

**ICLTIBM 2019****9<sup>th</sup> International Conference on Leadership, Technology, Innovation and Business Management: Leadership, Innovation, Media and Communication****LITERATURE REVIEW AND MODEL PROPOSITION: THE RELATIONSHIP BETWEEN INTER-ORGANISATIONAL LEARNING AND INNOVATION**

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**Abstract**

Despite the growth of the literature on organisational learning and innovation especially in the last 30 years, theorising and further empirical studies are still needed to better understand the mechanisms of the inter-organisational learning, as well as its connection to innovation. Inter-organisational learning leads to performance and innovation primacy for the organisations by providing knowledge advantage to the recipient firms in the inter-firm collaborations, which can take numerous forms. This study contains a systematic literature review and a synthesis on the various perspectives, and provides the connection and mechanisms of inter-organisational learning and innovation with a theoretical model. In particular, the study suggests antecedents of inter-organisational learning as the organisational size, relative power of the participating organisations, knowledge ambiguity, level of trust, proximity of absorptive capacity, cultural proximity, presence of shared vision, sharing of knowledge, and the availability of complementary resources and capabilities amongst the participating organisations with the moderation of competition and communication, and the model proposes the consequences of inter-organisational learning as innovation context, content, dosage and model in a dyadic relationship. The paper intends to contribute to the literature by providing a synthesis of the literature, and combining the previous studies in a theoretical model, as well as by suggesting further constructs to study the relationship of inter-organisational learning and innovation and concludes by presenting suggestions for further research.

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*Keywords:* Inter-organisational learning, inter-organisational knowledge transfer, exploitation, exploration, innovation, innovation types



## 1. Introduction

Organisational learning (OL) was first coined by Cyert and March (1963) according to the research undertaken by Easterby-Smith and Lyles (2015). Despite the vast literature on OL, OL and knowledge transfer are still described as fields in progress – theory development remaining as a challenge (Crossan et al., 2011; Easterby-Smith et al., 2008). The reason is the diversity of perspectives, dispersed focus in theory development and empirical studies, and the need for further research as to the actual learning taking place in organisations. Inter-organisational learning (IOL) involving at least two organisations is a concept that followed the OL literature, with the alliances and network relations gaining momentum. IOL having slightly different network related antecedents, is related to firm performance and innovation, hence is an important topic which has gained research attention especially in the last 30 years. Recent studies on learning uncover different parts and mechanisms of the effects of IOL on innovation context, content, dosage and model.

The paper is organised into 7 sections. Problem Statement, Research Questions, Purpose of the Study follow the Introduction section. The fifth section (Research Method) provides a solid theoretical background for Inter-organisational Learning and Innovation based on the main selected articles in the related subjects and drive a big picture in the form of a combined model of relations between IOL and innovation with antecedents, moderators and mediators. The sixth section includes findings and the last one conclusions and suggestions for future research.

## 2. Problem Statement

The literature on IOL and innovation are diverse and fragmented, and the studies approach with several theoretical lenses combining IOL with other management/sociology/strategy and organisation theories. In recent studies innovations is frequently studied as the outcome of IOL, considering innovation from different perspectives such as context, content, types, dosage. Due to the sharply increasing importance of innovation for the business world the need for understanding the relation between IOL and innovation became indispensable. Furthermore, as there are numerous studies focusing of diverse areas of the IOL and innovation relation, there is a need to combine variables studied to give a clear inside and more comprehensive theoretical model.

## 3. Research Questions

The research questions that this study is based on are as follows:

What aspects of IOL and innovation are studied in the literature (both theoretically and empirically),

What are the areas of convergence and divergence between the viewpoints in the literature?

How can we provide a comprehensive summary and how can we synthesise the studies on IOL and innovation?

What are the areas for further research related to the IOL and innovation?

## 4. Purpose of the Study

This study provides a systematic literature review in order to highlight the previous theoretical and empirical studies concerning IOL and innovation, to determine the mostly studied themes, and industries, and to provide the reader with ideas related to further research as well as practical implications. The purpose of the study is to provide a summary and synthesis on the very diverse studies on IOL and Innovation and combine them in a comprehensive model providing relationship between IOL and innovation including mediating, moderating and control variables.

## 5. Research Methods

### 5.1. Inter-organisational Learning

Levitt and March (1988) define OL as “encoding inferences from history into routines that guide behavior” (p. 1). Learning at the organisational level is a joint process leading to a change in behaviour and (in some cases) cognition of the organisation (March, 1981). OL refers to the studies aimed at understanding and criticising the processes concerning how organisations learn (Easterby-Smith & Lyles, 2015) and therefore has a descriptive nature (Vera et al., 2011). Learning organisations, popularised by Senge (1994) refer to the characteristics of the entity, and is described as a place “where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning how to learn together” (Senge, 1994, p. 9). As stated by Vera et al. (2011), learning organisation studies are of a prescriptive nature as they emphasize how an organisation should learn.

OL is studied with two separate lenses of intra-organisational learning and IOL. Intra-organisational learning processes are based on the exploitation (making incremental improvements by using the present knowledge, by building on and improving the benefits from the current knowledge) while IOL processes use exploration (creating a range of experiments, and new experiences – what Mintzberg et al. (1998) refer to as play). An organisation cannot sustain its competitive advantage by only fine-tuning and exploiting what is already present and embedded in routines, it needs to inject newness to be able to recharge itself, and adapt to the changing environmental conditions. In order to derive a complete picture of the organisational learning, a dynamic synthesis of intra- and inter-organisational learning is needed as they are, in fact, inter-tangled (Holmqvist, 2003). According to Larsson et al., (1998), learning synergy or interaction effect are the factors that distinguish IOL from OL.

Bapuji and Crossan (2004) define IOL as a more relevant learning due to the interaction in inter-firm relationships (such as strategic alliances and joint ventures) compared to other forms of organisational learning. IOL is referred with various terminologies, such as dyadic learning (Jia & Lamming, 2013), inter-firm learning (Mohr & Sengupta, 2002), inter-partner learning (Hamel, 1991), alliance learning (Kale & Singh, 2007), network of learning (Powell et al., 1996) and relationship learning especially in marketing literature (Jean et al., 2010).

## 5.2. Innovation

The traditional school approaches to innovation from two different perspectives. The deterministic point of view defines innovation exogenously as an inevitable result of a special combination of demographic, economic, and cultural changes. According to the contrasting view by the individualistic school, innovations are made by gifted people and in most of the cases when the serendipity helps them. This is partly endogenous due to the interference of serendipity. Schumpeter focused initially on the concept of innovation from the individualistic perspective and defined an entrepreneur as the person who brings new solutions to the current problems. Later, he enlarged the innovation capability from being an individual task to be a cooperative task recognising the fertile influence of interaction between people (Trott, 2017).

Innovation theory followed the road indicated in Christensen (2006) and transformed itself from being descriptive to the normative. The normative approaches started with two complementary perspectives as Resource Based View (RBV) and market-based view.

The market-based view concentrates on market conditions and locates innovative characteristics of the company as its understanding of those market environment, identification of market forces (Porter, 1985), opportunities, and threats. RBV, on the other hand, concentrates on the organisation's own tangible and intangible resources and specifically indicates that the innovation is the result of deliberate use of valuable, rare and non-imitable resources (Barney, 1991) such as knowledge, skills, and core capabilities (Prahalad & Hamel, 1990).

Hence, innovation began to its journey as attributed to serendipity (Trott, 2017), continued as the creativity of a single person, then was considered as a capability of an organisation, and finally became an artifact of a group of organisations or a network. The complexity of the innovation grows as its context and content extend, as the number of acting elements increases, and the interacting environment changes faster.

Beyond the nature, types and dosage also matter. As for the types, Kilic et al. (2015) claim that product and process innovations are most frequently encountered innovation types, furthermore marketing and organisational innovations are appended to this category in the OECD Oslo Manual (2005). The product innovation is further differentiated into two types as radical product innovation and incremental one. Gunday et al. (2011) underlines that firms concentrating on product innovations strive for quality and flexibility; whereas those concentrated on process innovations targets cost decrease. A marketing innovation on the other hand, is set by the application of new marketing methods to create a significantly different product mix and an organizational innovation is identified by the application of new business models, practices and organisational designs.

As for the dosage, Christensen and Raynor (2003) stress the difference between disruptive innovations and sustaining innovations. Incremental innovation is a result of a deliberate "design research strategy" or it is achieved through a "series of mutual adaptations" by the parties involved (Norman & Verganti, 2014, p. 81).

In contrast, radical innovation always needs a new technology or a different interpretation of the old technology. Incremental innovation is interpreted as climbing a hill by Norman and Verganti (2014). This is a well-known innovation dilemma; the continuous innovation may deteriorate the chance of bigger

innovations. Dynamic capabilities on the other hand are abilities ensuring three requirements simultaneously: identification and assessment of an opportunity, mobilization of resources to address an opportunity and continuous renewal, and reconfiguration to keep track with the change in the environment (Cohen & Levinthal, 1990).

Innovation is at the same time an organizational capacity and a market performance for organizations to sustain competitive superiority. In order to make continuous innovations, the firms are forced to dynamically monitor all changes in the marketplace and in relevant technologies and provide immediate responses to the market needs (Bekiroğlu et al., 2011). Similarly as competitive power necessitates innovativeness, innovativeness necessitates in turn cooperation (Erdil et al., 2004). In this concern, cooperation among organizations in monitoring, learning and developing joint and appropriate responses to the changes may strengthen and sustain their competitive power.

Recent studies on learning uncover different parts and mechanisms of the effects of IOL on innovation. For instance, Manuj et al. (2013) suggest that IOL can be used to develop capabilities such as innovation and flexibility contributing to a firm's competitive advantage.

Liu (2015) proposes a conceptual model in which learning proceeds through knowledge transfer consisting of dialogue, articulation and experience mechanisms and knowledge cross-transformation consisting of articulation and pollination mechanisms.

The second layer of the model introduces relation of knowledge transfer and knowledge cross-transformation to the product development speed. His empirical tests in R&D alliances supports the relation between cross transformation of the knowledge and product development speed but the relation between knowledge transfer and product development speed can only be supported within the mediation of cross transformation of the knowledge.

A longitudinal study, again, on the alliances is undertaken by Bouncken et al. (2015), who investigate if the pioneer or follower strategy improves the innovation performance of an SME. The researchers conduct a longitudinal study on a sample of 169 established SMEs from the packaging technology industry in Germany, and find strong support that the pioneer strategy improves SMEs' innovation performance.

### **5.3. Model of joint innovation through IOL in a dyadic relationship**

Based on the review of theoretical models and empirical studies, a comprehensive model is formed to combine, and demonstrate the relationships between IOL and innovation. The context of the model is a dyadic relationship between two organisations, where they jointly create IOL leading to innovation.

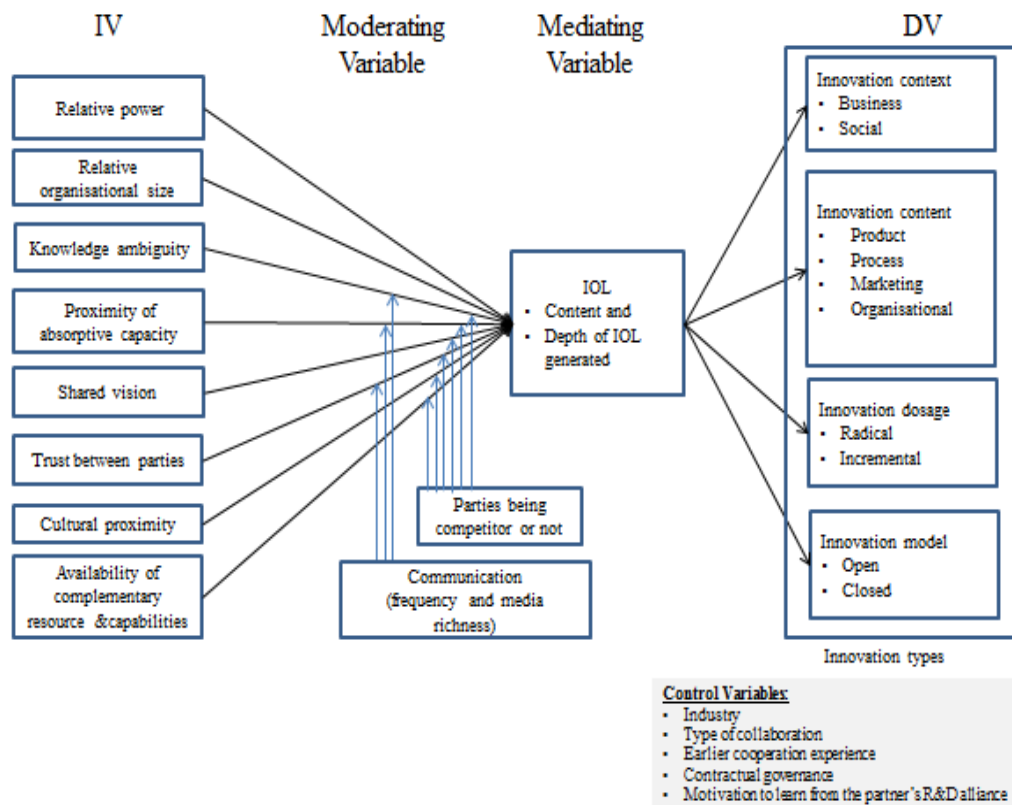


Figure 1. Model of joint innovation through IOL in a dyadic relationship]

#### 5.4. Antecedents of IOL

IOL is at the centre of our proposed model as the mediator between its antecedents and innovation related consequences. One of the antecedents of IOL is the type of knowledge ambiguity accommodating knowledge characteristics such as knowledge specificity, tacitness, and complexity. Knowledge ambiguity has a negative impact on OL, as the parties may not be willing to exchange tacit, specific and complex information with others due to the underlying competitive power of this knowledge (Van Wijk et al., 2008). As another one, power asymmetry is studied by Hao and Feng (2018) on 205 high-technology firms in China to investigate how the large alliance partner makes an impact on the exploration and exploitation of small one through power, and confirm that perceived power imbalance can positively influence OL if and when exercised in the right manner. Therefore, we propose to include the relative power of parties in a dyadic relationship. The operationalisation can be through the use of “position-driven power” and “capability-driven power” of two parties by proportioning them against one another (Hao & Feng, 2018, p. 1). We suggest also that relative organisational size as another independent variable impacting IOL. While organisational size is a mostly studied variable in absorptive capacity studies, producing mix results, the study by Van Wijk et al. (2008) confirms the positive influence of organisational size on knowledge transfer.

*Proposition 1: The relative power of parties in a dyadic relationship influences IOL (content and depth), which then influences the type of innovation (innovation context, innovation content, innovation dosage, and innovation model). Close relative power has a positive relationship on IOL.*

*Proposition 2: The relative organisational size of the parties in a dyadic relationship influences IOL (content and depth), which then influences the type of innovation (innovation context, innovation content, innovation dosage, and innovation model). Close relative size has a positive relationship on IOL.*

*Proposition 3: The knowledge ambiguity negatively influences IOL (content and depth), which then influences the type of innovation (innovation context, innovation content, innovation dosage, and innovation model).*

Based on Easterby-Smith et al. (2008) and Lane and Lubatkin (1998), absorptive capacity of the donor and recipient is influential on the knowledge transfer. In that regard, and also in parallel to the findings by Van Wijk et al. (2008), we include the absorptive capacity as an antecedent for IOL. We also suggest to operationalise it a bit differently than the previous studies, by taking into account the proximity of the absorptive capacities of the two organisations, rather than separate absolute absorptive capacities.

*Proposition 4: The proximity of absorptive capacity of the parties in a dyadic relationship positively influences IOL (content and depth), which then influences the type of innovation (innovation context, innovation content, innovation dosage, and innovation model).*

RBV states that the valuable tangible and especially intangible resources that are rare, difficult to copy and difficult to substitute can be the sources of competitive advantage (Barney, 1991). One of the reasons for mergers, acquisitions and strategic alliances is to get access to such valuable resources. The value-added from the resource complementarity is studied and confirmed by a study by Harrison et al. (1991). The study demonstrates that (the access to) complementary, rather than similar resources are related with better firm performance in acquisitions. The authors underline, in their 2001 article, the importance of the effective integration and management of these complementary resources in the alliances (Harrison et al., 2001). The parties in the dyad can combine technical and non-technical complementary resources to enjoy the synergetic benefits. As for the soft factors, shared vision, cultural proximity and trust between the two parties (common expectations about the dyadic relationship) can be other important drivers (e.g. Azadegan et al., 2008; Easterby-Smith et al., 2008; Senge, 1994; Van Wijk et al., 2008; Weterings & Ponds, 2009).

*Proposition 5: The shared vision of the parties in a dyadic relationship positively influences IOL (content and depth), which then influences the type of innovation (innovation context, innovation content, innovation dosage, and innovation model).*

*Proposition 6: The trust between the parties in a dyadic relationship positively influences IOL (content and depth), which then influences the type of innovation (innovation context, innovation content, innovation dosage, and innovation model).*

*Proposition 7: The cultural proximity of the parties in a dyadic relationship positively influences IOL (content and depth), which then influences the type of innovation (innovation context, innovation content, innovation dosage, and innovation model).*

*Proposition 8: The availability of complementary resource and capabilities of the parties in a dyadic relationship positively influences IOL (content and depth), which then influences the type of innovation (innovation context, innovation content, innovation dosage, and innovation model).*

## 5.5. Moderators

Media richness is the variety of the channels and mediums of communication that impact the interpretation of knowledge (Daft & Lengel, 1984; Steensma, 1996). Badir and O'Connor (2015) propose that communication (frequency and media richness) influence the strength of ties for a strategic alliance. We model the communication as a moderating variable between the above independent variables and IOL. We also include the impact of the parties being competitors or not in a dyad as this can directly moderate the relationship of trust, availability of complementary resources and capabilities, knowledge ambiguity, proximity of absorptive capacity, and cultural proximity with the IOL. Having a competitive or cooperative relation leads to different sides of balance in exploration – exploitation dyad. Martinez-Noya and Garcia-Canal (2016) argue that contracting to the same suppliers with competitors enhance the innovative power of the company in case of IOL that is neither tacit nor firm specific. Leung et al. (2019) identify both cooperative and competitive practices on industry peer networks during vicarious learning process. As another example from the literature survey, Feller et al. (2009) demonstrate that IOL is a function of inter-partner competition, knowledge complementarity, trust, and the use of various knowledge transfer mechanisms. The relationship characteristics moderate the relationship between the use of various knowledge transfer mechanisms and IOL.

*Proposition 9: The relationship between knowledge ambiguity and IOL is moderated by communication characteristics (frequency and media richness).*

*Proposition 10: The relationship between proximity of absorptive capacity and IOL is moderated by communication characteristics (frequency and media richness).*

*Proposition 11: The relationship between trust between the parties and IOL is moderated by communication characteristics (frequency and media richness).*

*Proposition 12: The relationship between knowledge ambiguity and IOL is moderated by the parties being competitors.*

*Proposition 13: The relationship between proximity of absorptive capacity and IOL is moderated by the parties being competitors.*

*Proposition 14: The relationship between shared vision and IOL is moderated by the parties being competitors.*

*Proposition 15: The relationship between trust between parties and IOL is moderated by the parties being competitors.*

*Proposition 16: The relationship between cultural proximity of the parties and IOL is moderated by the parties being competitors.*

*Proposition 17: The relationship between the availability of complementary resources and capabilities and IOL is moderated by the parties being competitors.*

## 5.6. Outcomes

As a contribution to the reviewed literature, various types of innovation with differentiating factors of context, content, dosage and model are introduced into the picture to discover the impact of IOL on innovation for a thorough understanding. Business innovation is a more frequently studied type, whereas



social innovation is a new and less frequently touched research area. Social innovation brings generally big changes into the society consisting of different stakeholders thus collaboration and IOL are indispensable constituents (White, 2014). Relation of IOL to business innovation is more or less identified under different conditions within the scope of the literature survey whereas its relation to the social innovation is yet to be discovered.

Product and process innovations are described as the dependent variables in various articles reached in our literature survey (e.g. Azadegan et al., 2008; Manuj et al., 2013; Ribeiro-Soriano et al., 2013). Marketing and organisational innovations are appended to complete the content categorisation (Kilic et al., 2015; OECD Oslo Manual, 2005). In the OECD Oslo Manual (2005) the product innovation is further differentiated into two categories as radical product innovation and incremental one (Kilic et al., 2015). Bouncken et al. (2018) point out the relation of incremental and radical innovation dosage on product innovation. They analyse the relationship of cooperative environment with new product development, and conclude that during the radical innovation processes, firms should critically manage risk and tension in case of exchanging knowledge with their competitors. However in all steps of incremental innovation, cooperative collaboration is easier and more productive. More complex relations are mentioned between the radicality and incrementality of innovation and the effect of IOL in this process. Four business model innovation types introduced by Taran et al. (2015) are positioned on three dimensions as: radicality, reach and complexity. Therefore, those types of innovation are directly affected by the building blocks: network openness, core competencies and value chain architecture.

Prange and Schlegelmilch (2016) introduce the number of innovation types on a continuum of exploration and exploitation (March, 1991) and a specific balance point for a firm is defined as strategic inflection points (SIP). Companies dealing with a single type of innovation and those dealing with multiple type of innovation may need different types of IOL antecedents and moderators to increase performance. Exploration and exploitation performance is found to be related to the institutional environment such as national culture (collectivism, power distance, uncertainty avoidance) and social welfare (level and equilibrium) (Mueller et al., 2013). Partanen et al. (2014) state that adding a new dimension (autonomous versus systematic) seems to bring a second-degree complication on innovation types (with the incremental vs radical dimensions originally) causing a variation in IOL requirements. Firms with systemic innovations would require more resource commitment and adaptations from their network relationships during the varying steps than those with autonomous innovations.

The last categorisation introduced into the picture is the innovation model identified as open and closed. Open innovation reflects network model of innovation in relation with IOL build through the communication among competitors, supplier partnerships, distributors, customers, strategic alliances, and other liaisons (Berkhout et al., 2010) whereas closed innovation is built within in the limited audience. As a result, we believe that integrating the various innovation types such as context, content, dosage and model, when evaluating the relationship of IOL and innovation helps to fill a gap in the operationalization of innovation and lets the researcher uncover this relationship better. Introduction of various innovation types into the model as dependent variables, and formation of the relationship of the independent variables with those specific innovation variables through the moderating and mediating variables would improve model's predictive performance.

## 6. Findings

The general focus of reviewed studies is especially on routines and rules about the learning environment, and the types and mechanisms of relationship amongst the actors to increase the joint learning effectiveness. Practitioners are advised to intentionally and explicitly design and manage those inter-organisational elements based on the mutual benefit of the network members:

- Joint activities, interactions, proximity, communication technology and human resources allocation (Eiriz et al., 2017),
- Company's network capabilities to handle and exploit network relationship required by the ultimate goal, short term market relation or long-term partnership (Rajala, 2018),
- Social capital practices such as the entrepreneurial imperatives and problem-solving, informal gatherings, consensus development camps, yellow page databases for external referrals and others (Fang et al., 2010),
- Partner fit in vertical alliances, preference of partners with entrepreneurial orientation for joint product innovation (Bouncken et al., 2016),
- Finding a balance between the accumulation and retrieval of technological knowledge to further learning in research and development alliances (Ernst et al., 2011)
- Management of innovation by modularization of design components (Grunwald & Kieser, 2007),
- Application of benefit sharing schemes (Kim, 2006),
- Managing power relations and competitive tensions in alliances (Gogan et al., 2007),
- Outsourcing standardized services to specialized supplier without fears of knowledge leakage (Martinez-Noya & Garcia-Canal, 2016).

## 7. Conclusion

The important take-outs for practitioners in the systematic literature review are on trust, power asymmetries, stability of alliances and capability development. Trust between parties may lead to open innovation, thus joint platforms for knowledge sharing should be developed between long-term co-operations (e.g. Eiriz et al., 2017; Kim, 2006; Martinez-Noya & Garcia-Canal, 2016). On the other hand, in asymmetric dyadic inter-firm collaborations, the type and nature of power impacts the type of learning of the smaller organisation. Instead of the general defensive reaction, understanding how the dominant partner uses power, designing proactive interaction mechanisms, and attempting to learn from them is a beneficial strategy (Hao & Feng, 2018). The forces that impact the stability of alliances, "competition versus cooperation", "rigidity versus flexibility", and "short-term orientation versus long-term orientation" vary and shift over time. Project governance type, the participants' ability and willingness to contribute with competitive/complementary knowledge, and the features of Information Technology can impact these tensions (Gogan et al., 2007, p. 93).

As another practical implication, one of the most important watch-outs is the emphasis that should be given to the capability development of firms – a factor that can impact the absorptive capacity, as well as the ability to select the right "teachers" for the student firms in IOL relationships (Lane & Lubatkin,

1998, p. 462). This is also supported by the study by Operti and Carnabuci (2014), as the authors suggest that even the explicit, codified knowledge gained from the network/IOL can add value to the innovations of an organisation, as they are combined and bundled with the receiving firm's organisational characteristics, resources and capabilities.

Joint exploitation of different parties' resources including human capital may lead to expert transfers from one another, thus strategic human resources management decisions and career plans of critical personnel need to be done collectively in order to prevent hostile transfers and also to provide enlarged promotion, rotation or outplacement opportunities to the experts in both sides of the relationship. Papers specifically focusing on supply chain suggest that in supply chain collaborations, partner fit is an important issue that can result in successful IOL that support new product development, hence the possibility of learning from each other can be a supplier selection criterion (Azadegan, et al., 2008; Bouncken, et al., 2016). On the other hand, there are a few more specific practical implications in specific innovation cases. Cultural adaptation seems to be the primary advice to the managers of international supply chains due to its causal relationship towards mutual benefits and spill-over rents (Jia & Lamming, 2013).

Due to the lack of detailed empirical studies, we suggest that IOL-Innovation relationship is to be tested also empirically in different settings i.e. cultures, sectors, etc. While doing this, IOL - Innovation relationship can be investigated using case studies or through quantitative studies based on RBV, Institutional Theory, Social Networks, and absorptive capacity literatures with specific reference to IOL. In terms of future research, it can be interesting to study which alliance types creating IOL are related to which types of innovation, and if there is a specific distinction, and if so what can be the leading factors. Another area suggested for future research can be conducted in the networks of organisations with asymmetric power to see the impact of power, and power combinations on the exploration/exploitation outcomes. With the accumulation of empirical studies, IOL's impact on the type, speed, effectiveness and efficiency of innovation can be studied with meta-analyses to derive powerful conclusions for scholars and practitioners.

Based on our literature survey, we can conclude that the innovation concept is not investigated in depth with various dimensions and sub processes, but it is handled rather as a black box consequence of various IOL/OL mechanisms. Therefore, discovery attempts to uncover mediating variables in this complex model of relationships may produce original contributions.

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