Internal Insemination Capacity: exploring the activation triggers of knowledge absorption

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Résumé :

This paper investigates the concept of Insemination Capacity proposed by (Imbert and Chauvet, 2012): the ability of an external firm to trigger a knowledge absorption sequence relative to the absorptive capacity of a knowledge-recipient firm. We collected data through an ethnographic-inspired methodology conducted as an embedded scholar within the Innovation Purchasing Direction of an automotive firm, an internal innovation scouting entity. The results of our investigations first extend this concept to an internal dissemination capacity which is made of the same four knowledge-related mechanisms than external insemination capacity: selection, adoption, contextualization and preservation of external knowledge. We also complete it with the identification of a fifth mechanism which is "people-related" which appears to be central for potential knowledge absorption. This mechanism is the enrollment, by the scouting entity, of Research and Development actors to become the internal holder of the external knowledge. Finally it appears that the trigger of absorptive capacity is made up of two sequences of knowledge-related mechanisms, linked by the people-related mechanism: the first is made apart by the internal scouting entity, the second together with enrolled R&D actors.

Mots-clés : innovation, R&D, gestion des connaissances, ethnographie / observation

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1. INTRODUCTION

Innovation of products, services and business models is increasingly identified by firms as an important strategy to achieve competitive advantage. Nowadays, the turbulent economic environment and rapid changes in the development of new products are some of the reasons for identifying and assimilating external knowledge to reinforce and accelerate internal innovation projects (Noblet and Simon, 2010; Phillips et al., 2006; Zahra and George, 2002). Within this changing innovation landscape, an "*Open Innovation*" approach has become a major theme across companies worldwide. Chesbrough in his seminal work on Open Innovation suggests that, in a world of widely distributed knowledge, companies cannot afford to rely entirely on their own research, but should use external channels to bring new ideas/technologies to markets (Chesbrough, 2003).

A key challenge of an Open Innovation approach is to recognize the value of new, external information, assimilate it, and apply it to commercial ends. As the variety and the complexity of potential external sources of innovation get increasing, the costs of searching and obtaining this external knowledge can overpass the expected benefits (West and Bogers, 2014). For firms, choosing and managing the path to efficient acquisition of innovation from external sources stays a pending stake specially when conducted by internal innovation intermediaries (Hargadon and Sutton, 1997; Howells, 2006; Mol and Birkinshaw, 2014). The challenge of recognizing, assimilating and applying external knowledge in a recipient firm corresponds to the well-known definition of *absorptive capacity* by Cohen and Levinthal (1990) i.e. the ability of an organization to appropriate external knowledge in order to transform it into new products.

The different types of external sources and the ways for searching new external ideas are well identified (West and Bogers, 2014). But the mechanisms that conduct from the identification

[1] Earlier versions of this research were presented to IPSERA and EURAM 2014 conferences

to the recognition of the value of external knowledge by a firm before acquiring it are as critical as partially acknowledged (Imbert and Chauvet, 2012; West and Bogers, 2014). As the variety and complexity of potential external sources of innovation get increasing, it is more and more critical for firms to understand the performance levers of their innovation scouting actions. The concepts of Absorptive Capacity and Insemination Capacity are theoretical lenses that can bring them this understanding.

The aim of this research is to explore the triggering mechanisms of launching Absorptive Capacity Process (ACAP) when activated by an internal scouting entity. This paper begins by defining the process of Absorptive capacity and specifically the Insemination Capacity proposed by (Imbert and Chauvet, 2012) which is the central concept of our research. Next section presents the research setting: the role of the studied entity within our sample in a French automotive firm, the automotive sector being one of the best examples to illustrate the importance of managing external knowledge (Beaume et al., 2009; Ben Mahmoud-Jouini et al., 2007; Schulze et al., 2014; Takeishi, 2001). The details of our data collection and analysis linked to ethnographic-inspired method are presented. Then, as a first-order analysis, we narrate how ACAP is triggered. Further, as a second-order analysis, we examine the mechanisms activated by the observed internal scouting entity. Finally the paper concludes by discussing our contribution to the knowledge of the Insemination Capacity: the identification of people-related mechanism completing knowledge-related mechanisms.

2. LITERATURE BACKGROUND

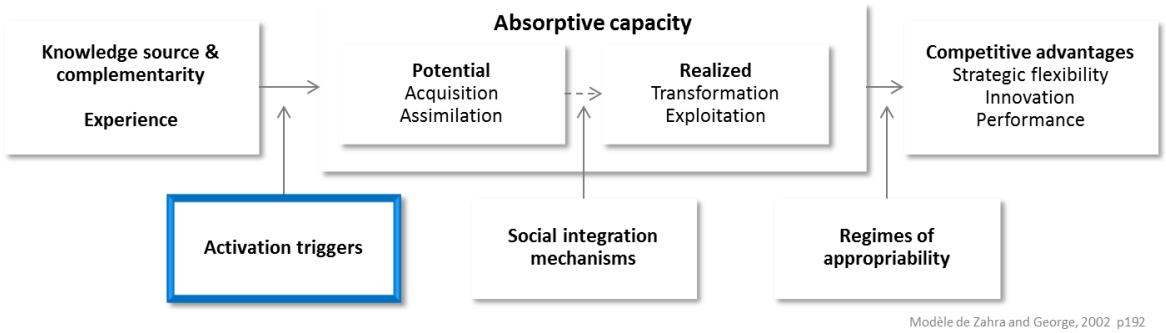
Chesbrough in his seminal work on Open Innovation suggests that, in a world of widely distributed knowledge, companies cannot afford to rely entirely on their own research, but should use external channels to get new ideas/technologies to markets (Chesbrough, 2003). A key challenge of an Open Innovation approach is to recognize the value of external knowledge, to acquire it and to transform it into innovation. This corresponds to the well-known definition of *absorptive capacity* by Cohen and Levinthal (1990) that is most mentioned concept of this literature (West and Bogers, 2014).

Absorptive Capacity (ACAP) is defined as "*the ability of a firm to recognize the value of new, external information, assimilate it, and apply it to commercial ends"* (Cohen and Levinthal, 1990). It consist a critical capability for the innovation capacity of a knowledge-recipient

firm. Since the seminal article of Cohen and Levinthal, the notion of ACAP is widely used and explored in different area of management sciences and is a reference for the Open Innovation literature (Dahlander and Gann, 2010). It also gives an interesting guideline to analyze the role for Purchasing as it focuses specifically on internal functional requirements for managing external collaboration (Johnsen et al., 2012).

According to Zahra and George (2002) who built upon the seminal model, the ACAP of a recipient firm is defined as "*set of organizational routines and processes by which firms acquire, assimilate, transform and exploit knowledge*" (Zahra and George, 2002, p.186). It is constituted of two successive dynamic capabilities: first the potential absorptive capacity when external knowledge is acquired and assimilated, which is then followed by the realized absorptive capacity when the knowledge is transformed and exploited [figure 1]. Other dominant models describing ACAP (Lane et al., 2006; Todorova and Durisin, 2007; Van Den Bosch et al., 1999) differ on the arrangements of the capacities composing ACAP, but agree that it is the recognition, at the firm level, of external knowledge that leads to its acquisition

Figure 1: a model of absorptive capacity



This model is preceded by antecedents such as the availability of external knowledge source and its complementarity with the recipient knowledge base, and the experience of the knowledge-recipient firm. It also includes two variables allowing realized ACAP: "*activation triggers*" and "*social integration mechanisms*". The activation triggers are "*events that encourage or compel a firm to respond to specific internal or external stimuli*"; the social integration mechanisms represent the social structure and the knowledge management system of this firm (Zahra and George, 2002). The activation triggers are also envisaged in terms of incentives to collect and share knowledge (Cohen and Levinthal, 1990; Zahra and George, 2002). But, because of the difficulty in observing, little research has focused specifically on these triggers when they relate to a specific sequence of ACAP (Imbert and Chauvet, 2012).

Activation triggers of ACAP are approached through studies about the role of internal and external innovation intermediary in technology transfer and diffusion. Literature on innovation intermediaries suggests that by facilitating the transfer of knowledge between organizations, they can increase both the ACAP of the recipient company and the extent of its knowledge base (Meyer, 2010; Whelan et al., 2011). In these works about innovation/knowledge/technological brokers, gatekeepers or boundary spanners, two main roles played by different innovation intermediaries are described in the triggering phase of ACAP: (1) the idea scout who identifies and exploits external knowledge and (2) the idea connector who identifies the relevant internal colleagues that are best equipped to convert this knowledge into an innovative outcome and that will hold such a task (Huston and Sakkab, 2006; Whelan et al., 2011). Such findings are revealed through analysis of organizational network analysis and innovation journey (Klerkx and Aarts, 2013; Mol and Birkinshaw, 2014; Whelan et al., 2011). The triggers activated by a single-actor are also approached through the lens of attention-based view that demonstrate the importance of the "*pre-selling and selling efforts*" of innovation intermediaries to decision makers for firm's knowledge acquisition (Monteiro, 2015).

Nevertheless, the studies about the role of these intermediaries "*do not stress, or detail, the interactions by the intermediary between the different parties*" (Howells, 2006, p. 719) and a need for further research is widely recognized (West et al., 2014, p. 809). Few works on that describe these interactions building on ACAP to study them are based on external innovation intermediaries, such as (Hargadon and Sutton, 1997; Imbert and Chauvet, 2012), both with design agencies. The formers stress that these external intermediaries facilitate knowledge transfers "*across people, organizations and industries*" via linking knowledge bases and helping the recipient and the source to transform the transferred knowledge. The latters have identified and described four mechanisms implemented by an external actor facilitating the initiation and development of a sequence of knowledge absorption in a recipient organization. These mechanisms activated externally of the recipient firm by an intermediary firm are described as the Insemination Capacity of the latter that impact the absorption capacity of the former (Imbert and Chauvet, 2012). This capacity is divided into: (1) adopt knowledge, (2) select knowledge, (3) contextualize the knowledge and (4) preserve it (table 1).

Table 1: external Insemination Capacity described by Imbert & Chauvet (2012)

	External intermediary role	Results	Examples of action
Knowledge adoption	Organize exchanges (creativity workshops) with client's team	Identify and understand client's knowledge base	Organize exchanges (creativity workshops) with client's team
Knowledge selection	Eliminate low value external knowledge	Avoid client's saturation in front of too much ideas	Eliminate low value external knowledge and distil through the time the disclosing of new ideas
	Distil through the time the disclosing of new ideas	Increase value recognition choosing the "right moment"	
Knowledge contextualization	Explain external knowledge	Facilitate the recognition of knowledge value	Explain external knowledge and adapt it to client's people and processes
	Adapt external knowledge to client's people and processes	Facilitate the assimilation of knowledge	
Knowledge preservation	Accompany team during transformation, conduct change internally	Guide knowledge transformation, reduce internal knowledge asymmetry	Accompany team during transformation, reduce internal knowledge asymmetry. Keep and recall recipient firm's objectives
	Keep and recall client's objectives vs. team short term's objectives	Preserve knowledge value during transformation phase	

Adapted and translated from Imbert & Chauvet, 2012

In this paper we are looking to understand how external knowledge becomes incorporated into a firm by investigating the role of internal innovation intermediaries implicated in the Open Innovation approach of a knowledge-recipient firm, DELCAR (a pseudonym). Our research question is: *what are the mechanisms that may trigger a sequence of absorption of new and external knowledge for a recipient organization?*

3. METHODOLOGY

Because the very first steps of a knowledge absorption sequence in a continuous process of inbound open innovation are very subtle and volatile phenomenon, their observations is not possible through surveys or evens interviews. It requires an embedded methodology with a direct observation of the actions realized by a knowledge recipient firm. Thus, data collection was done through an ethnographic-inspired methodology: participating-observation within the Innovation Purchasing Department of a division of a French automotive tier-one supplier. The data were analyzed by focusing on the approach developed by this department to identify new innovative suppliers and potential innovations leveraging external knowledge. It was made sense of it through (1) the narration of triggering sequence followed by (2) the analysis of the identified mechanisms in the insemination journey that leads to a sequence of knowledge absorption.

3.1. DATA COLLECTION: AN ETHNOGRAPHIC-INSPIRED APPROACH

Data collection for this research was realized through an 18-month participating-observation done by the author and variously corroborated (figure 2). Inspired by ethnographic-inspired methodology, participating-observation is a source of evidence for case studies positioned between direct observation and participant-observation (Yin, 2009, p. 102). It specifically differs from the latter because the role of the researcher is more active on the ground of study, its participation in the life of the studied organization is not marginal (Gold, 1958; Tedlock, 1991). The researcher is both an actor of the organization and a scholar. He forms a part of his ground of study and was assuming various roles in a situation of case study (Yin, 2009). He doesn't only observe his ground of study but also its own participation.

This ethnographic-inspired approach allows observing phenomenon difficult to observe and facilitates the collection of diversified data. It allows a direct and "real-life" access to the events that should not be possible by other means (Yin, 2009). It also permits enlightening practices that can be considered commonplaces by practitioners and academicians but are important micro-foundations of firm's capabilities. Lastly, by adopting the point of view of an actor of the case study, this type of data collection allows a higher degree of freedom to investigate the studied phenomenon (Donada and Mbengue, 1999, p. 239).

In this research, the participant-observant was integrated into the Innovation Purchasing Direction two days a week. He was participating in the studied events through the practice of the same work than the firm's actors following the directives of the Innovation Purchasing Director and the routines of its department. The primary data collected is made of an over-700-page research notebook that chronologically compiles the notes taken by the participating-researcher, the exchanged emails (received and sent) including the attached documents and copies of screen.

Figure 2: Sources of evidence

Primary data	Description
Participating-observation	Electronic and paper research notebooks compiling ground notes and exchanged emails – 770 pages for 156 days of observation Presentations and documents realized through the participation of the researcher Participation to 8 fairs and 7 BtoB speed dating: more than 200 potential suppliers met, 99 presented, 49 investigated, 19 suppliers met and 24 {idea-source} studied, 11 "innovation idea from supplier" forms endorsed and 3 {idea-source} still under investigation

Source of validation	Description
Confidentiality raising	Narration submitted to Innovation Purchasing director (and creator of the function) to raise confidentiality
Firm quality documentation update	Quality management system describing the processes of Innovation Purchasing directions. The process related to scouting was updated further to the first results of this research. This updating was approved by Directors of Purchasing, Quality Purchasing, Innovation Projects, R&D and Marketing
Secondary data check	Innovation Purchasing Direction electronic archives . Presentations and steering files realized by Innovation Purchasing team in the last 5 years by 2 former Innovation Purchasers

The notes describe the main interactions related to the studied cases: the meeting reports, both internal and external, as well as the remarks exchanged at the coffee machine. For this research, we extracted data related to observed initiatives of scouting innovative ideas out of DELCAR until the first phase of its innovation process. The activities that are described in this research were realized by the author, as well as the two full-time actors of the Innovation Purchasing Direction. They are reported rendering the words of the organizational members. Data collected are mostly confidential and are available under the control of DELCAR.

3.2. DATA ANALYSIS

Data analysis methodology was conducted in line with the ethnographic approach used in management research. The first phase of data analysis was done through the use of the technique of "*floating attention*": all the data collected was read from beginning to the end to be influenced by the entire material as a whole and identify recurring themes and surprising facts (Dubois and Gadde, 2002; Dumez, 2013). It led to the development of the theme of this research through the confrontation of the result of innovation scouting actions led by the Innovation Purchasing Direction and by other actors of the firm: the same external actors were met in quite the same conditions but the observed entity was the only one to provoke ACAP sequences identified as an active cooperation of R&D teams with a knowledge-source firm.

A literature review was realized. The research question was determined. In line with the data collection ethnographic-inspired methodology, a narrative approach was used for the first-order analysis to describe the observed dynamic phenomenon (Dumez and Jeunemaitre, 2006). The narration was focused on a triggering sequence that starts by innovation scouting through speed-networking business meetings. It was reported following the procedure for case study report proposed by (Yin, 2009, p. 179). We defined the end of this sequence as the production of an "*Innovation idea from supplier*" which marks the recognition and understanding of potentially new knowledge outside the firm through exploratory learning, though representing the first phase of potential ACAP (Lane et al., 2006). For the second-order analysis, the four triggering mechanisms of ACAP described by (Imbert and Chauvet, 2012) were used as a framework to examine our narration.

The biases linked to this type of research were taken into account. First order-data was collected on a long period of time: 156 days of participating-observation. To ensure construct validity, multiple sources of evidence were used to validate data (figure 2). Primary data was corroborated with electronic records of the department of the main outputs of such triggering sequences when realized by former Innovation Purchasing manager. Furthermore, our analysis was internally validated through the validation of the narration – which is a condition for lifting the confidentiality of data –and by the actualization of the observed process in the quality system of the studied organization – this process being validated by the Directions of Purchasing, R&D and Marketing. External validity and reliability of the analysis was completed through exchanges with academics (2 seminars internal to the author's laboratory and 2 international seminars, one in an Open Innovation/ACAP track, the other in a session about Innovative Buyer-Supplier Collaboration) and with practitioners from other companies, sectors and functions.

3.3. RESEARCH SETTINGS

3.3.1. The global organization

This research took place in DELCAR (pseudonym), a division of one of the top automotive worldwide tier-one suppliers: the DELAUTO group (idem). The independent divisions of DELAUTO are in charge of producing different parts or modules of cars. DELAUTO's annual purchases amount to nearly 60% of net sales value. Within DELAUTO, the DELCAR

division represents a third of the general turnover and employs around 40% of the worldwide staff. DELCAR is an international leading producer of an automotive part that is key for both the security and the design of a car. In DELCAR, the perimeter of innovation is about new products, services, technologies and production and supply organizations or processes, which are positioned "*ahead of customer awarded program"*: before any contractual sales agreement with automotive carmaker.

Innovation projects are ruled within Research & Development direction. They are led by Innovation Project Managers who recruits their functional team, for the time of the project, within Technology Research and Development departments. Innovation projects are managed by a 5-phase stage gate process (Cooper, 1990), from fuzzy front end to the transfer to Program Development teams. Every gate review is presented by the Innovation Project Manager to representatives of Technology Research departments, to Sales, Marketing and Innovation-Purchasing managers; managers from Business units and life-cycle sourcing are invited but rarely present.

The creation of a new innovation project is performed by the validation of the first gate by the review committee. In fuzzy-front-end, the innovative ideas presented, as potential new innovation projects, can come from inside or outside DELCAR. DELCAR is considered a creative firm in the automotive industry and officially develops an Open Innovation approach. The scouting of external knowledge coming from outside the boundaries of the firm is extended: many internal actors have a part to play. If it can be done by all the actors of the firm, four functions include it in their job descriptions: Technology Strategy managers, Technology Research experts, Advanced Innovation business developer and Innovation Purchasing managers. The two first functions produce electronic newsletter that sum-up their scouting discoveries and establish research partnership agreements with external knowledge-sources. The last function is the one observed in this paper.

3.3.2. The role of the observed organization: the Innovation Purchasing Direction

The Innovation-Purchasing Direction of DELCAR is an eight-year old department within DELCAR Purchasing worldwide organization and is managed since then by the same Director. This oldness and continuity allow the raise, and observation, of routines in its working modes and its interactions. Since its creation, the Innovation-Purchasing Direction

has the role to search for, select and follow-up with external resources that can bring in extra innovation capabilities to DELCAR (Figure 4). Innovation Purchasing staff never exceed 3 full-time employees since then, which represent 1% of the Purchasing staff. Its personnel are based in the two main Research and Development sites, with a facilitated access to the offices and laboratories of Innovation projects and Technology Research. It has the mission to manage the implication of external organizations in co-innovation projects from scouting to negotiating joint innovation contracts with external organizations. It makes internally the interface between R&D and other Purchasing entities.

Figure 4: Innovation Purchasing description since 2006 – abstract

- Support the R&D organization to find and select the right supplier in line with the global purchasing strategy
- Identify potential partners for new needs:
- Prospect new suppliers with support from commodities
- Activate idea generation from suppliers with support from commodities
- Contribute to technological survey
- Work in network with R&D, Marketing, Commodities, Legal
- Be a permanent member of the Innovation Committee

The innovation scouting targets for this department are every new idea that can make the automotive part lighter or cheaper to produce or enhance its design, these ideas being supported partly or entirely by an external organization. Innovation sourcing is also realized to answer expressed demands from Innovation project managers and technology roadmaps developed by Technology research teams. The scouting for external ideas is not only focused on NPD targets. New ideas can be innovations in process or organizational methods, or brand new technologies. The target can be either incremental or radical innovation. The specificity of the innovation scouting realized by DELCAR's Innovation Purchasing Direction is the search for new innovative ideas, technologies or products coupled with an external organization source of knowledge. This knowledge-source must have the capacity to accompany DELCAR in the development, assimilation and application of this innovative idea. The role of Innovation Purchasing is neither technology intelligence nor patent scouting: Innovation Purchasing is looking for dyads {idea-source}.

The scouting is done through participation in professional fairs, business meetings and classical market and economic intelligence. The participation at such events is chosen according to the proximity of the sector and of the technology used or potentially used in automotive industry. For example, the exploration of Innovation Purchasing can be done

within the aerospace sector or in events dedicated to nanomaterial. Innovative {idea-source} can also originate from spontaneous contribution of the source firm through a public mailbox on DELAUTO's website or as a result of a suggestion made by any internal actor in the company.

The value of an innovative {idea-source} is officially recognized by DELCAR through the production of an "*Innovation idea from supplier*" form, whether the knowledge-source is not necessarily a supplier. This form, registered in the quality system, is constituted of three sections in one page:

1. A synthetic presentation of the source organization and of the innovation idea
2. The description of the idea with the potential application on the part produced by DELCAR, its insertion in the production process and the provided advantages: cost, design, weight. This section is also illustrated by schemes or photos.
3. The endorsement by Innovation Purchasing members implicated and by one Research and Development who confirms that "*R&D is going to proceed with detailed analysis, seeing realizable* (this innovation idea) *with a probability above 60%*".

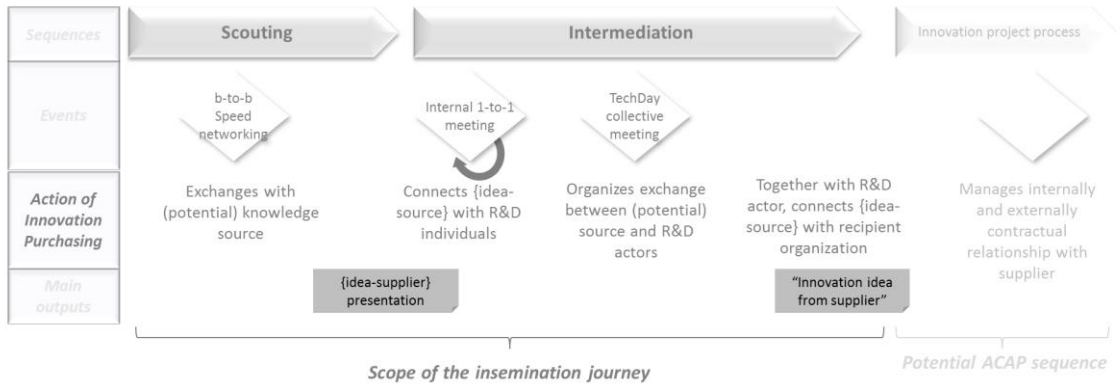
This is the first step of DELCAR's official recognition of the potential value of external knowledge. When the {idea-source} is endorsed by an Innovation project manager, it leads to the presentation of a new co-innovation project in order to pass the Stage 0 of the innovation management process. When it is endorsed by a Technology Research expert or manager, it leads to an advanced investigation in cooperation with the source organization, under a non-disclosure agreement *a minima*, which an objective of later launching new projects; the endorsement of an {idea-source} by Technology Research can also be realized further to first tests in DELCAR's lab, which extends the delays of recognition. Further, if such {idea-source} is validated, it is prepared by Technology Research actors to be integrated in an Innovation project following DELCAR's Innovation Management System. Further, in case of acquisition of external knowledge, Innovation-Purchasing Direction's role is to accompany the R&D and Marketing Departments for selecting and contracting with the source-organizations.

4. RESULTS

4.1. FIRST-ORDER ANALYSIS: NARRATION OF A TRIGGERING SEQUENCE

A complete insemination journey that conducts to the absorption of external knowledge begins by a scouting sequence and is followed by an intermediation sequence (figure 5). We focus our narration on a scouting sequence that begins with the preparation of a business-to-business speed-networking day. It is a routine of the Innovation Direction members to attend to such events in order to source new innovative {idea-source}.

Figure 5: narrated implication of Innovation Purchasing in DELCAR's ACAP



These events are organized, in parallel or independently of business fairs, in order to facilitate the meetings of potentially complementary companies – mainly suppliers and clients. Each event is around a central theme: industrial sector, type of material or subsystem, innovation… The meetings are planned through a selection process of both supplier (knowledge-source) and client firms (knowledge-recipient), following rules defined by the organizers. The day of the event, supplier and client firms meet in a dedicated box, during around 30 minutes. 3 to 20 meetings can be scheduled.

A typical meeting begins by the presentation of the source-organization, its technologies, its products… Then, the Innovation Purchaser quickly presents DELCAR, its needs, specifies the target (innovative ideas for DELCAR subsystem), and explains the next steps after this meeting. Sometimes at this moment, the two interlocutors decide to stop the meeting, usually when the source-organization offers only "on the shelf products" and has no innovation will or capacity.

> *"If there are any opportunity, I will be your first ambassador in front of DELCAR's R&D"* – example of verbatim from Innovation Purchasing actor during a speed-networking meeting

The following step is a recipient-directed explanation of the technologies and products developed by the source-organization that could present potential usages for DELCAR. Both interlocutors explore together potential innovative ideas and try to find the ones to present to DELCAR's R&D staffs that would warrant a meeting. The Innovation Purchaser can ask its interlocutors to help him to define the best internal targets and the adapted pitches. For example, for an innovative gliding solution adapted to metal parts, three types of R&D personnel can be interested: tribology experts, material experts and innovation project managers working on gliding sub-systems. And, for each, the argument can differs and when the proposed solution can be a major stake for one, it can be minor for the other. The meeting concludes on a recall of the next steps: more documentation, specific explanation and / or samples to send to DELCAR.

Once complementary material is collected, back at the office, the Innovation-Purchasing department passes through the collected materials, supplier by supplier. A hierarchical list of potential innovative {ideas-sources} is made and potential inside holders of the external knowledge are targeted (mainly from R&D and rarely from Purchasing and Marketing). Following this hierarchy, a slideshow is prepared presenting briefly these innovative {ideas-sources}, with illustrations and targeted applications: the title presents the targeted contribution to DELCAR's part or final user and the core expounds upon technical details, with schemes or photos, and on the situation of the source-organization and on its intimacy with the automotive industry or with large-series' industries.

This slideshow is emailed to the R&D targeted people and to the Innovation and Purchasing hierarchies; reactions are rare (3 demands on more than 150 ideas proposed by mail). This slideshow, together with supplier documentation and samples, is presented to the people from R&D in one-to-one informal and formal meetings by Innovation-Purchasing actors. These presentations are done by bounces, looking for the interested people that could recognize the value of the new knowledge and hold it internally. Specific investigation on presented {idea-source} can be required to Innovation-Purchasing – which is realized with the source representative who at this stage can recognize that the unfeasibility of the idea in the automotive sector.

People from R&D are also asked for their ideas of other targets: another use of the presented technology or another internal actor of DELCAR that might be interested by the subject. Some {ideas-sources} are eliminated because of the idea or of the supplier that doesn't match with DELCAR, or both. The presentation of an {idea-source} can be updated along the process (figure 6).

Figure 6: examples of successive adaptation of {idea-source} (anonymized)

Generic presentation by source	Title on slideshow	Title of TechDay	Title of Innovation Idea form	Holder
Nano-electro-mechanical sensors	Innovative sensors	Innovations on sensors (pressure, force, and temperature), communicating sensors and integrated sensors	Joystick for movement detection for application on Y	Senior expert on product design research
Fixation with technology X - mechanical assembling		Multi-material mechanical assembling solution	Wear-free and resilient metal thread that can be inserted in high-quality plastics	Specialist of assembling process
Chock absorption system for sportswear	New chock absorption system			
Electronic engineering service specialized in made-to-measure solutions	Development of sensor-related systems for applications on DELCAR parts	Development of sensor-related systems for applications on DELCAR parts		
Automatisation solution of logistics flows	Automatic geoguided vehicles for plants' logistics	Automatic geoguided vehicles for plants' logistics		
New materials for automotive	Fabric for function Z and new composites	1 - X Research Center - last innovations on advanced electronics, composite materials and simulation 2 - Textile for function Z - sample presentation	Conductive paint for automotive part surface that could perform better than existing solution	Managing expert on product design research
Easy solution for controlling daily objects from a mobilephone	Universal electronic card for communication	HMI (electronic card combined with RF communication and mobile application)	Propose the possibility for the automotive occupant to send information wireless and directly from its communicating device to the car system	Innovation project manager on electronics

If there is an interest for a potential {idea-source}, the role of the Innovation Purchasing direction is to organize a "*Techday*". A Techday in DELCAR is a meeting between the supplier and internal interested people: the potential "holders". It is organized with them by the Innovation-Purchasing Direction. Selected people from Innovation Project and Technology Research Directions, and Commodity purchasers are invited regarding their proximity to the subjects. They are also requested to transfer the invitation to any concerned people. Such a meeting consists mainly in presenting the potential supplier to DELCAR people in a 2-hour timeframe and exchanging about the stakes and processes of both companies.

The objective of a "*Techday*" is to explore potentials of cooperation between the two firms. Each firm presents its main respective needs and solutions to the others regarding the subjects targeted by the Innovation-Purchasing Direction with the internal interested actor(s). The

presentation of samples and feedbacks on the application of their solutions with other companies and/or sectors are appreciated and facilitate the increase of interest of DELCAR actors. After such meetings, some samples can be sent to DELCAR in order to proceed to tests. Business cases can be requested in order to evaluate that price-volume can be in line with the constraints of the automotive sector.

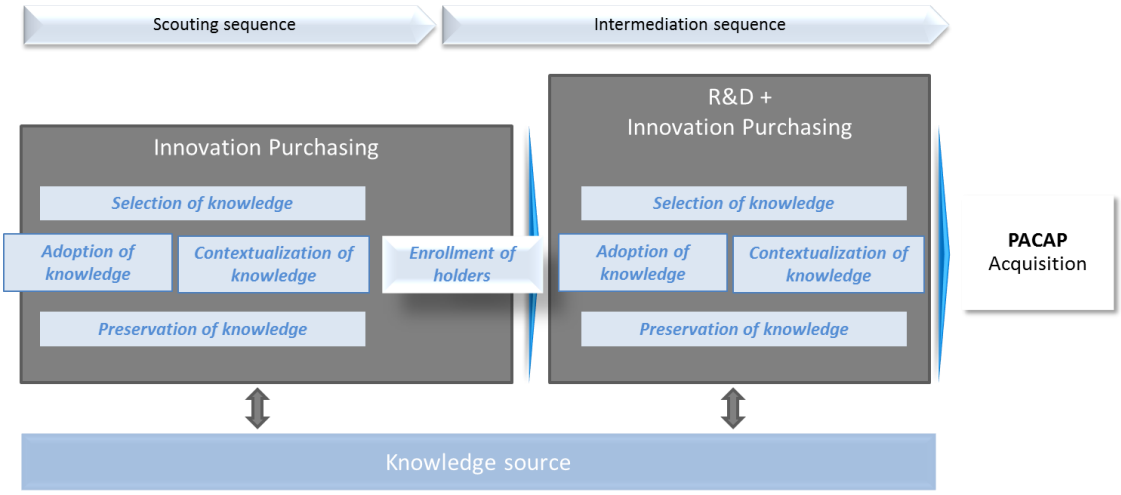
> *"Could you send us an example of a business case of your (new technology) solutions on a non-confidential development with one of your clients? We would specially evaluate that the over-cost on material doesn't exceed 2 to 3 euros to our standards. The idea is to work on an example that is not too complex"* – example of verbatim from R&D engineer to the representative of a private research center during a Techday meeting

When sampling or business casing is not possible or worthwhile – or after the test completed and the business case recovered – the role of the Innovation-Purchasing people is to meet the participants – most importantly the interested people and their managers – to receive their feedback on the meeting and on the potential of any {idea-source} raised during the meeting (or further to the meeting). If there is any, an "*innovation idea from supplier*" form is filled out by Innovation-Purchasing and approved by one R&D manager with or without amendment. At this stage the innovative {idea-source} is prepared to enter in the innovation project management process. When approved at the first stage of DELCAR innovation process, the innovation project with the supplier can be officially launched.

4.2. SECOND–ORDER ANALYSIS: EXPLANATORY FRAMEWORK

In the analysis of the insemination journey of new knowledge coming external sources, we find five mechanims activated by the observed innovation scouting entity (Figure 7).

Figure 7: the insemination journey



Four mechanims are directly related to knowledge and activated differently in the two phases of the triggering sequences: (1) selection, (2) adoption, (3) contextualization and (4) preservation of knowledge. The fifth mechanism is related to the identification and enrollment of internal holders within R&D actors that early recognize the potential value of the external knowledge for DELCAR.

During the scouting sequence, the four knowledge-related mechanisms are activated by Innovation-Purchasing along with the external knowledge source – the represantatives of the supplier firm. During the intermediation sequence, these mechanisms are first combined with the identification of internal holders coming from Research & Development Direction. Then, when the internal holders are identified, the knowledge-related mechanisms are activated jointly by Innovation Purchasing and R&D holders. The scouting sequence leads to the recognition of the value of new, external information at the individual-level. The intermediation sequence leads to the recognition of the value of new, external information at the organization-level.

4.2.1. 1st mechanism: selecting knowledge

We observed that a knowledge selection mechanism occurs throughout the triggering sequence. At the beginning of the sequence, the greatest number of possible {ideas-sources} is eliminated. The Innovation-Purchasing actor begins by roughly evaluating the compatibility of the two knowledge bases. This evaluation is based first on the knowledge base of Innovation-Purchasing individually and as a team. Then the evaluation is based on the

knowledge base of R&D individuals to whom the {idea-source} is presented. They act as spokesmen of their area of expertise knowing the history of the recipient organization (and sometimes even the potential supplier) and possessing the technological knowledge close to the knowledge base of the potential supplier. Finally, the selection is completed institutionally via the insertion, or not, of the {idea-source} in the innovation management process.

This selection is based on complementarily between the two bases of knowledge organizations, and on other criteria. The scarcity of resources available in the recipient organization plays a role in the selection of {idea-source}. The time devoted to the discovery of new sources of knowledge by Innovation-Purchasing, as well as the time available to explore the potential of these sources by R&D, is limited. This leads to tradeoffs based on availability of resources. If Innovation-Purchasing begins by selecting knowledge during the scouting sequence, its action during the intermediation sequence consists in accompanying the selection of knowledge by R&D actors. Innovation Purchasing performs an intermediary role in collaboration with the internal network. And, this intermediation consists also in finding the appropriate time to introduce an {idea-source} to a potential holder, in order to limit the impact of resource scarcity but also in response to changes in technology or business strategies of the recipient organization.

4.2.2. 2nd mechanism: adopting knowledge

During the scouting phase, the action of Innovation-Purchasing consists of understanding the knowledge offered by the supplier firm. Presenting to the supplier its internal role after their meeting, Innovation-Purchasing invites the supplier to provide him the elements to present internally the external knowledge. Innovation-Purchasing adopts the external knowledge and adapts arguments about the technologies and usages potentially offered by the supplier. Through its questions and the reformulation of the answers brought by the supplier firm, the Innovation-Purchasing actor is first able to compare both knowledge bases and then get the materials that will allow lately this comparison by DELCAR's R&D actors. The demands for samples, for technical files or for additional presentations are other mechanisms for adoption of the knowledge as they provide a basis for deeper understanding and comparison.

During the intermediation phase, Innovation-Purchasing plays a role of intermediary between the supplier and the internal actors that are invited to identify the value of the external

knowledge for DELCAR. Innovation-Purchasing actors in their meetings with R&D actors push them to articulate and specify their own knowledge base and link it to the knowledge base relative to the presented {idea-source}. This mechanism of adoption of external knowledge conducts to the selection mechanism when the knowledge is recognized as potentially valuable.

4.2.3. 3rd mechanism: contextualizing knowledge

For a selected {idea-source}, the external potentially valuable knowledge must be translated into a form that can be understandable and seen as relevant by the recipient firm actors. In that case, the mechanism of contextualization is used to facilitate the assimilation of external knowledge in order that it can fit into the standards and standard processes of the recipient organization. The mechanism of contextualization is activated alone by Innovation-Purchasing during the scouting sequence. It is done through the presentation of potential applications of the external knowledge and through the use of samples, demonstrators, selected images or documents, transfer of videos, formulation of potential uses… These intermediate objects are used in order to present the knowledge in an understandable form to the potential internal holders.

During the intermediation phase, knowledge contextualization is adapted throughout the exchanges with R&D actors and especially with those who are able to identify potential holders; it is translated by the successive adaptation of the presentation of the potential {idea-source} (cf. figure 6).

Once a "*Techday*" meeting is accepted, Innovation-Purchasing invites the targeted audience to take part to it. The supplier is briefly presented and the object of the meeting – the potential idea – is presented in order to get the maximum participants. After the Techday, the contextualization takes a more formal role: if the {idea-source} is evaluated as potentially valuable for DELCAR, the R&D holder and Innovation-Purchasing implicated actors commit formally. "*The innovation idea from supplier*" form is filled. It institutionally contextualizes the external knowledge that becomes potentially valuable "*at 60%*" for becoming a future innovation project or being integrated to current innovation tracks.

4.2.4. 4th mechanism: preservation of knowledge

The external knowledge is preserved by Innovation-Purchasing through the stocking and the production of the materials provided by the suppliers or produced during the adoption and contextualization mechanisms: slideshows, business cards, technical files, samples... The preservation mechanism is also activated by Innovation-Purchasing actors through the transfer to R&D experts of these materials to ensure that the knowledge will be kept for DELCAR by the internal reference on the concerned topics. During the "*TechDay"* events, the Innovation-Purchasing actor can contribute to enhancing external knowledge through reminding R&D of some supplier's capacities or ideas that are not spontaneously presented.

Internal knowledge is also preserved by Innovation-Purchasing actors all along the sequence, and specifically during the direct exchanges between R&D and the supplier, through specific attention to the disclosure of confidential information. Innovation-Purchasing ensures the respect of confidentiality through the evaluation with R&D spokesmen of the level of confidentiality of the topics that might lead to the proposal of a non-disclosure agreement to the supplier and to specific briefing of *"TechDay"* participants before the meeting.

4.2.5. 5th mechanism: enrollment of holders

The mediation sequence is characterized by the people-related mechanisms activated by Innovation-Purchasing in order to first identify the potential R&D holder(s) of the {idea-source} and then to enable their appropriation of this external knowledge. Innovation-Purchasing looks for connecting external knowledge with the people that are best equipped to recognize its value. These connections are based on official and personal networks of Innovation-Purchasing and on the networks of the R&D actors that do not reject the {idea-source} and that relay the information to or designate potential holders.

Once a holder is identified, Innovation-Purchasing facilitates its engagement through a personal implication in the activation of the knowledge-related mechanisms. The holder selects the {idea-source} and shows its interest as a spokesman of its area of expertise. Then he contributes to the translation of external knowledge all through the sequence. Innovation-Purchasing does not only ensure the connection with internal holders but also accompanies their adoption of the external knowledge. This enrollment through their participation in the

knowledge related mechanisms will later reinforce their implication on the innovation project, once validated at the firm level.

5. DISCUSSION

5.1. THEORETICAL IMPLICATIONS

Our objective was to explore the internal Insemination Capacity of a knowledge-recipient firm through the study of the mechanisms activated by an internal innovation scouting entity likely to trigger the absorption of external knowledge. This perspective is rarely adopted, mainly due to the difficulty of observing such events (Imbert and Chauvet, 2012). These authors and (Whelan et al., 2011) are among the rare academics to have described and analyzed such a sequence. Their analyses were grounded on two categories of actors. The former studied a consulting firm (intermediary) and the recipient-firm (its client). The latter identified two internal roles: *"(1) Idea scouts act as the R&D unit's antennae, tuned to emerging scientific and technological developments that are broadcast from around the globe. (2) Connectors are the hub of the company's social network, the go-to people of the organization. Much of their expertise lies in knowing who is doing what and who can do what"* (Whelan et al., 2011, p. 39).

Our results allow us to highlight the role of a singular internal actor of a knowledge recipient firm that plays both roles through the activation of the five described mechanisms that lead to the triggering of an ACAP sequence: an internal Innovation scouting entity. Being part of two systems, it plays the "*role of a go-between and interpreter*" (Crozier and Friedberg, 1977, p. 86) between innovative suppliers and innovation units. As a firm's absorptive capacity is formed from an overlap in individual members' knowledge structures as well as the transfers of knowledge across and within organizational subunits (Roberts et al., 2012), in the triggering phase of an ACAP sequence, the Innovation scouting entity evaluates, prepares and realizes the first steps of this overlap – which is a role of a knowledge broker. As an interpreter being part of the two systems, he plays a pivotal role in transforming organization's resources (Ben Mahmoud-Jouini et al., 2007).

In our study, we identified the knowledge-related mechanisms described by (Imbert and Chauvet, 2012) when they were activated by an external intermediary firm: selection,

adoption, contextualization and preservation of knowledge. As though, we demonstrate the applicability of their work to internal innovation intermediaries. The description of these mechanisms also contribute to nurture the works on knowledge transfer (Nonaka and Toyama, 2003) through the conversion of tacit knowledge into implicit knowledge and vice-versa. We confirmed the activation of such knowledge-related mechanism first by an internal intermediary function and then jointly by this function and R&D actors, in a double loop of knowledge transfer. We also highlighted the mechanism of enrollment of these individuals being spokesmen of an internal complementary knowledge base and becoming allies for the potential absorption of the external knowledge through this mechanism (table 2).

Table 2: mechanisms of Insemination Capacity

		Intermediary's ability	Objective	Examples of action
Knowledge-related mechanisms	**Knowledge adoption**	Recognize, pull, and adapt knowledge from knowledge-source	Reduce the gap between the respective knowledge bases of intermediary and recipient firm, by identifying valuable knowledge and drawing in external knowledge.	Exchanges with knowledge-source to understand their knowledge
	Knowledge selection	Select valuable knowledge for the knowledge-recipient firm (interest and timing)	Avoid client's saturation in front of too much ideas, and Increase value recognition choosing the "right moment"	Eliminate low value external knowledge and distil through the time the disclosing of new ideas
	Knowledge contextualization	Adapt the knowledge to the context of the recipient firm's organization / of individual actors and entities	Facilitate the recognition and the assimilation of knowledge value	Explain external knowledge and adapt it to internal actors, recipient-firm context and processes
	Knowledge preservation	Guide knowledge exchanges an be the gatekeeper, internally and externally	Preserve the created value from threats created by source and recipient firm as the transfer unfolds	Accompany R&D actor/team during transformation, reduce internal knowledge asymmetry. Keep and recall recipient firm's objectives Store knowledge (electronic, paper and samples)
People-related mechanism	**Holder enrollment**	Identify potential R&D holder(s), convince and enable their appropriation	Get the value of external knowledge recognized from individual-level to firm-level Avoid later Not-Invented-Here syndrome	Involve actor(s) in the adoption, selection, contextualization and preservation of knowledge Complete and approve the description of the knowledge value

Adapted and extended from Imbert & Chauvet, 2012

Through these findings, we intersect with the works of innovation sociologists Akrich, Callon and Latour on the role of intermediaries and on the necessity to recruit good spokespersons in order for the innovation to succeed (Akrich et al., 2002a, 2002b); which is in line with the results of academics working on Innovation intermediaries through network analysis (Whelan et al., 2011). We also intersect the results of Monteiro (2015) about the importance of pre-selling external knowledge for the performance of knowledge sourcing and extend it to "ground actors" when his work is focused on decision makers. With this exploration of the concept of internal Insemination Capacity, we extend their results to Open Innovation literature where the Not Invented Here (NIH) is recognized as a major obstacle to external

knowledge absorption (West and Bogers, 2014). The activation of the described mechanism, both people and knowledge-related, appears to be a remedy for such a syndrome.

The use of the Absorptive Capacity perspective and definitions for this case study led to another contribution to Open Innovation literature. We differentiated the activation trigger and the potential ACAP. It conducts us to choose a method for identifying in our material the boundary between these two succeeding states. The result is that the first state induces the recognition of external knowledge at individual-level, or ground actor level, when the second is at the firm-level, or at the decision-maker level. As such it underlines the importance of conducting cross-level analysis for studying Open Innovation, and specifically getting insights on NIH that are not only related to the cultural side of such a stake.

5.2. MANAGERIAL IMPLICATIONS

The first managerial implication of this research is a contribution for the efficiency of inbound Open Innovation practices through the development of Insemination Capacity. For top managers, generating buy-in of operational managers for the implementation of innovation projects is an uphill battle. Through the identification of the mechanisms that triggers absorption of external knowledge, we suggest incorporating in their acquisition process of external knowledge a step dedicated to self-designation of internal holders of the project. For managers it implicates that in the selection process of external sources and ideas, a specific attention must be dedicated to the incorporation of the future "ground actors" of the project in order to get their further personal implication. It means that change has to be managed at the level of Open Innovation projects, and that top-down communication of Open Innovation scouting initiatives needs to be completed by bottom-up activities. Knowledge-related mechanisms need to be completed with people-related mechanism.

The second managerial implication relies on the distinction of an internal intermediation role that allows to involve both internal potential heavy weight managers, here designed as the holders, and external organizations that may be reluctant to share their knowledge (Ben Mahmoud-Jouini and Calvi, 2004; Wynstra et al., 1999). The marginal position of the observed function regarding the two actors may be an opportunity to trigger such sharing in the fuzzy front-end stage of innovation, representing R&D in front of external organization and the external organization in front of R&D. Furthermore, it represents a potential of

efficiently distribution of resources between experts and pivotal roles to get external knowledge, in a context of limited resources. In the fuzzy-front-end of Open Innovation, it means beginning by leveraging first the pivotal actors that are making a first assessment of external resources before distributing their results to the right experts who can stay focused on their expertise.

5.3. LIMITATIONS

This paper has the traditional limitations associated with a methodology based on a single case study in one sector and specific context. It is a starting point for further research. An action research can be conducted in the same company in order to evaluate how this process could be improved in DELCAR and implemented in the other divisions of DELAUTO, in order to evaluate its reproducibility in the same sector before looking at other sectors. Our research question and our results should also be examined in regards to an innovation scouting function positioned within R&D and Marketing, and with the level of the technological expertise of such actors. Such investigations will improve the limitation associated with ethnographic-inspired methodology and increase generalization of our findings. Further research could investigate the relevance of such a position in other sectors of activities where the complexity of the knowledge bases are dissimilar to the one of an automotive tier-one supplier, for example in aerospace industry or in service industries. Other could also examine whether an Innovation-Purchasing position suits to an organization in regards of its size, especially of the size of its Research and Development department. There is wide room for developing studies that consider the role of Purchasing in early stages of Open Innovation.

6. CONCLUSION

In this article we underline the importance of people-related mechanism in the internal Insemination Capacity of a firm willing to develop an Open Innovation strategy. Our results demonstrate their link with knowledge-related mechanisms such as the selection, adoption, contextualization and preservation of external knowledge by internal actors in order to recognize its value, at the firm level, before acquiring it. These findings help us to build a better understanding of the functioning of the first step of inbound Open Innovation in action.

For managers, integrating this vision of Insemination Capacity would increase the internal buy-in of Open Innovation projects and decrease the failure rate due to NIH syndrome.

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