



The dynamics of intellectual property rights for trust, knowledge sharing and innovation in project teams



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ABSTRACT

The research question is: How can intellectual property rights (IPRs) influence trust, attitudes, commitment, knowledge sharing, and innovation in inter-organisational project teams?

The four strategically selected team cases include eight global knowledge-intensive industrial oil service companies in Norway. The methodology included 24 in-depth interviews done in 2016.

The study finds that formal intellectual property rights are key to building up and keeping trust in the team and also for building up the right attitudes within the team. The IPRs increased the innovativeness in the team and incremental innovations. The IPRs fostered a unique knowledge sharing in these four teams enabling them to work towards innovative solutions and delivering in time. Formal IPRs foster informal trust and expertise sharing and by that also the inter-organizational cooperation. The confidence and knowledge sharing strengthen the possibility for future collaboration and innovations both on an individual level and on a corporate level. The theoretical implication of our findings is that IPRs increase the trust, commitment, and attitudes within the team providing knowledge sharing and innovativeness for improved solutions and results. IPRs are positive for collaboration, and they are complementary governance mechanisms.

The practical implication is that IPRs must be defined and accepted before the corporations start up the inter-organizational teamwork. The contract typology should in the start up be sensitizing giving directions and security and in the end definitive.

1. Introduction

Nothing is a resource until actors' discover how to use it and how to benefit from using it. Knowledge has only potential value. It is the collaborative action that gives knowledge value. It creates value and innovations when knowledge is shared and used. Legal contracts play a significant role in clarifying how knowledge creates value and who is to benefit from the generated value. Knowledge is a critical asset and an important source of innovation, but to protect it might be even more critical. The protection might be a requirement for knowledge sharing (e.g., Du Chatenier, Versteegen, Biemans, & Omta, 2009; Nonaka, Toyama, & Konno, 2000). Formal contracts may also have potentially adverse effects on the collaboration and the level of knowledge sharing (Grant, 1996). Thus, knowledge sharing and the conditions for knowledge exchange becomes a major challenge in managing innovations.

One way of creating such conditions is using Intellectual Property Rights (IPRs). IPRs are often introduced to protect and specify ownership to the valuable assets developed in projects. We define IPRs as the rights linked to any product and/or knowledge drawn up in an

intellectual process in cooperation between companies. IPRs include the whole development process towards the innovation design and patent phase of a product and/or service.

We refer to IPRs not only as IPRs that are granted and protected by laws, but also knowledge and other intangible resources whose use may be controlled by contracts, policies, organizational routines, and norms, both physically and technically. IPRs include all cooperative innovations and results developed in the inter-organisational project team. There is a gap in understanding how and if the use of formal protection mechanisms affects trust, attitudes, knowledge sharing and innovation in project teams (Aarseth, 2014). The dynamics of IPRs and knowledge sharing in inter-organizational teams are weakly researched (Vaaland & H & kansson, 2003). Inter-organisational project teams are essential for global collaboration and innovation (Scarborough, 2003; Ring & Van-de-Ven, 1994). Exploring and researching such an IPR context might be the understanding of the future organization of any global business. Our research question is:

How can IPRs influence trust, attitudes, commitment, knowledge sharing, and innovation in inter-organisational project teams?

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2. Theoretical framing and proposition development

2.1. Knowledge sharing and IPRs

The relationship between knowledge sharing and legal contracts regarding Intellectual Property Rights (IPR) has not been extensively investigated (Lee, Gillespie, Mann, & Wearing, 2010). Knowledge integration and knowledge sharing are essential for value creation and thus well researched. There is, however, limited research on the actual mechanisms used in inter-organisational collaborations. There is hard evidence on which types of boundaries trigger different types of knowledge sharing and integration tools (Koskinen, Pihlanto, & Vanharanta, 2003). Researchers have claimed that current research concerning this issue is insufficient and that further research is needed (Bock, Zmud, Kim, & Lee, 2005; Foss, Minbaeva, Pedersen, & Reinholt, 2009). Due to the lack of prior research related to IPRs potential influence on knowledge sharing, we chose to focus on factors known to be necessary for knowledge sharing and which seemed reasonable to be affected by IPRs. Three important factors promoting knowledge sharing in teams are trust, commitment, and attitudes (Fong, 2003). We will investigate how these factors are affected by IPR contracts and the potential consequences for knowledge sharing. Even though the three factors can affect each other (Hislop, 2003), we chose to investigate them separately in relation to knowledge sharing. Foss et al. (2009) concluded that the key to commitment and knowledge sharing is mutual trust.

2.2. Mutual trust and IPRs

The basis of mutual trust can emerge from different factors and have different effects on knowledge sharing. The relationship between contracts and trust are not well researched. The effects different kind of contracts and IPRs can have on mutual trust are however not set. Contracts and legal and regulatory frameworks can act as antecedents of trust. These structures can also undermine confidence and make it difficult to determine whether or not trust exists (McNeish & Mann, 2010). IPRs can have both a positive and adverse effect on knowledge sharing indirectly through its influence on trust. Trust is a substitute for contracts according to theories on cost transaction economy (Hosmer, 1995). Trust can replace the need to monitor the other partner and reduce the need for safeguards and full contracts (McNeish & Mann, 2010). Increased use of contracts can, therefore, reduce trust, as the introduction of contracts can be seen as a signal of lacking trust and expectations of opportunistic behavior (Gallivan & Depledge, 2003; Kadefors, 2004; Mayer & Argyres, 2004). Kadefors (2004) found that detailed contractual specifications and close monitoring were negative for trust and consequently for cooperation. “The more complete and complicated contracts, the less trust” (, p.111).

Less detailed contracts can act as a trust mechanism and help develop trust by clarifying expectations, roles and responsibilities to the parties (Mayer & Argyres, 2004). Contracting can promote expectations of cooperation and generate a sense of obligation among the project members (Mayer & Argyres, 2004). Members might fear being exploited when sharing knowledge and this fear can be a serious threat to knowledge sharing (Empson, 2001). Contractual agreements such as IPR can safeguard knowledge (Olander, Laukkanen, Blomqvist, & Ritala, 2010) and therefore potentially minimize the risk and fear of being exploited. The IPR contracts can promote stability and predictability (Olander et al., 2010) and have a positive impact on trust (Argyres, Bercovitz, & Mayer, 2007; Blomqvist, Hurmelinna, & Seppänen, 2005).

Trust and contracts are complementary modes of governance that supplement each other. The presence of both is found to increase the knowledge exchange performance (Solitander & Tidström, 2010). Olander et al. (2010) found that trust and contracts had different importance depending on the phase of the project. In the first exploration phase, trust was necessary. In the following development phase, both confidence and governance mechanisms were needed. In the

finalization stage, contractual management was more evident. Aalbers (2010) however concluded that IPRs, trust, leadership in teams are working closely together in all innovations phases. Woolthuis, Hillebrand, and Nootboom (2005) found that IPRs and trust complement each other in project teams. IPRs provided the basis for trust. Less specific IPRs and trust were enablers for completion of detailed legal contracts following the innovation process.

The relationships between mutual trust and contracts are complex and dynamic. The researchers are not in agreement concerning its impact and causality. We conclude that there is support for that IPRs have a positive influence on mutual trust in teams. More research is however needed. We, therefore, suggest as Proposition 1:

- a) The IPRs will increase the trust among the members of the inter-organizational project team.
- b) The IPRs will increase the collaboration among the members of the inter-organizational project team.

2.3. Attitudes towards knowledge sharing and IPRs

As employees cannot be forced to share knowledge, willingness to share knowledge among the members becomes crucial. Willingness is defined as the extent to which an individual is prepared to grant other team members access to his or her personal intellectual capital and is influenced by employees' attitudes to sharing (Bock et al., 2005; de Vries, van den Hooff, & de Ridder, 2006). Attitudes towards knowledge sharing are found to influence individuals' intention to share knowledge, which in turn relate to actual knowledge sharing behavior (Cabrera & Cabrera, 2005). Attitudes towards knowledge sharing are strongly affected by beliefs regarding the outcomes of the actions and an evaluation of these findings (Cabrera & Cabrera, 2005; Liu & Liu 2011; Wang & Noe, 2010). Hence, employees evaluate the benefits and costs related to knowledge sharing. Individuals must be able to anticipate sharing knowledge to prove worthwhile (Schultz, 2001) even if they are uncertain about the outcome (Nahapiet & Ghoshal, 1998). As sharing of knowledge does not come without participant costs (Bock et al., 2005), members will evaluate if they can benefit from the value created by their involvement (Ipe, 2003). IPRs increase the expectations of benefits while the lack of IPRs decreases the expectations (Ipe, 2003). Our No. 2 Propositions are:

- a) IPRs will positively influence project members' attitudes towards knowledge sharing.
- b) Those with IPRs will be more willing to share knowledge than those without IPRs.

2.4. Commitment, attitudes and IPRs

There is found to be a significant positive relationship between organizational commitment and knowledge sharing (Cabrera, Collins, & Salgado, 2006; Hislop, 2003; ; van den Hooff & de Ridder, 2004). Those who are committed may engender beliefs that the organization has rights to the information and knowledge one has created or acquired (Jarvenpaa & Staples, 2001). According to Nonaka (1994) commitment is one of the most critical components for promoting the creation of new knowledge and thus essential for successful inter-organizational projects. The engagement to the team is much stronger than to the corporations involved in the teamwork. It is thus a multi-dimensional construct where contracts increase the commitment both to the project and corporate goals (Meyer & Herscovitch, 2001).

Cognitive commitment to the project and its aims are characterized by the acceptance of the goals and values of the project and by that the willingness to engage in the project (Mowday, Steers, & Porter, 1979). Affective commitment implies that the member believes in the project and by that contribute to its success (Allen & Meyer, 1990). Olaisen (1984) found the combination of cognitive and affective commitment to

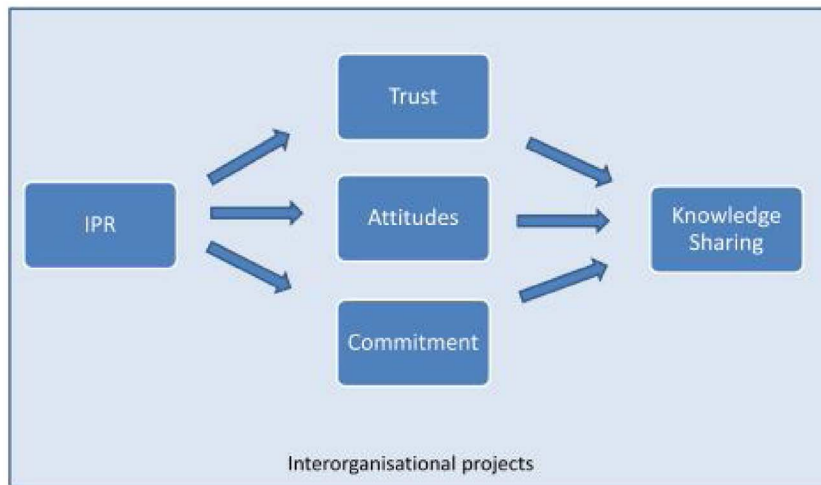


Fig. 1. Conceptual Framework: The Relationships between IPR contracts and Knowledge Sharing in Inter-organisational Projects.

be crucial for team performance. When several organizations interact in a project, it is important that they accept a commitment to the overall project goals (Hoegl, Weinkauff, & Gemuenden, 2004). Goal commitment has a critical role in goal-setting theory (Hollenbeck, Williams, & Klein, 1989; Locke, Latham, & Erez, 1988). Goal commitment is one of the key variables for project success (Donovan, 2001; Leung, Chen, & Yu, 2008). Corporate dedication and follow-up are vital in developing team innovations Tidd, Bessant, & Parvitt, 2005). The commitment cannot be contracted but might be a result of IPRs (Aarseth, 2014; Lusch & Nambisan, 2015). We propose as Proposition 3:

- a) The IPR contract will influence project members’ commitment towards the project goals.
- b) Those with an IPR contract will show a higher level of commitment than those who do not have an IPR contract.

2.5. IPRs and innovations

Innovation is of crucial importance to sustain and gain a competitive advantage. To legally protect the process of creating innovations and the innovations themselves are therefore of vital importance (Christiansen, 1997; Christensen & Raynor, 2003).

Innovation is driven by employees using their knowledge and skills in creative ways to integrate resources for the benefit of the corporations involved (Lusch & Nambisan, 2015). Knowledge interfaces influence innovation outcomes and firm performance (Urdaninie & Parasueman, 2011). Lusch and Nambisan (2015, p. 157) argue that information and communication technology (ICT) enable the sharing and integration of resources and knowledge, thereby fostering innovation. “Technology is the practical application of knowledge; thus, technology, innovation, and service are interlinked” (Luch & Nambisan, 2015, p. 159). Lusch and Nambisan (2015, p. 161) put forward the need to mobilize contextually relevant knowledge (resource) in the most effective and efficient way (i.e., enhance resource density) and show that institutionalized trust is important for innovations. It may also involve decontextualizing and contextualizing knowledge as well as moving knowledge from one domain to another and at the same time be sure that the benefit is not ‘stolen’. “The only way to do this is through IPRs” (Lusch & Nambisan, 2015, p. 175). Thus, knowledge sharing and the conditions under which knowledge become a major challenge in managing innovations. The key for getting radical and incremental innovations in inter-organizational teams might be IPRs (Lusch & Nambisan, 2015; Urdaninie & Parasueman, 2011).

Most innovations take place at the boundaries between specialized domains and organizations through project teams (Carlile, 2004; Nonaka et al., 2000). The knowledge production relies on the

combination of knowledge from a variety of fields and disciplines across branches and corporations (Newell, Robertson, Scharbrough, & Swan, 2009; Shalley & Gilson, 2004). Inter-organizational teamwork is the highway to effective and efficient organizations (Aarseth, 2014). The protection of the work process in the inter-organizational team is crucial for getting the integration of knowledge sharing and innovations in the team (Rosendahl, Olaisen, & Revang, 2014). IPRs are also found to contribute to the form and design of products (Tidd et al., 2005).

Our propositions for IPRs and innovation are:

- 4a The IPRs contract will influence the innovativeness in the teamwork
- 4b The IPRs contract will contribute to more incremental innovations
- 4c The IPRs contract will contribute to more radical innovations
- 4d The IPR agreement will add to the form and design of subsea products

3. Research model for the study

The literature review has resulted in the development of a conceptual model that aims to examine the relationships between IPR contracts and knowledge sharing (Fig. 1). We suggest that IPR contracts will influence knowledge sharing indirectly through its effect on trust within the project group, employees’ attitudes towards knowledge sharing and commitment towards the project and its goals. The knowledge sharing will again affect the level of innovation.

4. Research methodology

We identified four cases where actors working in inter-organisational teams with the goal to achieve incremental product innovations that might lead to radical innovations. The four strategically selected cases to represent eight knowledge-intensive industrial oil service companies in Norway. The eight associated companies are global innovation frontrunners (OLF, 2015). The explanatory power was the main criteria for selecting the cases and using them for theory building. We are using Eisenhardt & Graebnefs approach as a methodological guideline (2007) together with Yin’s case methodology (2003). The four cases had all formal IPRs All the 24 interviewed had worked in similar teams without IPRs. The industry has over the last decades shifted from a domestic industrial focus into a global knowledge industry and has a keen interest in IPRs (Thurow, 1997). The nature of the sector being innovative, competitive, and highly complex and knowledge intensive with specialized actors collaborating makes it an attractive business for the study of the impact of IPRs. The four business cases are from the Stavanger region. Statoil is the largest offshore producer of oil in the

Table 1
Findings related to the Propositions.

Propositions		Finding
1a	The IPRs will increase the trust among the members of the inter-organizational project team.	High Support 9 of 10
1b	The IPR contract will increase the collaboration among the members of the inter-organizational project team.	Support 7 of 10
2 a	The IPRs contract will positively influence project members' attitudes towards knowledge sharing.	Support 8 of 10
2 b	Those with IPRs will be more willing to share knowledge than those without IPRs.	Support 8 of 10
3 a	The IPRs will influence project members' commitment towards the project goals.	No, support 3 of 10
3 b	Those with IPRs will show a higher level of commitment than those who do not have IPRs.	Weak Support 5 of 10
4a	The IPRs contract will influence the innovativeness in the team work	High Support 9 of 10
4b	The IPRs contract will contribute to more incremental innovations	Support 7 of 10
4c	The IPRs contract will contribute to more radical innovations	No, support 2 of 10
4d	The IPRs contract will add to the form and design of subsea product	No, support 1 of 10

world and Stavanger is a global cluster center for marine companies (OLF, 2015). All the cases were related to subsea technical equipment produced to be working up to 1000 m under the sea level controlled from deep-sea oil rigs offshore together with global onshore assistance. This is integrated operations. The four cases had each from four to eight companies' involved sharing knowledge within formal IPRs. These project teams were also involving the operators (Statoil, BP, Exxon, ENI, etc.) to include their experiences. These are customers and business partners. The relationship between the oil service companies and the operators is regulated in long-term contracts (3–5 years). Their primary interest is developing new products and/or costs efficient improvements. The development process is a highly knowledge-intensive process where the business philosophy is that an informal process promotes innovation and improvements.

The methodology included 6 in depth 90 min interviews from each case (24 interviews in all) done in January-March 2016. The four teams have been in work since 2010. The interviewed used a self-identified scale from 1 to 10 to rate the importance of the variables. All of the interviewed had participated in teams without IPRs.

5. Typology of IPR contracts

We have divided contracts into sensitizing contracts giving the proper directions and definitive contracts where every possible situation is spelled out in details. The last contract is typical in the way that every aspect of the process and possible results are precisely regulated and decided upon through a proper path of micro-actions. The sensitizing contract governs the process of cooperation and possible innovations/results in a more macro way with fewer details and ifs. The contracts are a legal protection for every company involved and where the details have to be worked out later on in the innovation process. The sensitizing contract is used at the beginning of the project while the final contract is part of the patent and delivery phase.

The companies might break these agreements by taking the innovations for themselves seeking own patents. However, the clue is that doing this means that they are out of the innovation cluster forever. The development of subsea robotics equipment is an example of all the eight involved companies sharing all worldwide patents. The robotics is constructed by five of the eight companies, but they all share from the rights. There might also be a formal agreement among the companies that one company takes the risk and cost of development and get the patent also benefitting the others. An example of this was a magnetic propel without any parts used for supply boats. Rolls-Royce Marine took the whole development cost to make into development and manufacturing. The entire oil service cluster got great advantages of this being a part of delivering the most advanced supply boats ever delivered. This is an example of giving one company all patent rights gaining the whole cluster.

During ten years (2005–2015) there have been four legal conflicts between these enterprises. These were solved outside the court system where the companies have agreed upon the rights and patents without

taking legal action through the Norwegian judicial system. All in this entire contract format works well in the way to foster agreements and hinder disagreements. The legal law companies used to propose and issue the contracts are all Norwegian law firms with a long experience from technology contracts and contracts between oil service companies. One might say that this is in any respect a corporate culture where everybody knows each other and by that also the risks of dishonor agreements or misuse trust. The Scandinavian culture context might limit the generalization of our results, but the global corporate world is also getting a smaller meaning that sensitizing contracts might be working in other business settings.

The Scandinavian management model is characterized by flat hierarchies, greater participation and the delegation of responsibility – and is quite the opposite to the hierarchical, authoritarian, command and control-based management style which dominates the way work is organized in many other parts of the world. The Scandinavian management style might also be a part of the explanation of the success of sensitizing contract formats.

6. Overall findings

We have summarized the overall results in [Table 1](#):

7. Findings related to each of the propositions

7.1. IPRs and trust

We wanted to explore in what direction IPR influence trust, as suggested in Proposition 1a and b. To study the impact of IPR on trust, we started with assessing the level of trust. To investigate the degree of trust, we asked the respondents how they determined the level of trust in their project team. A vast majority (22 of 24) of the interviewees reported high levels of trust in the project. They trusted the other members and did not fear exploitation or that their knowledge will be stolen, misused or exploited. The standard of trust is high in all the investigated projects. Moreover, the interviewed linked this to that all the projects included significant issues and challenges related to IPRs. As such, it is important to have well defined and agreed upon IPR contracts at the beginning of the project. The evaluation of IPR contracts' influence on trust cannot be related to what kind of IPRs they had. Having agreements on IPR affected trust in all the projects whatever kind of IPR the project had since all the interviewed relied wholly on their companies ability to protect their legal rights. The influence is implying that contracts are both positive and a condition for developing trust. All of the interviewed found that the IPRs improved the inter-organisational collaboration. The respondents expressed a high degree of trust in the project and rated the level to be nine on average using a scale from 1 to 10. The interviewed rated the projects they worked in without an IPR contract to level 4 for trust. Our conclusion is that those with an IPR commitment ranked trust as significantly higher than those without an IPR contract.

Proposition 1b is indicating that IPRs contributed to the collaboration in the team was supported. This is a control proposal for 1a since we are anticipating that cooperation in a team requires trust. The interviewed rated the projects they worked in without an IPR contract to level 4 for collaboration. Our conclusion is that IPRs do contribute to cooperation in a team.

7.2. IPRs and knowledge sharing

We suggested in Proposition 2a) that the IPR contract would influence attitudes towards knowledge sharing among the members of the project and in Proposition 2b) that those with owner rights would be more willing to share knowledge than those without owner rights. We found high levels of willingness to share knowledge among our participants. The respondents expressed positive attitudes towards sharing their knowledge with other members of the team and across the project. They shared knowledge openly with both members of their organization and from other organizations. Investigation of expectations and norms induced quotes like “expecting and encouraging others to share,” “hoping but not expecting” and “expecting others to share according to contract.” Overall, the majority of the respondents expected other project members to share knowledge openly. Our respondents exhibited significant beliefs in their competence and high power related to the aim and outcome of the project. Such evaluations of competence are expected to have a positive impact on attitudes towards knowledge sharing. Characteristics like vital, essential, crucial and imperative were used about the importance of knowledge sharing for the project to succeed, and all respondents agreed that knowledge sharing was of great importance. Another element about attitudes is the way individuals anticipate sharing to be worthwhile. When replying to what the most significant incentives for knowledge sharing were, a majority of the respondents replied improved solutions, creativity, and confidence. As such, the respondents saw benefits from sharing knowledge. The respondents expressed a high degree of knowledge sharing in the project and rated the level to be nine on average using a scale from 1 to 10. The interviewed rated the projects they worked in without an IPR contract to level 5 for knowledge sharing. Our conclusion is that those with an IPR contract rated knowledge sharing as significantly higher than those without an IPR contract. Based upon this, IPRs will influence the attitudes towards knowledge sharing. The important issue is that there is clarity in the rights. The IPRs must be defined and agreed upon by project start up. Therefore, we argue that IPRs do have an impact on attitudes towards knowledge sharing and should therefore also have an impact on actual knowledge sharing behavior.

7.3. IPRs and commitment

We suggested in Proposition 3a) that IPR should influence commitment towards the project, and in 3b) that those with IPRs should be more committed as they have higher incentives related to reaching the goal of the project, as well as increased costs related to a failure. Neither of the propositions is supported. IPRs did not influence overall commitment nor specific project goal commitment.

In general, the respondents reported high levels of engagement to the project. We got an overall score of 8 on a scale from 1 to 10. They stated that they felt a personal responsibility and that the project was important to them and their organization. The interviewed rated, however, the projects they had been engaged in without an IPR contract also to level 8 for commitment. Our conclusion is this evidence that those with an IPR contract rated commitment not as higher than those without an IPR contract. The respondents did not regard IPR to have had any influence on commitment and emphasized professional engagement and projects be important irrespective of IPRs.

7.4. IPRs and innovation

The four teams presented in 2011–2015 in all 124 patent applications for product innovation. 24 of the patents were given to individual companies while 30 of the patents were shared between two, three or four companies. 70 of the patents were divided between six or eight companies. The legal contracts between the companies were 3–5 pages, and there were no legal disputes between the corporations and the team collaboration and sharing worked without any legal disputes. All of the 24 interviewed stated that the IPR contracts secured them to work more collaboratively towards the innovations and since all the teams collaborated it was rather easy to honor patent rights. The projects gave 43 improvements of the work processes that saved the involved companies 10–40% in costs. Lower costs, higher quality and timed saved improved the overall productivity rate with at least 25%. The connected corporations estimated the improvements to 40% while the team participants estimated it to 20%. The discrepancy is explained by looking at the innovations from outside the team and inside the team.

Proposition 4 a was strongly supported showing that IPRs are necessary for the innovativeness in the project team. 24 of 24 of the interviewed found that the IPRs had given them more innovativeness in the team than without IPRs. Proposition 4b is showing that IPRs contributed to incremental innovations was supported. Proposition 4c is demonstrating that IPRs contribute to radical innovations was not supported. Proposition 4d is indicating that IPRs contribute to radical innovations was not supported.

7.5. IPRs and product design

The employees felt that they could use more time in the product design process with an IPR contract since they could integrate innovation, functionality, and design in a more timely manner and work in the design of the products both on shore and off shore. The employees estimated that they were using up to 25% more time on the integrated design process with an IPR contract. We can see this with a heavier emphasis on the form and the design used. The subsea products on up to 1000 m deep are colorful and given a form where we see a transformation from onshore design to subsea design. All the 24 interviewed said that the integration of form and functionality was necessary for their work. Proposition 4d is indicating that IPRs contribute to product design was however not supported. We might conclude that the IPRs did not in itself contribute to the product design process.

8. Discussion of findings

An important contribution of our study is the discovery of the direct impact establishment of IPRs have on knowledge sharing and trust. Little research has been done on the links between IPR and psychological concepts such as attitudes, trust, and commitment. The present study contributes to understanding these relationships, providing important implications for collaboration. Based on the factors investigated in our study, our findings indicate that trust is under significant influence of having established contracts regarding IPRs. In this study, there is clear empirical evidence that contracts regarding IPRs have a positive impact on trust in inter-organisational project teams and will be an enabler for knowledge sharing. The participants compared projects with and without IPRs. The conclusion is that IPRs contribute significantly to creating trust, collaboration and positive attitudes for knowledge sharing.

When the IPRs are in place, the respondents feel confident that they are protected and can, therefore, share knowledge. Our findings suggest that when IPRs are settled and agreed upon initially in the project, it provides trust and confidence among the project partners. Increased openness and positive attitudes towards knowledge sharing seem to be important implications.

The most important contribution of the study might be that IPRs

clearly influence the innovativeness in inter-organizational teams. Compared to projects without IPRs the difference is significant.

IPRs are necessary for developing incremental innovations. IPRs were not necessary for radical innovations. IPRs might not be hindering radical innovations. The interviews indicated however that IPRs also fostered radical innovations. The participant scorings are however clear that this was not the case.

However, it is possible that trust was there initially before the companies chose to cooperate and agree on a contract. The study did not control for this factor. The Norwegian cluster of collaboration within oil service companies might also create a unique culture for sensitizing formal arrangements not found anywhere else in the world. This might however also be the reason why all of the top oil service companies have primary or large offices in Norway. The Norwegian way might be the ultimate way of inter-organizational teamwork.

9. Conclusion

The findings from the study contrasts many other studies and professional assumptions:

1. IPRs are found to be critical for building up trust in the team
2. IPRs are considered to be vital for building up prevailing attitudes in the team
3. IPRs are found to be imperative for knowledge sharing in the team
4. IPRs are considered to be essential for innovative teamwork
5. IPRs are considered to be important for incremental innovations
6. IPRs are not found to be important for radical product innovations
7. IPRs are not found to have impact upon innovative product design
8. IPRs are not found to have impact on the worker's commitment towards the project goal
9. IPRs are not considered to contribute to the product design process

The study concludes that formal intellectual property rights are essential to building up and keeping trust in the team and also for building up the good attitudes within the team. Building up the good attitudes gave a unique knowledge sharing in these four teams enabling them to work towards innovative solutions and delivering in time. Formal IPRs foster informal trust and knowledge sharing and by that also the inter-organizational cooperation. These team experiences strengthen the possibility for future collaboration and innovations both on an individual level and on a corporate level. The theoretical implication of our findings will be that high-performing teams require IPRs to be getting high performance in inter-organizational knowledge, intensive teams. The link between IPRs and strong team performance is a theoretical implication that has not been proposed before as a part of high-performance teams in knowledge intensive inter-organizational work.

The practical implication is that the intellectual property rights must be clearly defined before the corporations start the inter-organizational teamwork in knowledge intensive processes.

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