Trust, Collaborative Culture and Tacit Knowledge Sharing in Project Management_P2 (1).pdf

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Trust, Collaborative Culture and Tacit Knowledge Sharing in Project Management – a Relationship Model
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Abstract: The aim of this research is to study the relationship between Trust, Collaborative Culture, and Tacit Knowledge Sharing in Project Management as a source of Team Creativity in the context of delivering value through knowledge. There are numerous scientific papers indirectly pointing to the relationship between these constructs, however there isn’t a work which would present the above relationship directly in one model which would also include Tacit Knowledge. Learning about the structure of this relationship is crucial today because of a growing awareness of the great significance of Tacit Knowledge Sharing in a present day economy. Tacit Knowledge in contrast to explicit knowledge is absolutely novel, which makes it truly advantageous. Tacit knowledge is specific: it is produced and stored in people's minds, thus creative culture and trust are significant for the act of tacit knowledge sharing which is a dynamic social process characterised by profound human interactions. Sharing informal knowledge is an informal voluntary act of the knowledge owner. It is impossible to formalise the act of commitment, for you cannot express your commitment in a not-commitment way. Bearing this fact in mind, the authors studied the relationship between Tacit Knowledge Sharing, Trust and Collaborative Culture as a source of Creativity. For this purpose, they conducted a study of 514 Polish professionals with different functions and experience in managing projects in construction industry. The data collected during the study has been analysed with the equal structural modelling method. The results indicate that a total effect of Trust on Tacit Knowledge Sharing is strongly mediated by Collaborative Culture. That interrelation suggests that team building is substantial even in such temporary organisations as project teams. Tacit Knowledge Sharing is closely related to Creativity which is a crucial part of innovation processes. This, on the other hand, is an indispensable condition for development. That points out to a new context of Tacit Knowledge Sharing as a key factor for value co-creation in project teams as a source of Creativity. What is more, in light of the presented research the essence of a Tacit Knowledge Sharing management process can be brought down to human resource management. Thus, it is the soft skills that seem to constitute key management skills. Practical implications resulting from the research suggest that hard substantive competences connected with, in this case, construction industry, are necessary, however not sufficient for creating an efficient temporary project team which is able to solve problems in a dynamic and creative way, and this ability often determines the project's success or failure. Delivering value through knowledge in project teams is making sure that knowledge which is necessary for effective action to take place is delivered. Delivering value through knowledge does not only require an efficient Transactive Memory System but most of all a diligent approach to human resource management, with special emphasis on the culture of collaboration, in order to ensure Tacit Knowledge Sharing, whose key element is the trust between team members.

Keywords: tacit knowledge, creativity, project performance, knowledge management, project management

1. Introduction
Change as a characteristic feature of today’s economy puts companies in a permanent learning and development mode, connected with the need to adjust and create market advantage and value through innovation. Terms such as: “learning organisation” and “knowledge economy” have gained in popularity in the last decade. A project management methodology strongly supports change implementation. Change as a permanent state of a business environment today enhances constant development and improvement of project teams as well. According to Almeida and Soares (2014) the ineffectiveness of knowledge sharing is the most influential issue that project-based organisations must deal with. Referring to Ryan and O’Connor (2013), who examined software project teams, sharing expert knowledge is a key process in developing software and since experts knowledge is mostly tacit. Also Sun (2007) pointed out that tacit knowledge sharing is one of the most critical steps in knowledge management in ERP companies. Likewise, Sun (2007), Koriat and Gelbart (2014), who studied IT teams, claimed that exchanging tacit knowledge is a real challenge today. Hence, the acts of acquisition and sharing tacit knowledge are crucial for project performance. Tacit Knowledge Sharing referring to Polanyi (1966) is an act of commitment which cannot be formalised because it is the result of a free will. Knowledge Sharing, unlike data sharing and information sharing, is characterised by strong contextuality, a fact emphasised by Polanyi (1966). Young and Milton (2011) claimed that “knowledge is situational and what works in one situation may not work in another”. This is why an organisation’s ability to learn and adjust to changes in the environment and in the marketplace is so valid. That is also why tacit
knowledge, as opposed to explicit knowledge, being absolutely novel is beneficial for organisations. This form of knowledge is specific: it is produced and stored in people’s minds and being an intangible asset it is closely related to social capital. Because knowledge sharing is so important, many studies have been conducted to understand how to encourage employees to share their tacit knowledge with others. Worth mentioning are studies of Hau et al (2013), who list the following determinants as ones which influence Tacit Knowledge Sharing: Reciprocity and Enjoyment, and Social factors such as: Trust, Tie and Goals as factors which create Social Capital. The research problem tackled in this article refers to determining, based on the literature of the subject matter, leading factors which affect Tacit Knowledge Sharing, such as Trust and Collaborative Culture as a source of Creativity. The expected knowledge resulting from determining this relationship should make it possible to find a solution to the problem of identifying the essence of tacit knowledge management. As well as, in the context of received results, to find an answer to the questions: how to deal with independent knowledge creators in order to enhance transfer of tacit knowledge? These questions asked by Lindström, Delsing, and Gustafsson (2015) are still open. How to share tacit knowledge in order to expand an organisation, strengthen its innovation, and gain market advantage? Experts such as Munnis, (1995), Park and Lee (2014), Buvik and Rolfsen (2015) suggest that the way to approach this problem is by establishing an organisational culture which encourages knowledge sharing, and where relationships between participants are built on mutual trust and collaboration.

2. Conceptual Framework

The goal of this research is to determine the structure of factors, identified as leading ones based on the studies of literature of the subject matter, affecting Tacit Knowledge Sharing, such as Trust and Collaborative Culture as a source of Creativity. In order to prove the relationship a research model has been designed, where the theoretical assumption presented in the Introduction section was contained. Figure 1 illustrates the conceptual framework. Trust should be understood, referring to Thomas, Zolin and Hartman (2009), as a relationship between people which involves a voluntary acceptance of risk based on the actions of the other party. According to them, trust is shaped through information sharing. Information is a source of knowledge, as was claimed by Young and Milton (2011). Research results by Park and Lee (2014) indicate that team members share knowledge when they can trust each other and feel dependent. Ding, Ng and Li (2014) pointed out that trust strongly influences knowledge sharing in architectural design teams. In relation to the presented research related to the influence of Trust on Tacit Knowledge Sharing hypothesis 1 was formulated:

H1: Trust has a positive influence on Tacit Knowledge Sharing

Collaborative culture, referring to Lopez, Peon and Ordas (2004) as well as Barczak, Lassk, and Mulki (2010) is defined as “team’s shared values and beliefs about the organisations’ support for adaptability, open communication, and encouragement of respect, teamwork, risk taking and diversity”. Barczak, Lassk, and Mulki (2010) as well as Park and Lee (2014) suggest that Trust strongly influences Collaborative Culture. With regard to this fact hypothesis 2 was formulated:

H2: Trust has a direct positive influence on Collaborative Culture

Referring to Ryan and O’Connor’s (2013) study results, who examined software project teams, tacit knowledge is acquired and shared directly through good quality social interactions between team members. They pointed out that social interactions are more important than transactive memory systems (TMS). Cao et al (2012) discovered that a team task and job engagement have a positive effect on knowledge transfer. Lin, Wu and Lu (2012) found out that from variables such as: market pricing, equality matching, authority ranking and communal sharing only the last one has a significant influence on the employee willingness to share knowledge, that, referring to Kathiravelu et al (2014), company culture is considered an important influencer affecting a knowledge sharing process. The significant influence of Collaborative Culture on Knowledge Sharing has also been pointed out by Mueller (2014) and Arpaci and Baloglu (2016). Based on the above, two hypotheses referring to the importance of Collaborative Culture in the process of Tacit Knowledge Sharing have been formulated:

H3: Collaborative Culture has a positive influence on Tacit Knowledge Sharing

Creativity according to Maier, Hülsheger, and Anderson (2015) refers to a part of innovation process, namely the generation of new and useful ideas. New and useful ideas help companies improve their performance. A
A creative way of solving problems improves efficiency and effectiveness. Problem solving, decision making, and better understanding of technical issues are claimed by Koskinen and Pihlanto (2008) to be the most valuable general effects of knowledge sharing. Referring to Bouncken and Meusburger (2009), and Rego et al (2007), Muller (1993) and Kirton, (1984) a hypothesis has been developed which talks about tacit knowledge sharing in order to build a Team Creativity, namely: Tacit Knowledge sharing has a positive influence on Creativity of team members:

H4: Tacit Knowledge Sharing has a positive influence on Team Creativity

Bearing in mind the presented above theoretical assumption, the authors created a model showing the relationship between Tacit Knowledge Sharing, Trust, and Collaborative Culture as a source of Creativity. Figure 1 below presents the graphical illustration of the said model.

![Conceptual framework](image)

Figure 1: Conceptual framework

3. Methodology

The study was conducted based on the data originally collected among Polish professionals with different roles and experience in managing projects in the construction industry. The sample comprised 61% of project managers, 16% of team members, 21% of team leaders, 1% of steering committee, 1% of project sponsors. 98% of the respondents were male and 2% were female. The questionnaire’s design was based on measurement scales and their sources presented in Appendix 1. The respondents reacted to statements based on a 7-point Likert scale, which goes from 1 – definitely NOT, through 4 – neither YES nor NOT, until 7 – definitely YES. The questionnaire was preceded by a short introduction explaining the purpose and subject matter of the study. The first qualifying question directly referred to the subject matter of the study and regarded the respondent’s affiliation to any projects whose performance was assessed. The subsequent part of the structure of the questionnaire led from general to detailed questions which required more precise answers. The proper study was preceded by a pilot study (32 persons). The pilot study made it possible to optimise the statements. In effect, for the benefit of the reliability of the study, problematic statements have been eliminated. Data collection took place electronically, using mainly the “snowball method”, and started with managers who then recommended our study to their acquaintances. The data was collected from February to April 2016 among Polish professional project members. The sample size was 600 respondents, 514 cases were accepted for further analysis, after rejecting faulty and incomplete questionnaires. The analysis was conducted using the structural equation modelling method. For the theoretical model presented in Figure 1, a measurement and later a structural Confirmatory Factor Analysis (CFA) models have been developed. The model was then estimated and assessed. Estimation was conducted according to a maximum likelihood method (ML). The evaluation of the model quality was conducted based on tests such as: Root Mean Square Error of Approximation (RMSEA), CMIN/DF, Comparative Fit Index (CFI), and HOELTER with the use of SPSS AMOS 23 software. Table 1 presents test results of the model’s goodness of fit.
Table 1: Test results of the model’s goodness of fit.

<table>
<thead>
<tr>
<th>CMIN/DF</th>
<th>RMSEA</th>
<th>NFI</th>
<th>RFI</th>
<th>IFI</th>
<th>TLI</th>
<th>CFI</th>
<th>HOELTER 0.05</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.13</td>
<td>0.072</td>
<td>0.98</td>
<td>0.96</td>
<td>0.98</td>
<td>0.97</td>
<td>0.98</td>
<td>265</td>
</tr>
</tbody>
</table>

Source: authors’ own study developed with SPSS AMOS 23

Based on the readings, CFA model presented in Figure 2 may be considered as well fit in relation to the data. Model reliability level 3.13 can be viewed as high, with the reference ≤5 (Wheaton, 1977). Model fit to the data based on approximation average error RMSEA at 0.072 also meets the reference values below 0.08, referring to Stieger and Lind (1980). Measurements of goodness of fit came close to 1 (Bollen, 1986, 1989), which confirms the mentioned above quality. Hoelter’s 0.05 coefficient exceeded 200, which also corroborates the statement about model’s goodness of fit (Hoelter, 1983). A positive evaluation of the model allows us to proceed to the presentation of test results.

4. Results

The results presented in Figure 2 indicate a statistically significant influence of all variables included in the model. Special attention needs to be paid to the variable of Collaborative Culture which plays a role of a mediator between the variables of Trust and Tacit Knowledge Sharing (TKS) in the given relationship between Trust, Collaborative Culture, and Tacit Knowledge Sharing in Project Management as a source of Team Creativity. Consequently, the influence of the Trust variable on TKS is very significant, which is visible in the analysis of total (direct and indirect) effects presented in Table 3. It is also worth looking at the very significant influence of TKS variable on Team Creativity. This is a proof of a close relationship between these variables, which also confirms the fact that the presented model explains the Team Creativity variable almost in 92%, which is indicated by Squared Multiple Correlations presented in Appendix 2. This means that Tacit Knowledge Sharing is an indispensable factor for Creativity building in project management.

Figure 2: Graphical presentation of achieved results.

Below in Table 2 we present a summary of the hypothesis tests referring to the theoretical model presented in Figure 1. The entire hypothesis was supported. Probability level <0.001 was achieved for all of them. B indicators obtained in the case of each hypothesis, including critical ratio (C.R) and probability level (p), point to a high significance of statistically presented results. Estimations of the total standardised effects of the model presented in Table 3 point to a significant role of the Trust variable in the model presented in Figure 2.
Table 2 Summary of the hypothesis tests

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>B</th>
<th>C.R</th>
<th>p</th>
<th>supported</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1Trust has a positive influence on Tacit Knowledge Sharing</td>
<td>0.49</td>
<td>6.70</td>
<td>&lt;0.001</td>
<td>YES</td>
</tr>
<tr>
<td>H2Trust has a direct positive influence on Collaborative Culture</td>
<td>0.82</td>
<td>17.51</td>
<td>&lt;0.001</td>
<td>YES</td>
</tr>
<tr>
<td>H3Collaborative Culture has a positive influence on Tacit Knowledge Sharing</td>
<td>0.48</td>
<td>6.53</td>
<td>&lt;0.001</td>
<td>YES</td>
</tr>
<tr>
<td>H4Tacit Knowledge Sharing has a positive influence on Creativity</td>
<td>0.96</td>
<td>18.36</td>
<td>&lt;0.001</td>
<td>YES</td>
</tr>
</tbody>
</table>

Source: authors' own study with the use of SPSS AMOS 23

Table 3 Estimations of the total standardised effects of the model

<table>
<thead>
<tr>
<th></th>
<th>Trust</th>
<th>Collaborative Culture</th>
<th>Tacit Knowledge Sharing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collaborative Culture</td>
<td>0.817</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>Tacit Knowledge Sharing</td>
<td>0.877</td>
<td>0.477</td>
<td>0.000</td>
</tr>
<tr>
<td>Team Creativity</td>
<td>0.839</td>
<td>0.456</td>
<td>0.957</td>
</tr>
</tbody>
</table>

Source: authors' own study with the use of SPSS AMOS 23

The analysis of the direct and indirect estimations, and the total effects presented in Table 3 show that Trust mediated by Collaborative Culture has a high significance for Tacit Knowledge Sharing. This means that team building has a great meaning even in the case of temporary project organisations.

5. Discussion and Conclusions

The structure of dependencies between Trust, Collaborative Culture, and Tacit Knowledge Sharing in Project Management as a source of Team Creativity points to the key role of trust in the process of Tacit Knowledge Sharing which is indispensable for Team Creativity. Trust affects Tacit Knowledge Sharing in a direct manner, but it is also an indispensable element which helps build Collaborative Culture which directly affects TKS. From the point of view of effectiveness of knowledge management, soft skills, in light of the presented studies, constitute key managerial skills because of the development through innovations. As it has been said before Team Creativity is a fundamental part of this process. The conclusion related to the importance of soft skills corroborates the Ryan and O’Connor (2013) study results which pointed out that social interactions are more important than transactive memory systems (TMS) in the process of knowledge sharing. This also refers to both the question posed in the introduction related to the essence of tacit knowledge management, as well as, in reference to Lindström, Delsing, and Gustafsson (2015), to the question of “How to deal with independent knowledge creators in order to transfer tacit knowledge?” Building trust between members of a project team is a key to Tacit Knowledge Sharing management. All things considered, the above asked questions can be brought to one: “How to create a temporary organisation whose members trust one another?” This question leads to another one: “Does temporality of a project organisation, which is more and more characteristic of organisations in the networked economy, rules out trust between team members or on the contrary gives a chance to rebuild trust in new circumstances?” The answer to these questions should be looked for on the basis of another study focused around psychological conditions for trust building in project teams. However, in relation to the studies presented in this article, one could tempt to claim that in the era of the network economy it is the relationships which are the one of key resources responsible for a success or a failure of a temporary enterprise managed in a project manner.

6. Limitations and Practical Implications

The article presents results of studies whose sample group consisted of members of project organisations in the construction industry, 61% of respondents in the group were men occupying the position of a Project Manager. If a similar study was conducted on a sample group of women, with a greater share of project team members, it would probably give us more insight into the Tacit Knowledge Sharing relationship with Trust and Collaborative Culture in Project Management as a source of Team Creativity. Taking into account the studies of
Woolley et al (2010) who call our attention to the fact that women have a greater aptitude for cooperation, we may assume that the immediate relationship between Tacit Knowledge Sharing and Collaborative Culture would be even stronger. From a practical point of view, the results imply that since Tacit Knowledge Sharing considerably affects Team Creativity, an organisation needs to create favourable trust conditions in order to support it. In the presented structure of dependencies between Collaborative Culture and Tacit Knowledge, Trust is the core of this relationship.

Practical implications resulting from the above conclusions based on the presented studies are connected with social capital and human resource management. Based on what has been discovered it could be stated that transfer of knowledge process management equals human resource management. In order to create temporary creative project teams in the construction industry, hard competences connected with a given project are necessary, however not sufficient to meet the goal. Problems are an indispensable part of every enterprise. Creative and dynamic ways to solve them often determine their success or failure. Soft skills of all team members, and especially managers and team leaders who, to the greatest extent, are responsible for a good atmosphere in the team, in light of the presented model, should be considered as crucial. In a broader context, the above conclusions may also be transferred to technical education systems, where great emphasis is placed on educating first class professionals with high level of hard competences but often forgetting about soft skills. The network economy, as a way to function in a contemporary economy, often requires the ability to work in temporary project teams. Relationships between people as a resource enhancing transfer of knowledge have an advantage over system resources because of the effectiveness of this process. Even best configurated Transactive Memory Systems (TMS) are unwieldy in relation to a direct contextual transfer.

Delivering value through knowledge, as Young and Milton (2011) claimed, is making sure that the knowledge needed for effective action is delivered. Delivering value through knowledge does not only require an efficient TMS but also a diligent management of the collaboration culture of a temporary organisation in order to ensure free flow of Tacit Knowledge Sharing.

Trust as a core of a relationship results from the unity of words and actions, based on common values of project team members. Project team members’ knowledge about what kind of behaviour is rewarded and accepted by the company is the foundation for understanding what is valued by the company. Therefore motivational systems should support values desired by the organisation. As Dembinski (2016) claimed, company culture and value statements are important, however the essence of trust are the actual, uniform with the claimed values, actions of employees, and especially the actions of managers and leaders. This matter constitutes a real problem today. The mentioned above motivational systems should therefore most of all apply to managers and leaders, and in the context of project teams to team leaders who directly influence the atmosphere in teams. The problem of trust may also be an effect of the temporality of project organisations and therefore the temporality of relationships in teams. On the one hand, the network economy makes companies care for their knowledge workers and ensure high work standards. On the other hand, the temporality of relationships in project teams may undermine mutual trust of their members. This issue remains unsolved and requires separate studies.

References


Dembinski, P.H. (2016) “Beyond the Financial Crisis: Is there a window of opportunity?” in: The 4th International Conference Economy/Culture/Values, Gdansk University of Technology, Poland, the 13th of June 2016


Appendix 1 Constructs and scales

<table>
<thead>
<tr>
<th>Construct</th>
<th>Scale</th>
<th>Adapted from</th>
</tr>
</thead>
</table>
| Tacit Knowledge Sharing (TKS) | • I shared my experience and know-how with team members of the project  
• I shared my experience and know-how with my functional co-workers in my organisation  
• I extracted new knowledge from the project team members based on their experience and know-how that helped me follow up the project  
• I extracted new knowledge and know-how from experts and functional co-workers in my organisation that helped me follow up the project  
• Overall, members of the project team shared their experience and know-how | Gemino, Reich, Sauer (2015); Park. and Lee (2014); Hau et al (2013) |
| Team Creativity (creativity) | • My team members suggest new ways to achieve goals or objectives  
• My team members come up with new and practical ideas to improve performance  
• My team members suggest new ways to increase quality  
• My team members promote and champion ideas to others  
• My team members exhibit creativity when given the opportunity to  
• My team members develop adequate plans and schedules for the implementation of new ideas  
• My team members have new and innovative ideas  
• My team members come up with creative solutions to problems | Rego et al (2007) |
| Trust                  | • My partners were open and honest when problems occurred  
• My partners helped me make critical decisions  
• My partners were always willing to provide assistance  
• My partners were always sincere  
• My partners could be trusted completely  
• I have great confidence in my partners. | Park and Lee (2014) |
| Collaborative culture | • The company considers change to be natural and necessary  
• The company considers individuals as an asset and tries to appreciate them continuously  
• Individuals who experiment and take reasonable risks are well-considered even if they should be mistaken  
• The preservation of different points of view is encouraged  
• Everybody's opinion and contribution is respected | Lopez, Peon and Ordas (2004) |
- Problems are discussed openly to avoid finding culprits
- Collaboration and co-operation among the different duties and departments is encouraged
- In general, all departments are aware of consumer satisfaction

Appendix 2

**Squared Multiple Correlations: (Group number 1 - Default model)**

<table>
<thead>
<tr>
<th></th>
<th>Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trust</td>
<td>.000</td>
</tr>
<tr>
<td>Collaborative Culture</td>
<td>.667</td>
</tr>
<tr>
<td>Tacit Knowledge Sharing</td>
<td>.845</td>
</tr>
<tr>
<td>Team Creativity</td>
<td>.916</td>
</tr>
</tbody>
</table>

Source: authors' own study with the use of SPSS AMOS 23

**Regression Weights: (Group number 1 - Default model)**

<table>
<thead>
<tr>
<th></th>
<th>Estimate</th>
<th>S.E.</th>
<th>C.R.</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collaborative Culture &lt;-- Trust</td>
<td>.707</td>
<td>.040</td>
<td>17.517</td>
<td>***</td>
</tr>
<tr>
<td>Tacit Knowledge Sharing &lt;-- Trust</td>
<td>.430</td>
<td>.064</td>
<td>6.691</td>
<td>***</td>
</tr>
<tr>
<td>Tacit Knowledge Sharing &lt;-- Collaborative Culture</td>
<td>.485</td>
<td>.074</td>
<td>6.529</td>
<td>***</td>
</tr>
<tr>
<td>Creativity &lt;-- Tacit Knowledge Sharing</td>
<td>.743</td>
<td>.040</td>
<td>18.367</td>
<td>***</td>
</tr>
</tbody>
</table>

Source: authors' own study with the use of SPSS AMOS 23

**Standardised Regression Weights: (Group number 1 - Default model)**

<table>
<thead>
<tr>
<th></th>
<th>Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collaborative Culture &lt;-- Trust</td>
<td>.817</td>
</tr>
<tr>
<td>Tacit Knowledge Sharing &lt;-- Trust</td>
<td>.488</td>
</tr>
<tr>
<td>Tacit Knowledge Sharing &lt;-- Collaborative Culture</td>
<td>.477</td>
</tr>
<tr>
<td>Creativity &lt;-- Tacit Knowledge Sharing</td>
<td>.957</td>
</tr>
</tbody>
</table>

Source: authors' own study with the use of SPSS AMOS 23