Developing New Skills and Technologies in International Alliances: What is The Role of Tacit Knowledge Transfer?

Imen Jayari, Mehrez Chaher

Abstract: This research analyzes how alliances can achieve their goals through inter-organizational learning that ensures knowledge transfer, stimulates the creation of new knowledge and contributes to innovation. Inter-organizational learning is dependent on the barriers that can limit it, such as the tacitness of allies’ knowledge, which can be understood in order to defend accessing to knowledge especially that which is related to competitive advantage. This research aims to complement the work on tacit knowledge transfer and to clarify shadow areas by analyzing its effects on achieving alliances’ goals. A qualitative empirical analysis, adopting a hypothetico-deductive approach, was carried out in order to validate the causal model. The results show that tacit knowledge transfer supports the development of new technologies.

Index Terms: Codification, goals achievement, innovation, inter-organizational learning, tacitness.

1 INTRODUCTION

Alliances are voluntary agreements between independent companies to develop and commercialize new products, technologies and/or services (Rothaermel and Deeds, 2006). They are a source of innovation and value creation opportunities (Hamel, 1991). They are also a means of learning by transferring the skills and the knowledge of a company to its partners (Malo and Elkoouzi, 2002). Alliances rely on protectionist behavior to avoid loss of their knowledge mainly those which are tacit (Norman, 2002). The tacit knowledge can limit learning and affect instability negatively (Nielson and Nielson, 2009, Ho and Wang, 2015). Their role in achieving alliances’ goals and their impact on alliances’ development remains unclear. So, such factor affecting learning needs to be analyzed separately to better understand its effects on the performance (Cummings and Holtberg, 2012) and goals’ achievement of alliances especially the development of skills and technologies.

2 Inter-organizational learning and knowledge creation

Creating new knowledge is a complex, non-linear and interactive process of inter-organizational learning. Connections between allies allow the new knowledge to have a higher likelihood of development and integration into their knowledge bases. Without them, it can be devalued or seen as irrelevant. New knowledge is formed through formal and informal relationships between individuals and groups. Relationships facilitate sharing and dissemination (Inkpen, 1998).

Mowery et al, (1996, cited by Meier, 2010) concluded that alliances are motivated either by the transfer of knowledge (convergent knowledge bases) or by enhancing the specialization of knowledge (divergent knowledge bases) and even the combination of their specific knowledge. As for Larsson et al, (1998 cited by Meier, 2010), they distinguish between the creation of a completely new knowledge and the transfer of existing knowledge between the partners. Companies seem to be motivated rather by creating knowledge (Meier, 2010). However, alliances can involve one partner to capture skills and knowledge of the others which strengthen his position more (Blanchot, 2007). For this reason, allies retain some of their knowledge as tacit to better protect them from the partner (Ahmad et al., 2014). Such behaviors limit the transfer of knowledge, inter-organizational learning (Nielson and Nielson, 2009) and the goals’ achievement of alliances.

3 TRANSFER OF TACIT KNOWLEDGE

To succeed in inter-organizational learning, there must be coherence between the types of knowledge that optimize their integration. In fact, Knowledge always joins two aspects: explicit and implicit (Walter et al., 2007), which are manifested by extremites of the complexity and coding scale (Murray et al., 2009). Explicit knowledge is easy to codify and transfer into formal and structural language. It corresponds to what is easily stored in databases, formalized by procedures and formally described by writing to be more discernable. It is transcribed into information and figures (Dostaler et al., 2000). On the other hand, tacit knowledge, known as implicit knowledge, is deeply rooted in the personal experience of individuals and is hardly coded by explicit terms (Nonaka, 1994). It is not visible, so it is difficult to formalize, to communicate and to share with the other (Collins and Hitt, 2006, Evangelista and Hau, 2009, Murray et al, 2009). When knowledge is highly tacit, it becomes difficult to learn from the other, since it cannot be simply articulated in a tangible form (Nonaka, 1994). The tacitness is one of the characteristics of the knowledge that inhibits its imitation and maintains the competitive advantage of the company (Simonin, 2004). It determines whether the transfer will be easy and fast or not (Zander and Kogut, 1995). Tacit knowledge involves ideas that lend themselves to codification and are influenced by personal experiences, values and beliefs. The ability to take advantage

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of tacit knowledge is related to the experience’s amount shared among team members (Berman et al, 2002).

**4 Codification of Tacit Knowledge as an Incentive for the Creation of New Knowledge and Innovation**

In the West, the concern has generally been the control of explicit knowledge. American and European firms lose much of the knowledge creation’s potential by the over exploitation of explicit knowledge and the development of complex hierarchies and managerial systems (Hedlund and Nonaka, 1993). By the other hand, one of the key factors in the competitiveness and the success of Japanese firms is their ability to create new knowledge. The Japanese approach aims at the socialization and the oral sharing of the tacit knowledge as well as the conditions that encourage the creation of new knowledge by the codification of this type of knowledge (Nonaka and Takeuchi, 1995). Nonaka (1994) proposes a knowledge creation approach according to which the innovation process intervenes through a continuous dialogue between tacit knowledge and explicit knowledge. He calls for a change in innovation’s design in large organizations which must be studied to better understand how they create knowledge. The creation of organizational knowledge stems from the conversion of tacit knowledge into explicit knowledge. Thus, the process of creativity is seen as an interactive social process between the two types of knowledge. This interaction’s process takes the form of spiral, beginning at the individual level and spreading progressively at different organizational, even inter-organizational levels. When knowledge is transformed from the individual to the collective level then new organizational knowledge is created (Nonaka and Takeuchi 1995). Similarly, when knowledge is transformed from the organizational level to the alliance’s level, then new knowledge will be created. The more the allies collaborate and combine tacit and explicit knowledge, the more the potential of new knowledge’s creation exists.

**5 Goals’ Achievement: The Reason of Being of Each Alliance**

Goals’ achievement is a subjective measure of alliances’ performance (Arino, 2003, Christoffersen et al., 2014). It is directly associated with financial performance (Chen et al., 2009) and provides a more accurate estimate of performance and effectiveness (Hatfield et al., 1994; 1998). Some goals can be achieved in the early stages of the alliance (Parkhe, 1993), while others emerge throughout the co-operation period (Doz, 1996). Goals' achievement should assess the achieved part of each objective. For Parkhe (1993), alliances have at least seven goals which are:

- Achieving scale economies
- Earn access to a market of another industry
- Earn access to another market of the same industry
- Developing new technologies
- Block competition.
- Develop new skills
- Reduce risks
- Others

According to Parkhe (1993), achieving the strategic goals of an alliance is a composite measure obtained by multiplying the importance of the goal by its degree of achievement. When firms face intense technological competition, the speed of innovation becomes crucial for firms to succeed in a technological race. Close collaboration via alliances facilitates the transfer of existing know-how and pooling specialized knowledge to generate new knowledge (Gomes-Casseres, Hagedoorn, and Jaffe, 2006). The academic literature provides empirical evidence for the potential of strategic alliances to enhance the innovativeness (Lee, 2007; Willoughby and Galvin, 2005). But this does not show whether tacit knowledge is part of innovation as advocated by some authors or not. So, we suppose that:

**H1:** Tacit knowledge affects the alliances goals' achievement

Our model is presented as below:

![Alliances goals' achievement](image)

**6 Empirical Methodology and Results**

A quantitative study was conducted using a questionnaire. For the treatment of data, various methods and software for data analysis (SPSS and AMOS) are mobilized. The questionnaire is administered to a sample of 114 companies having formed alliances in the industrial sector and the service sector particularly in technology services. The questions are quantified by Likert scales five points from completely disagree to strongly agree. In this research, the scale of Parkhe (1993) to measure alliances goals’ achievement and tacitness’ scale measure presented by Norman (2002) are adopted.

**6.1. Exploratory analysis**

The PCA of the Variable “Tacitness” shows that it is one-dimensional and allows obtaining an acceptable factor solution. Bartlett's test is significant at the 1% risk and the value of KMO is equal to 0.595. The selected axis can explain 66.241% of the variance. The three items have a representation of quality higher than 0.5 and a Cronbach’s alpha equal to 0.734. The PCA of goals’ achievement reveals a bi-dimensional variable that retains two axes. The first is formed by three goals alliances related to cost reduction, development of new skills and finally risk reduction. The second is formed by the goal of new technologies’ development. These two axes explain 47.624% of the information and have a KMO value equal to 0.571. Bartlett’s test is significant at 1%. Cronbach's alpha has a limit value equal to 0.624. This can be explained by the scores awarded to the goals’ importance to distinguish those who are more important than those that are less important.
6.2. Confirmatory analyzes

For tacitness variable, Rhô Joresckog , Rhô convergent validity and discriminant Validity are confirmed. For goals' achievement, Rhô Joresckog and discriminant Validity are confirmed. However, the convergent validity of the goals' achievement is less than 0.6. Two explanations can clarify the low value of convergent validity. The first is that the multiplication of the goals' achievement by their importance, which varies from one objective to another, will weaken thereafter discriminant validity. The second is related to the fact that items reflect the same variable “Goals achievement” but are different and quite distinct. For example, the first item is one of the most important objectives, namely reducing costs whereas the fourth item is the development of new technologies.

6.3. ADJUSTMENT MODEL QUALITY AND HYPOTHESES’ TESTS

The adjustment’s quality of causal models have been evaluated and verified by a series of indices provided by the AMOS software. We note that the model has a good fit. GFI, TLI, CFI and AFM are greater than or equal to 0.9. Residues RMR and RMSEA are below the threshold of 0.1 which confirm the adequacy of the causal model. The results of hypothesis’ tests show that tacit knowledge affects only the goals’ achievement relating to the development of new technologies but negatively. It does not influence the others goals. This proves that the development of new technologies requires the exchange of tacit knowledge and their codification.

7 DISCUSSION AND CONCLUSION

Tacit knowledges are difficult to codify, transfer and learn (Meier, 2010, Simonin, 2004, Zander and Kogut, 1995). So they can weaken the exchange of knowledge needed to create new technologies. This may explain the significant but negative effect of tacitness on this objective of alliances. The process of converting tacit knowledge into explicit through knowledge transfer from the individual level to the collective and inter-organizational levels allows the development of new technologies and their innovation. The ability to take advantage of tacit knowledge is related to the amount of shared experience (Berman et al., 2002) between the allies. The social interaction that ensures the transfer of tacit knowledge through practice or observation is vital for successful technology development. The more the knowledge’s tacitness is reduced through codification, the higher is the new technologies’ creation. As theoretically advocated by Hedlund and Nonaka (1993), implicit knowledge is important for innovation and it is interesting to seek to codify it. This approves also the claims of Nonaka and Takeushi (1995) according to which the importance of codification and the socialization of tacit knowledge are necessary for the creation and innovation in enterprises. Empirically, international alliances aim at the transfer of tacit knowledge to better develop new technologies.

REFERENCES


