Search phase and the openness effects in MNEs

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Abstract In this work we focus on the search phase that precedes the knowledge transfer process. We argue that it is important to closely analyze this phase as, the common understanding of problem developed in this phase has a significant impact on the stages that follow. In this analysis we focus on two key factors: openness and the richness of media of communication that foster the openness within Multinational Corporation (MNC) environment. Furthermore, we also try to explore the degree of knowledge transfer due to an open environment. Openness is a change that can be induced at the MNE level by the Headquarter (HQ), the effects of this change are behavioral in nature and can be observed at the subsidiary level in the type of media of communication used

Introduction

Knowledge flow within the MNC and its impediments have been the topic of scholarly investigation since the famous intellectual work of [1]. In order to transfer knowledge the source needs to know what kind of knowledge to transfer, an understanding developed in the pre-transfer phase of knowledge transfer. Pre-transfer phase of knowledge is the stage before the initiation phase of knowledge transfer. We use the 'Diffusion on the directed network' model, this simulation model helps us in analyzing the role of motivation and media richness in flow of knowledge.

The model adopts a process perspective because knowledge transfer is not an instantaneous process [2]. We follow the process perspective and argue that it is important to understand the process before the formal knowledge transfer begins. This analysis helps in developing a common understanding of the problem, which explains how the gap (the problem) was identified by the recipient. And, how a common understanding of the gap (a common understanding of the problem) was developed by both the source and the recipient. We explore the factors that might impede this flow of knowledge and the methods that the MNC can deploy to address them. Furthermore, we argue that a key assumption needs to be considered in order to understand the role of motivation, the environment of openness introduced by Headquarter. Openness in the context that we draw, creates an environment in which the subsidiaries are willing to share information with each other.

This discussion can be understood better by drawing an analogy with the innovation work. [3] stresses the need to investigate the pre-innovation phase while investigating the innovation diffusion process as this constrains the diffusion of the innovation. Even though knowledge transfer is a "distinct movement of knowledge within organization and not a gradual dissemination [2], we argue that the stages prior to the knowledge transfer have a significant impact on the knowledge transfer process and affect the knowledge transfer capacity of the source.

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Theoretical Background

Knowledge transfer and search phase

In international business literature, scholars have given substantial attention to knowledge transfer process among different units [5-8] . Knowledge transfer is the process through which one unit exerts influence on other units [9].

[2] argues that transfer of knowledge should not be modeled as an act but as a process which identifies stages or phases. This process is divided in four parts [2]: initiation, implementation, ramp-up, integration. In this study we argue that while following the process perspective we need to start analyzing the factors from the pre- transfer stage: search phase[4]. This should not be confused with the initiation stage. As, in the initiation stage a gap is identified but in the search phase a common understanding of the problem (the gap) is developed which is significantly different from gap identification.

The gap in knowledge based view between the source and the recipient exists because of geographical distance and stickiness. This point has been raised in RBV literature [10], in knowledge transfer literature [2]and in MNC literature [6,7,11,12].

These obstacles reduce the willingness and motivation of entities to share knowledge and information within multi-national corporation. These entities are intrinsically motivated to satisfy an immediate need [13], that is to solve their problem. If the obstacles to solution of entities problem are too high, the motivation goes down.

Media richness

The capacity to resolve ambiguity, negotiate interpretations, and facilitate understanding might vary depending on the kind of media chosen [14-17] .

The main assumption of *Media Richness* (**MR**) theory are:

-try to avoid equivocality and uncertainty in organizations;

-variety of media and these work better for certain tasks than for others.

Using four criteria, [14] present a media richness hierarchy, arranged from high to low degrees of richness, to illustrate the capacity of a given type of media to process unclear communication in organizations.

From a strategic management perspective, the media richness theory suggests that effective managers make a optimal choice if they follow these criteria. Hence, every criteria is suitable to address a specific kind of problem. Therefore, it would be preferable strategy to match a particular communication medium to a specific task or objective and to the degree of richness required by that task [18].

[4] In our work we consider search phase and pre-transfer phase with the same meaning, as they both refer to the initial stage of knowledge transfer process.

Openness

In the organization learning literature, openness has been defined by different authors [19-22] mainly as the partners' willingness to share knowledge in a collaborative interaction [23]. [24], argue that "openness can be understood in terms of overall perceived openness of dialogue, the degree to which the partner representatives work closely together on a common task, and the degree to which the partner representatives perceive that the others withhold their knowledge" [24].

As the prior discussion indicates lack of motivation and geographical distance are two major obstacles in developing a common understanding of a problem. We argue that an environment of openness motivates the sharing of problemistic knowledge and media richness mitigates the effect of distance between two subsidiaries.

Model

HQ plays a key role in creating an environment of openness. This environment motivates the subsidiaries to communicate to each other. Our model focuses on the search phase which precedes the knowledge transfer process [2].

Search phase

According to the behavioral theory of firm [25] two kinds of search are undertaken by a firm (in our case the subsidiary of a MNE): problemistic search and slack search. In our work we consider only problemistic search as, this will help us in developing a better understanding of the causal relationships.

What is the 'problemistic search process' in a MNC? How does a subsidiary look for solutions? Is it guided in this choice by the charter developed by the HQ or does the charter decide who will contact whom? Prior work has explained the charter development process in MNC [26]. This process explains the subsidiary specialization. We argue that the charter only helps in creating a general understanding of the problem. Despite the general understanding, lack of motivation might hinder knowledge transfer among subsidiaries [27].

Furthermore, few researchers highlighted that knowledge flow in a MNE can be affected by motivation in units: motivation is a property of knowledge exchange [13,28-30].

[31], suggests that the lack of motivation can be a cause of knowledge transfer failure. But theories related to knowledge sharing frequently stress the importance of motivation, which is higher in interactive learning environment. All these environmental factors affecting subsidiary behavior can be grouped under one construct: openness.

Openness is a phenomenon that can be observed at the organizational level. Openness is a situation in the intra organizational network where positive evaluation and work coordination is present. But, positive evaluation and work coordination do not suffice. They must be supplemented by tolerance for mistake and trust as these two features are very important in a learning process. We must point out that each of these features together constitute our definition of openness. None of them have a fixed level of contribution, their individual contribution varies as per the situation.

Work coordination among the subsidiaries develops an environment of cooperation, this environment is coupled with other features. As a result, the subsidiaries understand what the other subsidiaries are working on[5] and trust each other. Hence, the motivation to share knowledge increases due to the faith in the phenomenon of reciprocity[6]. This increase in motivation reduces the level of hindrance in knowledge transfer. But we must point out that in the search phase there is no transfer of knowledge, only a common understanding of the problem is developed. Hence, the increase in motivation and the phenomenon of reciprocity helps in sharing the information details concerning the problem. This helps in defining the problem in a way that can be understood by both the source and the recipient.

Why do we need to define the problem? Due to different mental models the same problem may be understood in different ways by the subsidiaries.

The source may not be interested in understanding the problem of the recipient cause of lack of adequate motivation. This lack of understanding is a major obstacle in developing a common understanding of the problem. But an increase in the motivation of the source will encourage it to understand the problem of the recipient. We argue that this change in the motivation is induced through openness. Openness acts on motivation, which helps in developing a common understanding of the problem.

The lack of effort on the part of the recipient can be attributed to the low motivation of the source. This leads to an environment characterized by non-cooperation. As a result the recipient does not feel encouraged in explaining its problem to the source. This lack of effort on the part of the recipient in teaching its problem to the source hampers the understanding of the source.

H.1: Higher motivation to share the knowledge and problem between source and recipient higher the common understanding the problem.

MR theory helps in explaining how the flow of information with a proper media facilitates the implementation of open environment. In search phase higher is the use of media, higher is the effective understanding of problem by each entities within MNCs. According to [33], effectiveness means the proper understanding of complex problems from recipient. So we formulate the following hypothesis.

H.2: Higher degree of use of media richness more effective is the understanding of complex problems from recipient.

Simulation

The hypothesis that we have proposed needs access to the MNCs in order to gather data and validate it. Due to reasons of confidentiality and infeasibility it becomes difficult even if not impossible to find data of this nature. Furthermore, even if we collect data within the MNC it still might be difficult to figure out answers to questions like the causal relationship, what triggers the flow of information during the search phase, how does openness contribute to the flow of information, what kind of contribution can media richness make? Simulations allow us to answer questions of this nature. In this paper we use the diffusion on the directed network simulation model. The subsidiaries are repre-

[5] This analysis should be combined with the meta knowledge to which they already have access.

[6] Reciprocity is often discussed in the justice literature, especially procedural justice.

sented by the nodes, the links between the subsdiary represent the link of communication, the rate of information flow through this link is fixed with the help of diffusion rate parameter. Link chance represents openness, the higher is the level of link-chance higher is the level of openness. Openness motivates the subsidiary to share knowledge of the problem during the search phase. The diffusion rate represents the sharing of information, which is affected both by openness and media richness. In the following part we explain the results of the hypothesis.

The simulation outcome supports the first hypothesis.

The figure below, the respective histogram (in the appendix) and the table gives us the output for the first hypothesis. We start by explaining the figure then proceed to the histogram. In the figure for low motivation it can be noticed that despite of the bidirectional links the size of the nodes is diminishing accompanied with a diminishing flow through the links. Only one node continues to grow. The same phenomenon can be observed if we read the histogram. 24 nodes fall in the range of zero value and only 1 node falls in the range of 16,8 value. This means that 24 nodes understand the problem of the neighbouring node but this understanding is almost equivalent to zero.

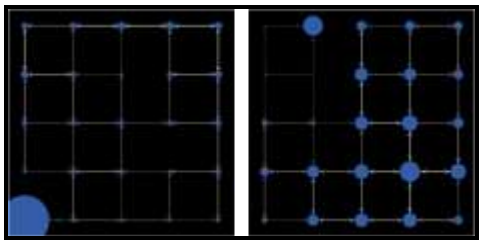

Fig.: 1: This figure showing respectively low and high motivation to share knowledge

Now let's proceed to the second situation when the level of motivations is higher. In this figure the information flowing through the bidirectional link is higher, the size of nodes is growing mutually. This phenomenon can be read in the histogram we have more nodes sharing the problem. 7 nodes understand the problem of their neighbouring and this understanding is equivalent to 0,8. The same interpretation can be made for the remaining nodes and the respective value.

This leads us to conclude that in case of higher motivation the level of understanding of a problem will be higher.

Table 1. Simulation results table

Low motivation		High motivation		Presence of media richness	
Value	N. of nodes	Value	N. of nodes	Value	N. of nodes
0	24	0	13	0	16
16,8	1	0,8	7	0,8	2
		1,6	3	1,6	3
		2,4	2	2,4	3
				3,2	1

We also found mild and not very strong support for our third hypothesis. It can be noticed that 16 nodes share knowledge at a level which is almost equivalent to zero and this is 3 nodes more than the case of higher motivation. Furthermore, we have only 2 nodes sharing the knowledge of the neighbour at a rate of 0.8 whereas in the case of higher motivation this value was 7. We suggest that decrease in the number of nodes to benefit from the media richness is because of the need to master the techniques of the media rich tool and to understand which tool is to be used with which kind of problem. This understanding is critical for the proper use of media richness.

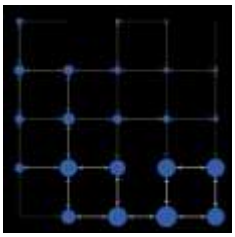

Fig. 2: This figure show respectively the use of MR in sharing knowledge.

Conclusions

Motivation increases the rate of problemistic knowledge flow and media richness further augments the flow. However, the simulation results emphasize that media richness by itself is not enough, the subsidiaries need to acquire or develop the capabilities needed. These capabilities help the subsidiary understand which type of media should be used for different problem and how to use that kind of media.

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Appendix

We use the [34] diffusion on a directed network model to test our hypothesis. In this model the nodes represent the subsidiary, the links represent the connection between them. The arrow on the link shows its direction, the links are either unidirectional or bidirectional. The brightness of the link shows the flow of information (we do not call it knowledge at this stage, because knowledge is contextualized information). The value that a subsidiary has is represented by the size of the node. We would like to emphasize that the value represents the amount of knowledge of the problem (we do this in order to specify the kind of knowledge we are considering). The diffusion rate is used to control for the amount of value transferred. If the node is connected (points towards them) to two nodes then it divides the value it receives in two halves and passes it to those nodes. When it is not connected to any node, it keeps the value it receives with itself. The key point here is that, if the node is does not reciprocate with the node from which it just received information then it will not transfer any information back to it. We will come back to this point later when we explain the hypothesis.

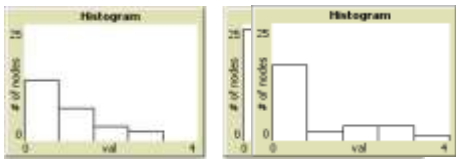

Fig. 3. This figure shows respectively the histograms for high and low motivation to share knowledge, and the histogram for the presence of media richness.