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Shaping partnerships between universities and SMEs within the open innovation framework

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ABSTRACT

Universities produce new knowledge from their research activity. Those results can be used to develop new solutions in order to offer to companies a sustainable differentiation facing their competitors. The process could be very fruitful for both actors. But in many case it is not obvious due to the different culture between the universes of companies and universities. This separation between those two worlds is more important for SMEs. SMEs without means of research ignores very often what it could bring. So which that is the size of the considered company, it is necessary to set up interfaces to establish a two side relation.

This paper presents an example to connect permanently universities to companies in a winning-winning relation within the framework of a strengthened process of innovation. The study case is from the Université de Nantes. The firm of the université of Nantes, a private company, transforms the results of the researcher works and produces usable innovating solutions. This private company ensures the double culture to act as interface between constraints of both environments.

Keywords : Open innovation, relationship between university and SMEs

1- INTRODUCTION

Theoretically universities and SMEs should have close and regular relationships for two reasons. First both are, for 20 years, highly encouraged to develop their innovative capacity and to increase their part as actors in the economic development of their region or country [1], [2], [3], [4]. Second as SMEs often experience difficulties in accessing technological and information resources, they are complementary with universities which could transfer them the results of their research [5], [6], [7], [8]. The cooperation between SMEs and universities thanks to the embodiment of new knowledge or technologies in marketable new products are supposed to contribute to economic development and employment within the region where they are settled [9].

In reality SMEs and universities seldom work together. [10] reported that in the early 90s' less than 5 % of the European SMEs participated to technology transfer
programmes of Higher Education Institutes. Two decades later, [11] estimated that only less than 10 % of French innovative SMEs regularly turn to external resources.

During the 80s’ and the 90s’, various attempts have been experimented, at the European level, in order to move universities and SMEs closer together. Ten years later, the balance of these experiments appeared mitigated [10], [4], [12]. The main criticism was that the experiments had insufficiently contributed to the expected economic development. Difficulties have to be overcome as we know, since the late 90s’, the importance for leveraging the competitiveness, of cooperation [13], [14] knowledge-based innovations, networking with public bodies and clustering of firms [15], [6], or in other words, open innovation [16]. The reasons of the frequent and reciprocal ignorance of both parties depend, on the one hand, of SMEs’ characteristics and, on the other hand, of the unsuitable offer of universities. This paper presents an organisational scheme set up in a French university in order to overcome these difficulties.

This paper, first, reviews the literature dealing with the discrepancies between companies needs (and especially SMEs) and universities offer. Second, it presents the case study of University of Nantes (France) which set up a private company to interact between research laboratories and companies in order to connect them permanently for building win-win relationships. Third, current benefits and limits of this organisational innovation are presented and discussed within the framework of open innovation.

2- DISCREPANCIES BETWEEN SMEs NEEDS AND UNIVERSITY OFFER

SMEs are nowadays fully recognized as important economic actors, as they contribute to developing employment and to maintaining economic competitiveness, despite their paradoxical situation about innovation. If they have specific abilities such as flexibility, creativity and closeness to their customers they have also to face limited internal resources [4], [14]. The lack of financial resources allocates for investment and the shortage of human resources jeopardizes research and development activities and the leveraging of knowledge and competencies. Low managerial resources and poor in-house expertise prevent them from accessing external resources. So limited resources are barriers in transforming their excellent customer knowledge into new products and services [14].

The personality, the profile and the motivations of the manager or the owner of the company are often determinant for the success of innovations [2], [17]. First owners are generally not used to delegate. Second, they are often suspicious about external help for reasons such as doubts about value for money, skepticism about generalist advice or preference for autonomy [4]. For these reasons they prefer, as external sources of information, informal channels with their usual business partners such as customers or suppliers rather than formal channels such as innovations agencies or universities. If prior trust relationships are preconditions to exchange valuable knowledge, the unawareness of external knowledge providers may seriously restrict the influences enabling or stimulating innovation [12].

SMEs are often specialized in a job or in a single technology. So they need, for developing innovation projects, to cooperate with other firms [2] [18]. They have
however no guarantee of success because of their lack of absorptive capacity [19]. It is why SMEs often call for a simplification in innovation approaches [20].

Universities are major providers of new knowledge and technologies through their traditional missions of education and research. For 20 years, in European countries, governments made increasing pressures on universities in order to achieve a third mission: contribute to economic development. Internal characteristics however hamper this ambition.

Universities are often huge institutions with numerous staff and research departments. Laboratories have generally not good knowledge of each other and are not well linked together [2]. So it is difficult for SMEs to contact researchers not only because they are outside of their business networks but also because in case that they would contact an academic, it would be confusing to reach the right person.

Technologies emerging from research activities often lack of readiness that forbids any fast marketing. Five to ten years may be necessary to recover investments with incomes that is too long when facing decreases in funding [8]. Laboratories are often source-(or supply-)oriented and can wish to transfer promising technologies, by intellectual interest or aspiration for notoriety, independently of any need. It is why then prefer to work with high-tech and already innovative firms. This leads to a mismatch between the targeted firms and those which really need support. Technology-following SMEs and structurally weak and inward-looking firm are generally ignored despite the fact that they should be a target group [10], [4], [12].

Organizational and cultural barriers [7] may also alter the collaboration between academics and SMEs. Researchers are used to participate to collaborative projects, to plan their activities, to record their data and to disseminate their results in order to submit them to pairs' criticism. SMEs' owner make their decisions alone, are often reluctant to formalize their ideas and to bring together the staff within the projects. Companies' managers or owners have an entrepreneurial approach. Some academics also have this profile whereas others are not interested in transferring knowledge or technologies to companies because, perhaps due to internal assessment system, they prefer to teach or to publish research results in academic journals. Researchers are guided by values such as public good, the improvement of certified knowledge or the competition for scientific recognition. Industrial are governed by values such as performance, efficiency or economic competition, private revenues.

According to the priority given by a university to contribute to economic development, to increase financial incomes or to gain scientific prestige, the transfer activities which will be pointed up will not be the same. The more fashionable transfer activities, for universities, are spin-off firms formation, patenting and licensing. They are also the more risky. Spin-off firms which successfully cross the "valley of death" [22] are often bought by large companies and then no longer bring any incomes to the university. Patenting and licensing activities are often of low value because of their technological immaturity, do not generate substantial royalties for the university [8] and do not meet the utmost SMEs' needs.

In order to move universities closer to SMEs, especially technology-following, structurally weak and inward-looking ones, without undermining their traditional
academic missions, cooperation should be resting on activities as consulting, continuing education, collaborative research, ad-hoc advice, networking with practitioners, informal technological transfer, conferences [21], [8].

As the alignment of universities and SMEs' needs and objectives is a major success factor and as a « one size fits all » approach [18] cannot be suitable because of partners' diversity, University of Nantes is experimenting for X years a new scheme which will be presented and discussed in the following sections.

3- CONTEXT OF THE UNIVERSITY GROUP CONCEPT

3-1 GENERALITIES

The economic development of territories and the improvement of the competitiveness of companies and more particularly SMEs require a constant innovation. The use of the resources of universities has to allow the companies it can benefit from sources of innovations strongly differentiating thanks to the new knowledge stemming from the research. This observation is not new but the relations between universities and companies remain at this time still too much disrupted to give their full measure. To deploy all the synergies and make that the system of transfer of universities can be set up for the largest number of companies, it is necessary to develop new approaches.

Universities collaborate for a long time with the socioeconomic world. However, in most of the cases, their activities stay composites of a multitude of individual links between the researchers and the companies. These rich relations remain regrettably separated some of the others. This established fact engenders no general dynamics. Only certain cases of partnerships have built up themselves on the long term. We are very far from seeing a systematic implementation of these practices. Actually, the universities do not appear as an economic partners to the eyes of companies. They are more often a reservoirs for the big companies in which they can come to look for the knowledge of a specialist according to their need. Furthermore, that is the big groups which come to look for these sources of innovation and almost not SME.

So the current stake in the relations of the university with the socioeconomic world is to place the university as an actor of the economic development of the territory for all companies. In this frame, it is important naturally to pursue and to strengthen the relations with the big groups but it is also essential to set up strong relations with the world of the SMEs. These last ones very often have no means to set up alone, processes of innovation. The university thus has to become also for these last ones a natural partner of their economic development in a strategy of opened innovation.

The innovation which is at present in the heart of all the economic policies, thus has to be the key word of all the relations of the university with the economic world whatever is the nature of these. The innovation passes not only by the technological transfer of the research, which is of course essential, but also by the valuation of the training aspect.

Indeed, for example student's simple project realized with a company can and has to be a source of improvement of the performance of a company, and thus potential
innovation. It's the same with the training courses. They are there often excellent keys for the starting up of long-lasting relations with a company. The recruitment of our students must be perceived at the same time by companies (and the students) as a link created with the university, and thus as a potentiality to reach the sources of innovations from the research and the expertise of laboratories.

The university must be recognized by the companies as being a partner allowing it to improve its performances and thus its competitiveness. The offer of the university presented to its economical partners and to social and political world has to thus be global.

The concept which we expose in this article aims at spreading a synergic partnership relation of the university with the whole socioeconomic world including the SMEs.

The "university group" is a new concept to allow the university to become a full actor of the economic development of territories. It rests on the integration of the historic jobs of the university (research and teaching) with the new jobs which are set up to insure the transfer of the knowledge outcomes of laboratories towards the socioeconomic world. These new jobs have to allow to transform the knowledge into exploitable sources of innovation by companies.

Teaching is one of the first aspects of this transformation of the knowledge. But, this first aspect must be however completed and it is a question of going farther by structuring the transfer of the new knowledge of the researchers. Those indeed have to be realized in a quasi-systematic way under forms directly usable by companies. This shape naturally will depend on the nature of the company applicant. If a big group can wish to have new source of innovation, he can wish to receive it directly in research result. Indeed, these large companies have their own researchers and service of Research and Development which will ensure themselves the transformation of this knowledge for their own needs.

However, it is not the same case for traditional SME. A solution in this irrefutable fact can be found in what one calls the open innovation. Within this framework, the companies entrust part of their Co-development to a third. The university could be this third and be used by them as supplier of sources of innovation.

A rich and multidisciplinary university could be so a source very rich in differentiation for a company. However, has the current hour, most part of time, the structuring of this job of transformation is generally insured by the researchers and even in a very individual way. This work thus comes in addition to their already heavy first missions (search, teach and administrate).

Three reports can be made in this aspect. The first one is that the working possibilities of the researchers are not infinite. The second is that if the researchers naturally have to participate in the phase of transformation, they are not still the best persons to make their results of research usable by a company. This work is rather the one of an engineer. The third report concerns the need to insure a permanent relation between the academics and the companies. In this frame, to establish a rich and sustainable relation, the exchanges have to be made in both directions and in a continuous way. Companies must be able to express their needs and the researchers must be able to present their skills and know-how.
As we can see, it is thus necessary to provide more people, for accompanying the researchers in this work and to multiply their strengths while allowing them to remain concentrated on their activities of creation of knowledge. These persons have to act as interface to accompany as well the researchers in their work of technological transfer as companies in their economic development. We shall return on this subject to the chapter 4.

So this concept of the" university group" aims at returning the more visible university in its partner's role of companies, at supporting the work of the teachers-researchers and at developing its relations with companies. This concept has to allow the universities to be equipped with a strategy in order to accompany their own economic development and that of the territory on which there are installed.

3-2 THE CASE OF THE UNIVERSITY OF NANTES

This concept corresponds to a vision integrated of the historic jobs of the university and the valuation of the resources which they engender. This valuation of the resources corresponds to transformation of these last ones so that they can be used in a wide way by all the companies to develop their business.

Within the framework of this work we shall present the case of the University of Nantes. Multidisciplinary, it represents all the scientific and technological domains. Strong of this diversity, it offers a big diversity of collaborations for companies. The access to a so wide spectrum requires a support of the companies which would like to reach it quickly. So, the University of Nantes have set up the concept of the university group.

At the origin, this concept is based on the implementation of a formalization of the offer of the university to the socioeconomic world. If the university wants to become a partner clear of the companies it must be able to show clearly its offers, quite as make it the companies with their clients. The global offer of the University for the Socioeconomic World thus appears under the shape of three complementary offers. These offers present the commercial face of the university which is towards other public very different (as for example towards students).

These offers lean on the jobs by the research and by the teaching of the university but come in "action" vocabulary oriented towards companies needs. The offers are directly proposed in order to answer to the request resuming the needs in which companies are confronted to innovate:

- Innovate and differentiate starting from the potential from research;
- Train your collaborators;
- Recruit your collaborators.

In this frame, two points must be considered:

- The support of companies in the search for the skills which they need whether it is in research, in training or in recruitment ;
- Then when the access to the resources requires it, the support of the projects of their assembly until their total fulfillment.
The university thus has to be capable of being able to welcome companies, to define their needs and to answer it by making sure that companies can indeed use the resources transferred in their development. To manage successfully this work, the university had set up three interfaces to insure the supply of its three types of offers. The following diagram shows how the university structures it organisation to meet these needs with its interfaces.

This figure represents the notion of space for the companies. In the heart, we find the resources of the university: teaching and research. Around them, we have the specialized interfaces. Each of them is associated in the treatment of one of the three offers. The interfaces are specialized, but of course they are also connected between them in network within the university. Indeed, in some case the answer for the companies requires the collaboration between two interfaces. The interfaces take their roots in the whole of the university but according to the nature of their activities interface of technological transfer is naturally connected to laboratories as we shall see it in the chapter 4-2. In the same way, the interfaces of formation for companies and accompaniment of the recruitment are connected to the departments of training. The resources of research and formation are also connected by a correspondents' network in order to represent all the possible resources of the university.

This network allows the university to have a permanent knowledge of its resources. The university can know so quickly if it can answer a demand of a company and to know who can make it and which is the potential planning. To complete the plan, a point of reception has added with a specific phone number and an e-mail address.
The whole organization (reception, network of the correspondents and the interfaces) is called "Space for the companies". The immense wealth of the university is henceforth approachable simply for the companies through the three offers.

The university is so permanently listening the economic world or through the researchers or henceforth through the interfaces specialized or the personalized reception.

The functioning of the set is simple. When a company contacts the point of reception or by telephone or by e-mail, it is taken care in a personalized way. Its demand is analyzed then it is passed on to the network to find quickly the resources allowing to answer the request. If certain answers can be quickly brought by a simple implementation, the others require a longer processing and especially a accompaniment. In this last case the interfaces are there to insure the development necessary as we shall see him(it) in the case of the interface of technological transfer.

Indeed, the access to the resources of the university requires very often a support. As an example, the use of results of research can seem easy for a big group possessing a department of research and development. It is however difficult to realize it for a SME. The university must be able to accompany them and go farther by anticipating their needs, even by creating them. So, the specialized interfaces are there to accompany at the same time the relations between companies and teachers-researchers to make transparent to each of them the constraints of the other one.

In its functioning, the "space for the companies" offers to companies an accessibility in the resources of the university, which goes of the detection up to the implementation of the whole process of transfer of the resource towards the company.

In addition, the interfaces hardly of this leading part of support have to develop more and be able to engender directly of the added value by creating sources of innovation then by marketing them.

These interfaces are already in position. Some are former (in-service training and occupational integration) and are actually remodeled, the others are more recent (the society CAPACITES and the foundation of the university), but they share the same plan of development in network. Indeed, these interfaces get organized to be present within every component of formation and research. These interfaces are, partially intern in the establishment university (internal service) and partially under the shape of private structures (as the society CAPACITÉS and the foundation of the university). However even with an appropriate personality, they are totally integrated into the group of university of Nantes, which is the only owner of all tools.

Due to the nature of the activities that these interfaces have to lead, their development and their sustainability have to pass by the implementation of economic models. Indeed, even if it is absolutely indispensable for the private structures, it is also strongly necessary for the internal interfaces.

These structures have for object to work on the interface between the economic world and the academic activities of the university. So, it is important that the
businesses model can base at the same time on the external marketing practices and on the internal structuring of the university.

The university in its strategic reflection in terms of valuation integrates totally its "privates" interfaces in its politics. These tools are totally considered in the global functioning of the group of the university, even if they present their own management rules and possess their autonomy. The university so presents an overall policy of valuation by declining it through all its tools.

4- The interface for technological transfer: CAPACITÉS

In this paper we only describe the interface dedicated to the technological transfer.

Within the framework of its "space for the companies", the University of Nantes have decided to implement actively activities of valuation of its results of research for its laboratories and for its researchers. To be able to lead these activities in the heart of the socioeconomic world, it created in 2005 its subsidiary company: CAPACITÉS, in the form of a simplified stock company.

The society CAPACITÉS is the tool of economic development. Its heart of business is the innovation. It serves as interface between the academic research) and the socioeconomic actors. It has for object to participate in the activities of valuation of the results of the researches coming from laboratories and to set up from these an offer of services or products in the competitive frame of the world of companies.

According to its statutes, the missions of the society CAPACITÉS are to insure in France and in all the countries, the development and the marketing of products and/or services in the domains of the research and the international cooperation.

In this executive the company insures quite particularly the transformation of the raw results of the academic research or of the skills and to know how to make of researchers in answer to an existing or emergent market.

Generally speaking the society CAPACITÉS can insure all the commercial, marketing, industrial, movable or land transactions susceptible to facilitate the realization of the transition between the raw results and the economics exploitation. It is an industrial and commercial and economical tool in the service of the activities of valuation of the University of Nantes.

The aim is to be able to make so that the potential of research for the university, that is its creation of new knowledge, and its resources can allow to improve or to set up the process of innovation in the companies. The new knowledges can indeed allow a company to increase their competitiveness or their differentiation. These two aspects can be focused on technological or of uses developments. The society CAPACITÉS works closely with laboratories to create these sources of innovation.

However as for all the interfaces, the staffs also have to be permanently listen of the needs of companies and particularly of those from SMEs and to understand their constraints. This process has to allow the company CAPACITÉS to analyze needs and to see how it is possible to answer it by adapting the knowledge and the current
know-how. If an adaptation is possible then the engineers of the society CAPACITÉS will take care of it.

If an additional research work is necessary to raise possible technological bolts, then the staffs of the society CAPACITÉS will work with the researchers to find new solutions. In case of new researches are necessary to raise scientific bolts, the engineers of the society CAPACITÉS can define with the companies their needs and write the specifications with the researchers. These specifications can be at the origin of new themes of search within the associated laboratories.

The activity of the society is articulated around three key points:

- Offer a reactivity of private company in the accompaniment of contracts of partnership research and participate in the development of "the open-innovation". The aim is to position in a relation of company to company with at the same an access to laboratories.
- Transform the knowledges and the skills from laboratories in products, processes or service and market them.
- To make an permanent economic watching (business intelligence) to follow and know the needs of companies in order to be able to answer it and be able to anticipate their needs.

To insure its missions CAPACITÉS deploys a synergic organization around " units of skills " internal to the society. We can also use "team of interface". We don't use the term of Business Unit. Of course, the units have to make business but they have also to develop their capability to act at the interface between the academic world and the economic world. This skills aspect is very important in order to ensure a good management of the relation respecting at the same time the academics constraints and those of the companies. A unit of skills is a team of engineers and technicians working in symbiosis with a laboratory and developing and marketing sources of innovations.

The units are directly settled within the laboratories in which they are associated to assure a permanent exchange with the researchers.

The staffs of units consist of engineers formed by the research (they are doctors) and engineers and technicians trained by the business world and the industrial companies. The teams, so organized, are general-purpose and can accompany as well the researchers of the associated laboratories as the staffs of companies. Every unit is under the responsibility of a professor to assure the link with the laboratory.

Thus, these units live in a double world. Indeed, although immersed in the world of the research they also have to follow the rules of functioning of a company which has, as any companies, economic objectives of profitability to be held to live.

The staffs of units maintain permanent relations with companies and assure the continuous link between the researchers and the companies. They meet the needs of companies and also work to make usable the results of research. In this frame, with their knowledge of economics needs and the expectations of the companies and of
socioeconomic world, they can propose innovative solutions in order to give to the companies of the competitive and differentiating advantages.

The following scheme shows the general organization and the relations between the units of skills, the laboratories and the companies.

The goal of the society CAPACITÉS is to supply to its customers some "sources of innovation" according to three levels:

- Accompanying the researchers and by managing the contracts of partnership research with the laboratories of the university of Nantes;
- By suggesting to the companies outsourcing their research and development. That is to answer their needs of innovation;
- By marketing products or innovative services (developed in house) so that the companies innovate in their proper offer.

The first level allows to bring to laboratories a support of financial and administrative management of their activities of partnership researches led with companies of the socioeconomic world. In this frame it is important for the university to pay attention on the aspects of industrial property. The circuit of management of a contract is then the following one: after the contact between the laboratory and the company, if the project is feasible then the contract fixing the modalities of execution is negotiated by taking into account the industrial protection and the costs of realization. This aspect is done by a specific unit inside the university in charge of the intellectual property. Once the contract was drafted, the management is entrusted to the society CAPACITÉS.

This aspect “management of contracts” is very important for the society because it assures in a way the automatic watching of the resources of laboratories potentially interesting for the companies. A recurring activity of a researcher with the economic world can give rise to the implementation of a permanent activity within the society if
there is a market and by the creation of a new unit to accompany the development of the activity.

Within the second framework, the realization of the activities of research and development are made either for their customers, in order to answer to the needs of companies with services, or for the own account of the society in order to develop news products or innovative services. The society makes so usable and marketable the know-how and skills of the associated researchers by using them knowledge of the needs of their customers. The permanent contact with the researchers and the continuous technological transfer between the laboratory on one hand and on the other hand the business intelligence on markets, allows to propose offers (services and/or products) the technological and scientific level of which stays at the tip of the knowledge while answering the emergent needs.

The third level after the phase of research and development is to propose to the market sales offers stemming from activities of research. They are either products or services. The marketing of the offers is then ensured by the society or possibly by the sales agents.

The society) is a supplier of sources of innovation for their companies customers so that these last ones can innovate in their market.

Society CAPACITÉS, has already set up several units of skills in connection with various laboratories. The diversified offer of the society, corresponds to the variety of the activities of research of the university.

For example, at present, the society proposes services in the field of the auscultation of harbor work of engineering, of functional exploration in the field of the health, of the implementation of solution ICTS (Information and Communication Technologies) for the development of commercial actions, of the metallic cover on various supports for industrial applications, of the economic expertise of the world of the fishing and the shellfish farming, of the preparation of surface by automated methods of manufacturing, of the shaping of rubber materials, of the saving of the scientific and technical heritage, of the chemical analysis, ...

The implementation of a unit of skills is an alternative solution with regard to the creation of a start' up. In certain cases the creation of a start' up is inescapable but not in many cases. A start' up must be created when a researcher absolutely wants to create his own company (that is his right by the law) or when the initial investment is very important. In other cases, implementation of a unit of skills within the subsidiary of the university is an interesting solution in many respects. Indeed it allows a researcher to associate his activities of research to a team of valuation without having to take care of administrative or legal aspects. The society brings its skills of management to him to manage the social and financial part. The researcher remains nevertheless totally involved in strategic choices of the development of the valuation of his results of research and can pursue his activities of research at the same time.

An another interesting point is to settle these activities beside those the other units, within the same company. It allows to strengthen the economic weight of a each unit by aggregating it to the others. So, it creates not a multitude of fragile societies, but a
bigger and stronger company given in the same hand a better visibility to the university. The whole activity is so accommodated within the society and protected by her. The society being the subsidiary of the university nobody can acquire the activity without its agreement.

Besides this aspect of economic mutualization, the presence of these various activities also allows to develop transverse synergies. Then, It is so possible to associate various units to answer or to develop even more innovative and differentiating solutions by associating scientific knowledge of various domains.

We can see that this in house orientation of the valuation of the research presents numerous advantages for the university, researcher and of course companies in a winning-winning relation.

Any way, if in case of a fast development of a unit happen on a market, then it will always be possible to decide to set up a new company to pursue the development outside of the society.

5- DISCUSSION & CONCLUSION

The objective of the university is to become one of the actors of the economic development. The university thus has to make so that the new knowledge which it to create every day irrigate companies, so that in their turn companies innovate and develop themselves on their markets. For that, it has to supply to the socioeconomic world of the adequate graduates with the needs of companies, trained in the new knowledge and with entrepreneurial spirit. It also has to make so that the knowledge are layouts and so that they answer to demands of companies.

Diagnose the SME before supporting it, is a good things. How to support a SME without knowing it well? The owner’s goals and expectations should be understood as well as the reasons of former successes or failures.

Many works have done on this subject. By confronting the obserations made in the various works with the organization organized by the university we can draw some conclusions

In [14], Hausman indicates that limited resources are barriers for SME in transforming their excellent customer knowledge into new products and services. The interfaces can allow to compensate for the lack of resource of research and development of the SME (by acting as supplier of research and development besides innovative with research. They can bring their power of development adding their double culture (academic and economic).

some guidance principles to help technology-following SMEs to use universities as an external resource in their innovation projects are presented in [23].

We can extract the following recommendations. Operate a two-fold guidance : with an expert of the knowledge or technology to be introduced in the company and by a mentor who knows very well the SME, who has the confidence of its owner and which will facilitate the academic ‘s introduction in the company.
The works recommend also a gradually advance and the stimulation of the commitment of proactive private firms. In the same way the relation should be establish quietly. There is no need to start too fast. The company support should meet the more immediate and modest SME requirements and begin with incremental improvements. Willing introduce the more recent and sophisticated technology of the laboratory would be counterproductive.

The works recommend also differentiating guidance strategies, due to the variety of profiles. A "take or leave" attitude is not suitable. Academics' guidance should be both demand-oriented and supply-oriented (inbound and outbound open innovation in Chesbrough's vocabulary).

And finally a guide until the implementation of a solution is absolutely necessary. SMEs tend to give up to introduce an innovation when experts leave. That is also a problem for academics because they don't benefit from the early learning of their collaboration.

To answer to these recommendations, first the university has set up an organization which aims to federate better the existing contacts between it and companies and to develop them strongly. The university has to become a natural partner for companies and particularly for SMEs. The university thus has to set up tools to insure to develop and perpetuate the number of partnerships with the socioeconomic world and SME.

The set up of the society CAPACITÉS and their units integrating engineers that well know the SME is an answer. So according to this recommendation, the unit can work easily with the SME and support the innovation work until the end. The staffs of the unit take about the well appropriation by the company. The university can also provides a support of training by it other interface dedicated to In-service training.

With the help of the unit of skills, the university can works in both demand-oriented and supply-oriented to respect the recommendation of inbound and outbound open innovation. The units of skills are linked to the academic part, but they are also interested by the economics world. So, they can work in order to answer to the demand of the SME, even it is not high technology. They can prepare quietly the progressive rise of the technology of their customer. In the same time, they work inside the society to develop new innovation. And one day, when the SME custome will ready, the unit of skill could give to it new source of innovation from the research.

So the university has worked to clarify its offer to companies. Furthermore, it set up interface to answer the demands of companies. The interface of valuation of the research has set up units of skill. These units can works in both demand-oriented and supply-oriented. Then, they assure a permanent relation in both side between researcher and the companies.

Thanks to its interfaces, the university is henceforth ready to work with the economic world in particular that of SMEs. However, to increase the number of partnership with SMEs, it is necessary to lead a progressive work of raising awareness of the SMEs to bring them to innovate more and more with solutions stemming from the research and thus more differentiating.
So, to be able to reach technology-following SMEs transfer organization should employ senior engineers with extensive business experience to visit firms frequently to help them come up with some technological issues [10]. To achieve that, the university works with different organizations that do this job.

To develop better its activity, the society and the university tries to set up a methodology of analysis of the researches for the researchers, to be able to detect and set up new units of skills, or develop those already existing. However, It is not easy to analyze the potential of valuation of the know-how with regard to markets inevitably also in development. These modology should integrate the economics part in the valuation of the results, to find the actual source of innovation, who naturally has to meet it market.

That is why the society decided to initiate an activity of research on the methodology of the processes of innovation based on the research. This works is done to structure better its development and its approaches of analysis and decision. This program of research recently launched has the aim to better understand the exchanges between companies and researchers.

REFERENCES


