studies from Fortune et al. [10] showed that limited or inefficiently conducted project management is detrimental to project success. Another study carried out in 2016 concluded that project management practices, such as communication and time plan, are critical to the project's success [11]. According to the PMBOK, a greater and more conscious use of project management suggests that applying the correct knowledge, tools, and techniques can impact the project's success [12]. Considering the importance of effective project management, the organizations place efforts to improve it, and the Project manager became an important role.

When subjects such as leadership, motivation and communication began to emerge, they started bringing more awareness to soft skills [4] [5]. Adzmi and Hassan [13] conducted a study to identify critical success factors during project planning phase that result in project success. They concluded that project manager experience and involvement are critical success factors. Gheni et al. [14] conducted a literature review on Critical success factors in Information Technology Projects and concluded that skilled project managers are one of the critical success factors. Moura et al [15] developed a recent study to bring more information to the discussion about factors that influence Information Systems project team members, with regard their high performance. They concluded that the human-centered dimensions are of greater importance when compared to the technical dimensions. They also stated that soft factors as communication, conflicts and trust are the ones that mainly impact project members performance.

An analysis was carried out to find the most mentioned soft skills in the literature regarding their impact on the project's success. Table 1 table provides a summary resulting from the literature review.

Table 1. Soft skills mentioned in the literature, regarding their influence on Project Success

1 - [5] *2* - [16] *3* - [4] *4* - [17] *5* - [18]
6 - [19] *7* - [20] *8* - [21] *9* - [22] *10* - [23]

Soft skill	1	2	3	4	5	6	7	8	9	10
Communication	✓		✓	✓	✓	✓	✓	✓	✓	✓
Conflict Management	✓		✓			✓		✓	✓	

Leadership		✓	✓				✓	✓
Team building	✓		✓		✓	✓		
People skills			✓	✓		✓		
Problem solving	✓				✓			✓

The table analysis allowed us understanding which soft skills are mainly mentioned in the analyzed literature. Maintaining good communication with all project participants stands out from other soft skills, with the highest literature mentions incidence.

2.2. Knowledge Sharing in Project Environment

Knowledge management process is based on selecting, storing and sharing knowledge effectively and systematically. Companies began to show interest in understanding how knowledge management can benefit the project environment. They understood that the complexity of projects was a risk factor for their success. As a result, knowledge transfer has been in the spotlight since efficient knowledge management and transfer can improve project results and put organizations in a more favorable strategic position [8].

Considering project failure rate is extremely important, there is an organizational effort to overcome the difficulties experienced during the project development. So, knowledge gained in previous projects is used whenever possible. However, it has been observed that with the nature of the project concerning its well-defined time and the different tasks necessary to carry out during its development means, project members' do not have time to document the knowledge acquired. This documenting phase process or participation in knowledge sharing activities is crucial for a good and efficient knowledge transfer. This fact is mainly applied to explicit knowledge sharing since this is a structured process that can be externalized and/or documented in tangible forms [7] [24]. On the other hand, tacit knowledge is gained from the individuals experience, and it is more difficult to define and transfer. This knowledge can also refer to perceptions, feelings and intuitions and sharing it relies on the relationships created between people, which requires trust [24]. This explains the difficulty in sharing knowledge during a project life cycle since this tends to be of short duration, not being enough to create trusting relationships that enable sharing [6] [7].

Since knowledge is viewed as a valuable organizational asset, project managers must create and develop an environment where knowledge is recognized as something valuable that must be created and shared, helping achieve teams and organization goals. Thus, project managers are challenged to recognize that knowledge management processes can create obstacles and not let those obstruct knowledge creation and sharing among team members, increasing the probability of project success. It is crucial that managers can identify knowledge management elements within the organization as to find problems that might jeopardize knowledge sharing [3] [12] [13].

3. Method

In this research, a theory was developed based on the research assumptions and later, a deductive approach was used to confirm or not the theory [27].

Considering the fundamental role that the project manager has in the project life cycle and its success and considering the need to improve results regarding tacit and explicit knowledge sharing, one hypothesis was created. This hypothesis intends to study the impact that each soft skills may have in tacit and explicit knowledge sharing.

H1: Project Manager soft skills impact tacit and explicit knowledge sharing.

The research model presented in figure 1 was designed to support the hypothesis. It depicts the dimensions of analysis resulting from the contributions gathered from the literature. The model includes the soft skills that will be analyzed and their influence on team members knowledge sharing.

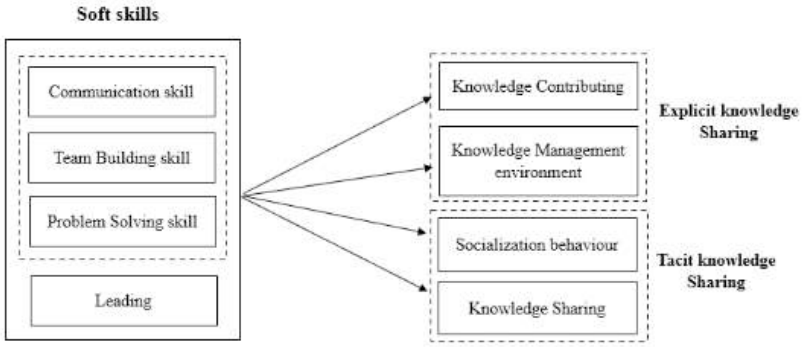

Fig. 1- Research Model.

The first three soft skills presented in the research model are found together because their scales were taken from the same study, while the leading soft skill scale was taken from a different study. The four dimensions make up our soft skill concept, which is why they are grouped together in the model. knowledge contributing and knowledge management environment are the dimensions used to measure explicit knowledge sharing concept, while socialization behavior and knowledge sharing are the two dimensions taken from the literature used to measure tacit knowledge sharing concept. All measures will be explained in the next chapter. The arrows reflect the four linear regression models that were analyzed, in which each one analyzes the soft skills impact on each of the four illustrated outcomes.

3.1. Sample

The sample demographics were as follows: 55.7% were male, aged between 18 and 58 years old ($M = 31.05$, $SD = 8.36$). The majority had up to five years of experience (4.8%). The geographic distribution showed that almost half of the respondents work in Portugal (46.8%), 12.9% worked in the Netherlands, 6.5% in Brazil. The remaining 33.8% were distributed by countries such as Denmark, Scotland, Germany, among others.

3.2. Measures

3.2.1. – Soft skills

The soft skills concept is built on five dimensions: Communication skills, Conflict management skills, Team Building skills, Problem solving skills and Leading. The first four were measured through ten items that uses a 5-point Likert scale, ranging from 1 – "Very Good" to 5 – "Very Bad". The items were created by Shi & Chen, who conducted interviews and designed a questionnaire based on the responses obtained [28]. Communication skills were the original name given by the authors and have been kept in this study. Three items were used to measure this dimension. Conflict Management skills was a changed designation, with the original being Coordination skills. Two of the three items were used. Team building skills were the third dimension used. The original designation was "Team building and delegation skills"; however, the item that mentions delegation was removed from the analysis. Regarding Problem solving skills, the original designation was "Problem-finding, analyzing, and solving skills" however, the items that referred to problem finding and analyzing were removed. The last dimension, Leading, was measured through items included in the Project Manager Competency Development Framework. Of the 25 items created to measure six

leadership project manager personal competencies, five were used to measure leadership competence. Items were measured on a 5-point Likert scale that ranged from 1 (strongly disagree) to 5 (strongly agree) [29].

3.2.2 – Explicit Knowledge sharing

To measure explicit knowledge sharing concept, items from two scales were used, one developed by Simon Cleveland [30] and another developed by Jay Liebowitza and Isaac Megbolugbeb [31]. The first four items, belonging to Simon Cleveland scale, are measured on a 7-point instrument that ranges from 1 – "strongly disagree" to 7 – "strongly agree". The remaining 3 items were chosen from a scale developed by Liebowitz and Chen [31] that aims to measure knowledge sharing effectiveness. This scale contains 25 items divided into four parts, with the selected items belonging to the part related to Knowledge Management Environment. The items were measured on a 5-point scale that ranges from 1 – "strongly agree" to 5 – "strongly disagree".

3.2.3 – Tacit Knowledge sharing

Tacit knowledge sharing concept is measured through two scales. The first four items were taken from the study developed by Juanru Wang and Jin Yang [32] measured knowledge socialization behaviours through items adapted from other authors, responsible for their creation and testing. The items were measured on 5-point Likert scale, where 1 means "Strongly disagree" and 5 means "Strongly Agree". The remaining items were taken from a study carried out by Chunjiang Yang and Aobo Chen [33]. These items were used to study tacit knowledge sharing, as they are related to knowledge sharing through face-to-face interactions. Items were measured on a 7-point scale, that ranges from 1 - "Strongly disagree" and 7 - "Strongly agree".

3.3. Questionnaire Development and Data collection

After finding the appropriate scales, a survey was developed using Google Forms. The survey consists in 44 questions, of which 15 correspond to soft skills, 16 to tacit and explicit knowledge sharing and 8 to knowledge management processes. The remaining items were related to participant information, such as country of residence.

A pre-test of the questionnaire with 12 participants was carried out. The feedback collected did not reveal any common difficulty in understanding the items. The final application of the questionnaire was then implemented.

For the present study, the target population were members of software development teams who could answer the questionnaire about their current or past project manager and the organization. A snowball sample was used, where the participants with whom the questionnaire was shared were challenged to share it with their contact network within the area. The questionnaire was also shared on LinkedIn and in software development groups. Two hundred and three responses were obtained, two of which were excluded as they recorded non-valid age responses. Thus, the final sample included 201 answers.

3.4 – Data Analysis

Statistical data analysis was carried out before the validation of the research objectives. All statistical data were developed using SPSS. Before creating the variables, scales' unidimensionality was analyzed through principal components analysis. Three components were extracted from the first scale used (Communication, team building and problem solving), and one component was extracted from the remaining scales. The obtained results allowed us to proceed with the selected data. Then, descriptive measures were used to validate the reliability of the data. Cronbach Alpha was calculated for all scales and the values can be seen in table 2. The results were quite satisfactory, having situations where the Cronbach Alpha values were greater than .85. This allowed us to understand that the items have a great internal consistency. Finally, four linear regressions were performed, with the four soft skills as independent variables. The dependent variable used differs depending on the model, using the four in the study: Knowledge

contributing, Knowledge management environment, socialization behavior and Knowledge sharing.

Table 2. Descriptive Measures

N = 201. Cronbach alpha is reported in parenthesis $^{*}p < .05$ $^{**}p < .01$ $^{***}p < .001$.

K. contributing = knowledge contributing K. man. environ. = Knowledge management environment

Variables	Mean	SD	1	2	3	4	5	6	7	8
1. Communication	2.34	1.06	(.89)	$.75^{***}$	$.74^{***}$	$-.28^{***}$	-.02	$.26^{***}$	-.03	.03
2 Team building	2.43	.92	$.75^{***}$	(.83)	$.76^{***}$	$-.20^{**}$	.04	$.29^{***}$	.03	.08
3 Problem solving	2.33	1.08	$.74^{***}$	$.76^{***}$	(.86)	$-.20^{**}$	.06	$.30^{***}$	.01	.06
4 Leading	5.02	1.41	$-.28^{***}$	$-.20^{**}$	$-.20^{**}$	(.92)	$.34^{***}$	-.08	$.24^{***}$	$.22^{***}$
5 K. contributing	4.91	1.41	- .02	.04	.06	$.34^{***}$	(.83)	-.07	$.32^{***}$	$.35^{***}$
6 K. man. environ.	2.75	.96	$.26^{***}$	$.29^{***}$	$.30^{***}$	-.08	-.07	(.75)	.05	.05
7 Socialization behavior	3.67	.89	-.03	.03	.01	$.24^{***}$	$.32^{***}$	.05	(.84)	$.22^{***}$
8 Knowledge sharing	4.18	.77	.03	.08	.06	$-.22^{***}$	$-.35^{***}$	.05	$.22^{***}$	(.75)

4. Results

For the present study, four linear regression models were performed, having Communication, Team Building, Problem Solving and Leading as predictors.

For the Knowledge Contributing outcome, the linear model (with communication, team building, problem solving and leading as predictors) explained 17.7% (R^2_a= 0.117) and was significant (F (4, 198) = 7.63, $p < .001$). Only leading showed a significant and a positive effect on knowledge contributing, ($\beta = 0.36$, $t = 5.20$, $p < .000$), validating the hypothesis that study the leadership impact on Knowledge Contributing, H1.4, and rejecting H1.1, H1.2 and H1.3.

Regarding Knowledge Management Environment outcome, the linear model (with communication, team building, problem solving and leading as predictors) explained 8.0% (R^2_a= 0.080) and was significant (F (4, 198) = 5.35, $p <$ .001). However, none of the predictors showed a significant effect on Knowledge Management environment, thus hypothesis H1.5, H1.6, H1.7 and H1.8 were not supported.

Regarding the Socialization behavior outcome, the linear model (with communication, team building, problem solving and leading as predictors) explained 4.2% (R^2_a= 0.042) and was significant (F (4, 198) = 3.22, $p < .001$). Only leading showed a significant and positive effect on Socialization behavior, ($\beta = 0.25$, $t = 3.41$, $p < .000$), only accepting Leading hypothesis H1.12.

For the Knowledge Sharing outcome, the linear model (with communication, team building, problem solving and leading as predictors) explained 6.5% (R^2_a= .065) and was significant (F (4, 198) = 3.42, $p < .001$). Only leading showed a significant effect on Knowledge Sharing, and it was a positive effect ($\beta = 0.25$, $t = 3.48$, $p < .000$), thus only Leading hypothesis (H1.16) was validated.

5. Discussion

This paper aims to study the influence of project managers' soft skills on knowledge sharing. First, a research model was created based on the conducted literature review. Then, we hypothesized that each of the studied soft skills would impact each research model's outcomes.

The initial assumptions were that the soft skills under analysis impact explicit and tacit knowledge sharing, having been proven that Leading soft skill do indeed have an impact on knowledge sharing. Three hypotheses were accepted, all referring to this soft skill.

The Leading variable had a positive and significant impact on three of the four outcomes: Knowledge Contributing, Socialization behavior and Knowledge Sharing. This means that Leading soft skill had significant and positive the two scales used to study tacit knowledge sharing and on one of the two scales used to analyses explicit knowledge sharing.

The second model performed, which had the Knowledge Management Environment as a dependent variable, did not significantly correlate between the predictors and the outcome. This may be since the respondents did not understand the chosen scale as being the dimension that we intended to study. Although the pre-test phase did not show any doubts regarding the sentence construction and general understanding of the items, it is not known if the understanding of the target audience was the same as we had regarding the object of analysis.

The obtained results for the remaining hypotheses were not significant. There was no significant relationship between the soft skills analyzed (communication, team building, problem solving) and the outcomes referring to the sharing of explicit and tacit knowledge.

Of the three models in which a positive impact was obtained between Leading and the dependent variable, it was in the first that the predictor had the most significant impact. This reveals that project managers' leadership has a greater impact on the team members' knowledge contribution when compared to the impact it has on knowledge sharing and socialization behaviors.

Conclusion and future research

This article presented a research model that aimed to analyze the impact of the most mentioned soft skills in the literature, regarding their impact on project success, in tacit and explicit knowledge sharing in a project environment. The items for each construct were found in the literature and used to measure the constructed hypotheses through developed regression models.

The linear regressions results showed a positive relationship between Leading soft skill and three of the four outcomes analyzed. Therefore, it was possible to conclude that a project manager with effective leadership positively influences team members knowledge sharing in information systems, reflecting explicit knowledge sharing, as well as knowledge sharing in face-to-face interactions, that is, tacit knowledge sharing.

The remaining results that led to the hypotheses rejection may be due to the number of respondents being lower than what would be desirable to obtain more reliable and representative results. It is also possible that the respondents did not interpret the items in the desired way, understanding that they measured something different from what was intended to be measured in the present work.

For future research, it would be interesting to find a larger sample of respondents, to confirm the results obtained. It would also be advantageous to study the main objective, but from the project manager's point of view, to understand if there are differences between what is perceived by team members and what is perceived by the project manager himself.

References

[1] F. Neves, H. Borgman, and H. Heier, “Success Lies in the Eye of the Beholder: A Quantitative Analysis of the Mismatch Between Perceived and Real IT Project Management Performance,” *Proceedings of the 50th Hawaii International Conference on System Sciences (2017)*, no. January, 2017, doi: 10.24251/hicss.2017.624.

[2] G. J. Hidding and J. M. Nicholas, “Reducing I.T. project management failures: Early empirical results,” *Proceedings of the Annual Hawaii International Conference on System Sciences*, pp. 4305–4314, 2014, doi: 10.1109/HICSS.2014.532.

[3] T. le Dinh, T. H. Van, and T. S. Nomo, “A Framework for Knowledge Management in Project Management Offices,” no. April, 2016.

[4] R. Maqbool, Y. Sudong, N. Manzoor, and Y. Rashid, “The Impact of Emotional Intelligence, Project Managers’ Competencies, and Transformational Leadership on Project Success: An Empirical Perspective,” *Project Management Journal*, vol. 48, no. 3, pp. 58–75, 2017, doi: 10.1177/875697281704800304.

[5] M. H. Awan, K. Ahmed, and W. Zulqarnain, “Impact of project manager’s soft leadership skills on project success,” *Journal of Poverty, Investment and Development*, vol. 8, pp. 27–47, 2015, [Online]. Available: https://www.iiste.org/Journals/index.php/JPID/article/viewFile/19288/19711%0Ahttp://citeseerx.ist.psu.edu/viewdoc/download?doi=10

.1.1.678.6911&rep=rep1&type=pdf
[6] J. C. Alvarenga, R. R. Branco, A. L. A. Guedes, C. A. P. Soares, and W. da S. Silva, "The project manager core competencies to project success," *International Journal of Managing Projects in Business*, vol. 13, no. 2, pp. 277–292, 2020, doi: 10.1108/IJMPB-12-2018-0274.
[7] B. Hanisch, F. Lindner, A. Mueller, and A. Wald, "Knowledge management in project environments," *Journal of Knowledge Management*, vol. 13, no. 4, pp. 148–160, 2009, doi: 10.1108/13673270910971897.
[8] A. Mahura and G. Birollo, "Organizational practices that enable and disable knowledge transfer: The case of a public sector project-based organization," *International Journal of Project Management*, vol. 39, no. 3, pp. 270–281, 2021, doi: 10.1016/j.ijproman.2020.12.002.
[9] R. Hassani and Y. el Bouzekri El Idrissi, "A framework to succeed IT project management in an era of digital transformation," *International Journal of Advanced Trends in Computer Science and Engineering*, vol. 9, no. 1, pp. 630–636, 2020, doi: 10.30534/ijatcse/2020/88912020.
[10] J. Fortune, D. White, K. Jugdev, and D. Walker, "Looking again at current practice in project management," *International Journal of Managing Projects in Business*, vol. 4, no. 4, pp. 553–572, 2011, doi: 10.1108/17538371111164010.
[11] A. Badewi, "The impact of project management (PM) and benefits management (BM) practices on project success: Towards developing a project benefits governance framework," *International Journal of Project Management*, vol. 34, no. 4, pp. 761–778, 2016, doi: 10.1016/j.ijproman.2015.05.005.
[12] PMI, *Pmbok - 7ªEd*. 2021.
[13] R. M. Adzmi and Z. Hassan, "A theoretical framework of critical success factors on information technology project management during project planning," *International Journal of Engineering and Technology(UAE)*, vol. 7, no. 4, pp. 650–655, 2018, doi: 10.14419/ijet.v7i4.35.23078.
[14] A. Y. Gheni, Y. Y. Jusoh, M. A. Jabar, and N. M. Ali, "The critical success factors (CSFs) for IT projects," *Journal of Telecommunication, Electronic and Computer Engineering*, vol. 9, no. 3-3 Special Issue, pp. 13–17, 2017.
[15] I. Moura, C. Dominguez, and J. Varajão, "Information systems project team members: factors for high performance," *TQM Journal*, vol. 33, no. 6, pp. 1426–1446, 2021, doi: 10.1108/TQM-07-2020-0170.
[16] R. Müller, J. Geraldi, and J. R. Turner, "Relationships between leadership and success in different types of project complexities," *IEEE Transactions on Engineering Management*, vol. 59, no. 1, pp. 77–90, 2012, doi: 10.1109/TEM.2011.2114350.
[17] C. Araújo and C. D. Pedron, "The importance of soft skills and it project managers' personality type," *International Journal of Professional Business Review*, vol. 1, no. 1, pp. 40–59, 2016, doi: 10.26668/businessreview/2016.v1i1.8.
[18] M. Tahir, "the Effect of Project Manager'S Soft Skills on Success of Project in the Construction Industry," *International Journal of Applied Research in Social Sciences*, vol. 1, no. 5, pp. 197–203, 2020, doi: 10.51594/ijarss.v1i5.44.
[19] S. Sandhu, "Key Competencies for Project Managers : An Empirical Study," 2018.
[20] D. H. Stevenson and J. A. Starkweather, "PM critical competency index: IT execs prefer soft skills," *International Journal of Project Management*, vol. 28, no. 7, pp. 663–671, 2010, doi: 10.1016/j.ijproman.2009.11.008.
[21] G. J. Skulmoski and F. T. Hartman, "Information Systems Project Manager Soft Competencies: A Project-Phase Investigation," *Project Management Journal*, vol. 39, no. 1, pp. 28–42, 2008, doi: 10.1002/pmj.
[22] T. Creasy and V. S. Anantatmula, "From Every Direction—How Personality Traits and Dimensions of Project Managers Can Conceptually Affect Project Success," *Project Management Journal*, vol. 39, no. December 2013, pp. 28–42, 2008, doi: 10.1002/pmj.
[23] R. Frese and V. Sauter, "Improving your odds for software project success," *IEEE Engineering Management Review*, vol. 42, no. 4, pp. 125–131, 2014, doi: 10.1109/EMR.2014.6966952.
[24] Stevens, "Waves of Knowledge Management: The Flow between Explicit and Tacit Knowledge," *American Journal of Economics and Business Administration*, vol. 2, no. 1, pp. 129–135, 2010, doi: 10.3844/ajebasp.2010.129.135.
[25] C. O. Egbu, "Knowledge Management and Human Resource Management (HRM): The Role of the Project Manager Knowledge Management in Project Environments – Some of the challenges," *Methodology*, no. 1996, 2001.
[26] B. H. Reich, A. Gemino, and C. Sauer, "Knowledge management and project-based knowledge in it projects: A model and preliminary empirical results," *International Journal of Project Management*, vol. 30, no. 6, pp. 663–674, 2012, doi: 10.1016/j.ijproman.2011.12.003.
[27] A. Bryman, "Social research methods," 2016.
[28] Q. Shi and J. Chen, *The Human Side of Project Management: Leadership Skills*, vol. 15, no. March. 2006.
[29] C. Cartwright and M. Yinger, "Project management competency development framework—second edition," 2007.
[30] S. Cleveland, "A Causal Model to Predict Organizational Knowledge Sharing via Information and Communication Technologies," *ProQuest Dissertations and Theses*, no. 16, p. 218, 2014, [Online]. Available: https://login.pallas2.tcl.sc.edu/login?url=https://search.proquest.com/docview/1625718250?accountid=13965%0Ahttp://resolver.ebscohost.com/openurl?ctx_ver=Z39.88-2004&ctx_enc=info:ofi/enc:UTF-8&rfr_id=info:sid/ProQuest+Dissertations+%26+Theses+Global&rft_v
[31] J. Liebowitz and I. Megbolugbe, "A set of frameworks to aid the project manager in conceptualizing and implementing knowledge management initiatives," *International Journal of Project Management*, vol. 21, no. 3, pp. 189–198, 2003, doi: 10.1016/S0263-7863(02)00093-5.
[32] J. Wang and J. Yang, "An Empirical Study of Employees' Tacit Knowledge Sharing Behavior," *Journal of Systems Science and Information*, vol. 3, no. 3, pp. 264–278, 2017, doi: 10.1515/jssi-2015-0264.
[33] C. Yang and A. Chen, "THE LONGITUDINAL EMPIRICAL STUDY OF ORGANIZATIONAL SOCIALIZATION AND KNOWLEDGE SHARING – FROM THE PERSPECTIVE OF JOB EMBEDDEDNESS," *International Journal of Managing Information Technology*, vol. 51, no. 11, pp. 1–340, 2014.