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When employees and external consultants work together on projects: Challenges of knowledge sharing

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Abstract

In project settings, personnel with different employment arrangements often work together and interact closely. Here, we study knowledge sharing when employees of the focal firm cooperate with external consultants. We differentiate between "in-group" (inside an employment category) and "out-group" (between employment categories) knowledge sharing and analyze the antecedents of knowledge sharing behavior. In an empirical study of 117 employees and external consultants, we find strong support for the main hypotheses: Internal employees tend to engage in more knowledge sharing than external consultants, in their relation to employees. Employees tend to engage in less knowledge sharing than external consultants, in their relation to external consultants. Trust in relation to a specific category of employment was also found to be statistically related to knowledge sharing behavior toward personnel in the category.

Keywords: Knowledge sharing; Employment arrangement; External consultants; In-group/out-group

1. Introduction

The core of project management is the management of a temporary *task* with a definite start-up and end-point in time. In a project setting where people work together and interact closely, issues of knowledge sharing are considered important. Flows of information and exchange of ideas and methods should enable innovative solutions, improve the quality of work inside the project and enhance the ability to learn and accumulate projects across different projects in time. In a review article on knowledge sharing, Wang and Noe (2010) identify five groups of factors that influence knowledge sharing; national culture, organizational context, interpersonal and team characteristics, individual characteristics and motivational factors. Here, we will analyze how a key HRM variable – employment arrangement – influences knowledge sharing in a project context. A project-oriented firm has several alternative staffing options, including the combination of employees and external contributors, such as external consultants (Modig, 2007; Søderlund, 2000). In the latter case, a share of the personnel who work for the firm on a temporary *task* is connected to the firm on short-term *contract*, without being employed by the focal firm.

While Nesheim et al. (2014) observed that there are particular challenges related to these external consultants, a study by Smith and Nesheim (2015) found no differences in knowledge sharing behavior between employees and consultants. The approach taken in this paper is that we differentiate between "in-group" and "out-group" knowledge sharing; i.e. between employees' knowledge sharing behavior (KSB) toward other employees *and* toward external consultants, and vice versa. Thus, we analyze antecedents of KSB toward a) employees and b) external consultants, with a particular emphasis on the impact of employment arrangement on KSB. The main hypotheses are that there will be a higher level of knowledge sharing among those in a similar employment

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arrangement than between people in different employment arrangements. We also include other variables – project attachment, trust, motivation, education and experience – in the model.

The hypotheses are tested empirically among 117 employees and external consultants who work on three projects for the Norwegian Public Road Administration.

2. Research background

2.1. Project management and non-standard work arrangements

Projects are temporary organizations, with an intentional death, purposefully designed to provide benefits for a permanent organization or certain shareholders, through complex problem-solving processes (Søderlund, 2011). Projects tend be unique, often have a high level of risk and uncertainty and involve heterogeneous work teams. A number of themes have been explored in the project management research domain, based on several theoretical perspectives. The studies typically highlight managerial, coordination and governance issues of temporary tasks. Attitudes and behaviors of individuals (such as knowledge sharing and other cooperative behaviors) do not figure prominently in the project management literature.

As regards the human resource dimension of project, it is acknowledged that project members may come from different organizations, and include ordinary employers of the focal firm as well as workers that are employed by a third party or are independent consultants (Borg and Søderlund, 2014; Bredin and Søderlund, 2010; Reich et al., 2013). However, empirical studies in the project management field have not systematically investigated differences between the different types of employment or the challenges of multi-employment relations in projects (Smith and Nesheim, 2015).

The research on non-standard work targets employment arrangements that are alternatives to long-term direct employment by a focal firm. Such arrangements include on call workers, direct short-term hires, three party-relations involving temporary help agencies or consultancy firms as well as independent contractors. While the research focuses on temporary *contracts* (as opposed to long-term standard employment), the temporality of *task* is to a large extent neglected in the literature (Ashford et al., 2007; Connelly and Gallagher, 2004; De Cuyper et al., 2007). Thus, project management and non-standard employment relations constitute separate research domains, and few studies have analyzed research questions that cross this boundary (Smith and Nesheim, 2015).

2.2. Why knowledge sharing is important

The sharing of knowledge is an essential aspect of knowledge management and a key process in translating individual learning into organizational capability (Dalkir, 2005; Foss, 2007; Prencipe and Tell, 2001). Knowledge sharing refers to "the provision of task information and know-how to help others and to collaborate with others to solve problems, develop new ideas, or implement policies and procedures" (Wang and Noe, 2010, p. 117). It may occur via written or face-to-face communication through networking with others or through documenting, organizing and capturing knowledge for others (Wang and Noe, 2010).

Many organizations have invested in various formal knowledge management systems to facilitate the collection, storing and distribution of knowledge, but these systems have often failed to live up to expectations (Babcock, 2004; Carter and Scarbrough, 2001). Obtaining information from colleagues and other professional relationships is often preferred, since "we not only end up with the information we were looking for, but also learn where it is to be found, how to reformulate our question or query… (and also)… 'metaknowledge' about our search target and our search capabilities" (Dalkir, 2005, p. 112). Thus, direct contact and exchange of information and experiences between employees are vital supplements to formal systems of knowledge management.

Wang and Noe (2010) identify five groups of factors that influence knowledge sharing behavior; 1) national culture; 2) organizational context (organizational culture, management support, incentives and organizational structure); 3) interpersonal and team characteristics (team processes, diversity, social networks); 4) individual characteristics; and 5) motivational factors (knowledge ownership, perceived benefits and costs, interpersonal trust and justice, individual attitudes).

The *project management* literature has emphasized several aspects of knowledge management and organizational learning. In a project setting, characterized by clear time limits, unique problem solving and close interaction, the flow of information and exchange of information between project participants are vital. Knowledge sharing may improve the quality of work inside the project, as well as the ability to learn and accumulate knowledge between projects (Prencipe and Tell, 2001; Søderlund, 2011). However, the conditions of knowledge sharing are challenging in project-based organizations. Discontinuous working constellations and team compositions lead to fragmentation of individual and organizational knowledge (Prencipe and Tell, 2001). It is more difficult to accumulate knowledge in such a context, compared to organizations characterized by continuous operations (Scarborough et al., 2004).

Thus, in a project setting there are both potential gains from, as well as unique challenges of, knowledge sharing. In addition, if project participants have different employment relations to the focal firm in question, a number of other issues may become relevant (Borg and Søderlund, 2014; Nesheim and Gressgård, 2014; Nesheim et al., 2014; Sankowska and Søderlund, 2015; Smith and Nesheim, 2015). Employees with long term contracts have a different time perspective and tend to be more integrated with the focal firm, compared to external consultants or independent contractors. A number of studies have found differences in behaviors and attitudes among different employment arrangements (Ashford et al., 2007; Connelly and Gallagher, 2004). When employees and external consultants work together on projects, there are challenges related to cooperative behavior and knowledge sharing.

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2.3. Knowledge sharing behavior: two dependent variables

Previous research has tended to measure an individuals' *general* propensity to share knowledge, rather than differentiating between knowledge sharing toward people with similar and different employment arrangements (cf. Smith and Nesheim, 2015). However, it is conceivable that the personnel in the two categories may exhibit "in-group" and "out-group" behaviors. The impact of affective states, such as identification with and commitment to multiple parties has been analyzed in previous research (Lauring and Selmer, 2012; Swart et al., 2014). Where there are strong internal affiliations, employees may tend to resist new ideas coming from the outside, due to the potential fracture of stability and familiarity of the in-group (cf. Husted and Mikhailova, 2002). According to social identity theory, individuals maintain a positive self-image by categorizing themselves "in-groups", that are perceived as more favorable than members of the "out-group" (Tajfel and Turner, 1986). Different employment arrangements may provide the basis for such categorization (Webster et al., 2008). Thus, an employee would interact in a more cooperative manner toward other employees than toward external consultants, and vice versa. Therefore, we differentiate between KSB inside and outside the given category and analyze the antecedents of two variables; knowledge sharing behavior with employees and knowledge sharing behaviors with external consultants.

3. Hypotheses

3.1. The impact of employment arrangement

Smith and Nesheim (2015) argue that three mechanisms related to employment arrangements are of particular importance. First, consultants tend to have a lower level of social capital than ordinary employees and have less time to develop cooperative relations with their co-workers and building social capital. Secondly, the same incentives are not in place for external workers to share knowledge compared to internal employees. Their contract with the client organization is usually short-term and therefore it is reasonable to assume that they do not have any expectation of benefits such as job security, status, or promotional aspects. Thirdly, in organizations where an individual's knowledge becomes his or her primary source of value to the firm, sharing this knowledge might potentially result in diminishing the value of the individual, creating a reluctance to engage in knowledge-sharing activities (Smith and Nesheim, 2015).

We believe that these mechanisms do not necessarily imply a lower *general* level of knowledge sharing among external consultants, rather, combined with the existence of "in-group"/"out-group" relations, they are primarily relevant to understand consultants' KSB *toward employees*. Here, one would expect that external consultants tend to have a lower level of KSB than employees. Employees of the firm will tend to interact with "their own", where there is a higher level of social capital and different incentives, compared to the "out-group" relation that exists between external consultants and employees.

H1. Employees will exhibit a higher level of KSB than external consultants, in their relations with internal employees.

Further, as regards knowledge sharing toward *external consultants*, similar processes are expected to occur. From a consultant's point of view they will tend to identify with and perceive this category as their "in-group", especially if the consultants have the same formal employer. Employees on the other hand will to a larger extent perceive external consultants as an "out-group". They may prefer their own ideas, prefer interaction with other employees and may also fear the hosting of "knowledge parasites" (Husted and Mikhailova, 2002) in the form of consultants who only absorb knowledge and share nothing in return (cf. Agarwal et al., 2007).

H2. Employees will exhibit a lower level of KSB than external consultants, in their relations with external consultants.

3.2. Project attachment

In addition to the firm, the project in question may also be a potential source of commitment and identity. We believe that the strength of project attachment affects knowledge sharing behavior. If one manages to create a strong project identity, other identities and differences in incentives may become of less importance. An open atmosphere and work relations characterized by trust should have a positive effect on project outcomes (Khalfan et al., 2007). O'Neil and Adya (2007) argue that the fulfillment of the psychological contract between an employee and a (line) manager will have an impact on knowledge sharing. Previous studies have found a positive association between commitment and knowledge sharing (Casimir et al., 2012). In project-based organizations, projects provide the day-to-day work context and source of attachment. Therefore, it is reasonable to expect similar mechanisms in a project participant's relation to the project and the project manager.

H3. There will be a positive relationship between project attachment and the level of knowledge sharing with employees.

H4. There will be a positive relationship between project attachment and the level of knowledge sharing with external consultants.

3.3. Trust in relation to employees and external consultants

Trust is "a set of beliefs about the other party (trustee), which lead one (trustor) to assume that the trustees actions will have positive consequences for the trustor's self" (Bakker et al., 2006: 598). When relationships have a high level of trust, people are more willing to both provide, listen to and absorb other's knowledge, compared to relationships with a low level of trust (Ipe, 2003; Swart and Harvey, 2011). A number of empirical studies have found positive associations between trust and knowledge sharing (Wang and Noe, 2010). Here, we have differentiated between KSB toward employees and external consultants. It is also useful to distinguish between trust toward employees and trust toward consultants. If the

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"in-group"/"out-group" mechanisms related to employment arrangements are significant, trust should be analyzed in relation to each of these arrangements. Accordingly, whether one exhibits knowledge sharing behaviors toward employees is dependent on one's trust in this particular category of project participants. When the level of trust is high, the relation is characterized by a high level of reciprocity. One will tend to both provide the person in question with information and ideas and will also tend to receive and take seriously information and ideas provided by the other. Similarly, the level of trust experienced in relation to consultants is expected to have an impact on knowledge sharing with consultants, and not with employees.

H5. There will be a positive relationship between the level of trust in relation to employees and the level of knowledge sharing with employees.

H6. There will be a positive relationship between the level of trust in relation to external consultants and the level of knowledge sharing with external consultants.

3.4. Autonomous motivation

Autonomous motivation is regarded as being advantageous for the willingness to learn, and for activities that involve tacit knowledge and a voluntary dimension (Osterleh and Frey, 2000). If a person is autonomously rather than extrinsically motivated, he or she will tend to be more open to learning from the experience of others and more likely to seek out knowledge to improve competencies (Deci and Ryan, 2000). Empirically, support has been found for the association between this type of motivation and knowledge sharing behavior (Foss et al., 2009; Reinholt et al., 2011), as well as knowledge application (Nesheim et al., 2011).

H7. There will be a positive relation between autonomous motivation and knowledge sharing toward employees.

H8. There will be a positive relation between autonomous motivation and knowledge sharing toward external consultants.

3.5. The level of education and expertise

Cohen and Levinthal (1990) argue that the diversity of the knowledge possessed by employees provides better grounding for absorbing new knowledge, since it enhances the chance that the incoming knowledge is related to what is already known. Constant et al. (1994) found that individuals with a higher level of education and longer work expertise are more likely to share their expertise and have positive attitudes toward sharing. Constant et al. (1996) also found that individuals with higher expertise were more likely to share useful knowledge asked by other employees. We hypothesize that knowledge sharing behavior is related to both the level of education and the amount of experience in a given knowledge domain. Both variables are expected to increase the potential for absorbing new knowledge and providing useful knowledge to others, and therefore to have a positive impact on knowledge sharing behavior.

H9. There will be a positive relationship between the level of education and knowledge sharing toward employees.

H10. There will be a positive relationship between the level of education and knowledge sharing toward external consultants.

H11. There will be a positive relationship between the level of experience and knowledge sharing toward employees.

H12. There will be a positive relationship between the level of experience and knowledge sharing toward external consultants.

The hypotheses are summarized in Table 1.

4. Data and methods

4.1. Context

The empirical setting of the study is Norwegian Public Road Administration (NPRA), which is responsible for planning, construction and operation of national and county roads in Norway. In 2012, NPRA had 7000 employees and used appr. 300 mill Euro on external consultants. The employees and consultants of our study were found among participants in three different projects; of which two were in the design phase and one in the building phase. All three projects are quite large. The consultants are used for capacity reasons as well as to bring in specialized competence related to complex technical challenges. There is intensive cooperation between employees and external consultants. Thus, in these projects knowledge sharing is regarded as significant.

4.2. Sample and response rate

Our contact persons in NPRA provided us with a list of 166 participants in the three projects. 62 were employees of NPRA, while 104 were consultants from four different firms. The questionnaire was administered by email in March 2014, using the online survey tool Qualtrics. We obtained 117 responses, 51 from employees (82%) and 66 from consultants (63%). The total response rate was 70%.

Table 1
Model summary.

Independent variable	Impact on: knowledge sharing with employees	Impact on: knowledge sharing with external consultants
Employment arrangement	H1: + (empl. > cons.)	H2: − (empl. < cons.)
Project attachment	H3: +	H4: +
Trust in employees	H5: +	
Trust in external consultants		H6: +
Autonomous motivation	H7: +	H8: +
Education	H9: +	H10: +
Experience	H11: +	H12: +

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4.3. Operationalization of variables

The two *dependent variables* were each measured by four items, using a 1–5 response scale. The questions were based on Foss et al. (2009) and were slightly modified to fit the empirical context. The items are: a) "do you learn from project participants from the NPRA (the consultancy firm)", b) "do you seek advice from project participants from the NPRA (the consultancy firm)", c) "do you share opinions, ideas and expertise with project participants from the NPRA (the consultancy firm)", and d) "have you used knowledge from project participants from the NPRA (the consultancy firm)". Cronbach's alphas were .78 (KSB toward employees) and .80 (KSB toward external consultants) respectively.

Project attachment was measured by three indicators developed for this study: a) "if the project is successful, I perceive it as a personal victory", b) "I take part in every project meeting that I am invited to", and c) "I am willing to contribute with extra effort to make the project successful". Cronbach's alpha was .62 which is rather low. *Trust in employees* and *trust in external consultants* were each measured by three items, based on Smith and Nesheim (2015) and Levin and Cross (2004): a) "I perceive that the employees in NPRA (consultancy firm) want me to succeed", b) "I trust the employees of NPRA (consultancy firm) to do their best in order for the project to succeed", and c) "when I seek advice from a project participant from NPRA (consultancy firm), I expect constructive response". Cronbach's alphas were .62 and .58 respectively. *Autonomous motivation* was measured by three items, obtained from Foss et al. (2009) and Gagné (2009): "I share knowledge because… a) I find it satisfying…, b) it is a vital part of my job…, and c) I wish to help others to succeed". Cronbach's alpha was .51. *Education* was measured by the question: "what is your highest level of education" (high school or less, college (1–3 years), master or similar (4+ years)). *Experience* was measured by the question: "how many road projects governed by NPRA have you taken part in, in addition to the present project?" (0, 1, 2, 3–5, 5+). Finally, *employment arrangement* was measured by the question: "what is your employment arrangement in relation to the project?" (open-ended employment with NPRA, temporary employment with NPRA, participation through consultancy firms A… B… C… D).

5. Results

The descriptive statistics; sample size, range, means, standard deviations and correlations; are presented in Table 2. Means above 4 scales: 1–5 for five independent variables tell us that the distributions are positively skewed. The highest correlation among independent variables is .436, indicating that multicollinearity is not a problem. We find that the level of knowledge sharing behavior is quite high (means are 3.56 and 3.67 respectively). There is no correlation between KSB toward employees and KSB toward consultants, a finding that strongly indicates that these are separate behaviors. Thus, the lack of statistical relation between the two variables supports our theoretical reasoning for differentiating between the two behaviors There is also no correlation between trust in employees and trust in consultants, which is a statistical pattern that further support the approach (employees and consultants are different groups) taken here.

Tables 3 (dependent variable: KSB toward employees) and 4 (dependent variable: KSB toward external consultants) present the results from linear regression analysis. In each of the tables, two models are applied. In model A employment arrangement is the predictor variable. In model B, six other predictor variables are added.

Table 3 shows that there is a significant statistical relation between employment arrangement and KSB toward employees. In model A, b is .704 ($p < .01$). When six other independent variables are included in the analyses (model B), b is .559 ($p < .01$). Thus, employees have a higher level than consultants of knowledge sharing behavior toward employees. Explained variance increases from .196 to .322 from model A to B. There is a positive relation between project attachment and KSB

Table 2
Descriptive statistics.

	N	Range	Mean	SD	1	2	3	4	5	6	7	8
Dependent variables												
KSB toward employees (1)	113	1–5	3.56	.78								
KSB toward ext. cons (2)	113	1–5	3.67	.80	.034							
Independent variables												
Employment arrangement[a] (3)	117											
Project attachment (4)	117	1–5	4.32	.62	.300**	.103						
Trust in employees (5)	114	1–5	4.59	.58	.393**	−.134		.186*				
Trust in ext. consultants (6)	116	1–5	4.50	.64	−.189*	>565*		.182	−.007			
Autonomous motivation (7)	116	1–5	4.47	.51	.198*	.182		.436**	.155	.188*		
Education (8)	116	1–3	2.66	.60	−.165	.045		.188*	−.044	.140	.182	
Experience (9)	117	1–5	4.25	1.26	.021	.219		−.001	.106	.076	.057	.050

[a] Dummy variable.
** $p < .01$.
* $01 < p < .05$.

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Table 3
Regression analysis. Dependent variable: knowledge sharing toward employees.

Independent variable	Model A		Model B	
	b	St error	b	St error
Employment arrangement	.704**	.132	.059**	.173
Project attachment			.312*	.124
Trust in employees			.312**	.114
Trust in external consultants			.003	.132
Autonomous motivation			.120	.140
Education			−.148	.104
Experience			.031	.049
Adjusted R square	.196		.322	
N	112		113	

** p < .01.
* 01 < p < .05.

toward employees (b = .312, 01 < p < .05), a finding that supports H3. There is also a positive relation between trust in employees and KSB toward employees (b = .312, p < .01). Thus H5 is supported. None of the following variables are statistically related to the dependent variable: autonomous motivation, education and experience. These findings imply that H7, H9 and H11 are not supported in the empirical analyses.

Table 4 shows that there is a significant statistical relation between employment arrangement and KSB toward external consultants. In model A, b is −.834 (p < .01). When six other independent variables are included in the analyses (model B), b is −.461 (p < .01). Thus, employees have a lower level than consultants of knowledge sharing behavior toward consultants. Explained variance increases from .261 to .372 from model A to B. There is a positive relation between trust toward consultants and KSB toward consultants (b = .473, p < .01), a finding that supports H6. There is also a positive relation between experience and KSB toward consultants (b = .107, 01 < p < .05). Thus H12 is supported. None of the following variables are statistically related to the dependent variable: project attachment, autonomous motivation and education and experience. These findings imply that H4, H8 and H10 are not supported in the empirical analyses.

Table 4
Regression analysis. Dependent variable: knowledge sharing toward external consultants.

Independent variable	Model A		Model B	
	b	St error	b	St error
Employment arrangement	−.834**	.131	−.461**	.175
Project attachment			.026	.117
Trust in employees			−.084	.116
Trust in external consultants			.473**	.133
Autonomous motivation			.204	.145
Education			−.108	.111
Experience			.107*	.049
Adjusted R square	.261		.372	
N	112		113	

** p < .01.
* 01 < p < .05.

6. Discussion

In order to capture the pattern of knowledge sharing, we have differentiated between knowledge sharing toward employees and knowledge sharing toward external consultants. The empirical findings are clear: People in both categories tend to share more knowledge with their "in-group" than their "out-group". Employees tend to share more knowledge with employees (compared to consultants), while external consultants tend to share more knowledge with other consultants (compared to employees). Thus, the empirical pattern strongly supports the approach taken to explain knowledge sharing in a multi-employment project context.

We have also found support for H3 (project attachment), H5 (trust toward employees), H6 (trust toward external consultants) and H12 (experience). The finding on project attachment is related to the argument that similarities in knowledge sharing among the two groups may be explained by similar strong project attachments in both categories (Smith and Nesheim, 2015). We find that project attachment is related to knowledge sharing toward employees, but not toward consultants. Support for H5 and H6 implicate that it is trust toward the employment category in question (rather than trust toward the work group) that predicts knowledge sharing.

However, in contrast to the findings on employment arrangement (H1 and H2), these latter results must be interpreted with some caution. The independent variables in question are positively skewed to a large degree and Cronbach's alpha is partly low. No support was found for the hypotheses on autonomous motivation (in contrast to several other studies) and education.

7. Conclusion and implications

This paper has examined knowledge sharing in one particular multi-employment constellation in projects; when employees of the focal firm cooperate closely with external consultants. While previous research has analyzed cooperate behavior and other issues when people in different work arrangements work together, there are only a few studies of knowledge sharing in multi-employment project contexts. The paper has two main contributions to the literature. The first contribution is conceptual. In contrast to previous research, we do not study knowledge sharing behavior in *general* among the two categories. Instead we differentiate between "in-group" and "out-group" knowledge sharing; i.e. between employees' KSB toward other employees *and* toward external consultants, and vice versa. Thus, KSB toward employees and KSB toward external consultants are regarded as separate behaviors. Second, the empirical analyses strongly support such an approach. There is no correlation between the two behaviors. There is also a clear pattern of in-group/out-group behavior, where employment arrangement predicts knowledge sharing toward both categories (supporting H1 and H2). In addition, there are statistical relations between trust toward an employment category and KSB toward the same employment category (supporting H5 and H6).

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The study has a number of implications for further research on knowledge processes in projects. The mechanisms related to "in-group" and "out-group" processes among people in multi-employment constellations could be developed further theoretically. Here, we have showed the explanatory power of these processes when employees and external consultants work together. Such mechanisms may also be relevant in other project settings; such as inter-organizational projects, mega "one-off" projects, virtual projects and internal projects that bring together employees from various departments and knowledge areas. In order to increase external generalizability, further studies should study employees/consultants in other firms and sectors as well as other multi-employment contexts. Here, it is vital to account for country and cultural differences (cf. Zwikael and Ahn, 2010).

In addition to the impact of employment arrangement on knowledge sharing, the paper has introduced and found some support for the relevance of variables such as project attachment and trust in a certain employment category. While the findings in this paper are promising, there are weaknesses related to the operationalization of the variables in question. Further research could both engage in in-depth qualitative studies on these mechanisms and how they relate to knowledge processes in projects, as well as developing robust measures on the project attachment and trust variables.

Conflict of interest

No conflict of interest.

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