

# Barriers to Knowledge Transfer - an Evaluative Study

David BLUNCK<sup>1</sup>, Moritz BRADLER<sup>2</sup>

<sup>1</sup>*Univations Institut fuer Wissens- und Technologietransfer an der Martin-Luther-Universität Halle-Wittenberg GmbH, Weinbergweg 23, Halle (Saale), 06120, Germany  
Tel: +49 345 13142703, Fax: + 49 345 13142701, Email: Blunck@univations.de*

<sup>2</sup>*Martin Luther University Halle-Wittenberg Univations Gruenderservice, Weinbergweg 23, Halle (Saale), 06120, Germany  
Tel: +49 345 5522978, Fax: + 49 345 5522957, Email: bradler@univations.de*

**Abstract:** Universities and other institutions of higher education (HEI) generate as results of their research knowledge and technology that can be of increased societal value if put to use in a commercial setting in addition to publication. Small and medium sized enterprises (SME) are considered an essential sector as economies as employment providers and engines of growth. In order to meet their role as major sources of innovative products and services, SME more than large enterprises rely on partnerships with research institutions and on the ability to utilize outcomes in a market setting. This paper presents the methodology and results of a needs analysis study among SME, HEI and transfer intermediaries that has been conducted in the course of the SUPORT project. In SUPORT, universities, SME, NGO and a chamber of commerce in six European countries work together to develop training material as well as a comprehensive online knowledge resource to teach both SME managers and research staff the benefits, challenges and good practices of engaging in fruitful liaisons.

## 1. Introduction

The importance of knowledge and technology transfer has been rising distinctively over the past years.[1] Global competitiveness requires new ideas which then can be turned into new cutting-edge products. In order for this process to take place it is essential for researchers and the industry to work closely together. Innovative products will maintain and enhance Europe's competitiveness in the global market.[2]

However, knowledge and technology transfer and the resulting product development are complex processes.[3] Companies, especially small and medium enterprises (SME), and higher education institutions (HEI) frequently experience barriers to their effectively engaging in and benefitting from in transfer projects. Partners involved often get discouraged by the complexity of the steps involved.[4] The creation of a framework is necessary to facilitate knowledge and technology transfer. Ultimately, barriers need to be understood in order to be abolished, not just at an individual regional level, but for Europe as a whole so it can continue to grow up to its full potential as a unified market.

SMEs hold a very important role for Europe and its economies. These enterprises account for a significant amount of European work experience and economic activity.[5] Furthermore, SMEs make an important contribution to the dynamism and innovative performance of an economy, thus enhancing economic growth especially in the medium and long term.

The following paragraphs will introduce and outline the Project SUPORT project which forms a part of the actions under the Erasmus Lifelong Learning Programme. They will

provide an insight as to what SUPORT does and how it has developed. The discussion of the results of an international study about existing transfer barriers will show the foundation for the resulting products.

## **2. Why SUPORT?**

The Erasmus Project SUPORT examines the current knowledge and technology transfer scenarios between SMEs and HEIs at the regional level in order to define problems that have an inhibiting effect and can potentially lead to failure. The project consists of the study of the current transfer environments within each of the participating partner regions. Interviews and focus groups were conducted. Roadmaps and E-learning material are being developed based on the results.

The group of partners includes Louth County Enterprise Board (Ireland), Martin Luther University Halle-Wittenberg (Germany), Universidad Politécnic de Valencia (Spain), Mindshare Consulting (France), Canice Consulting (UK), Northern Chamber (Poland), and Newry & Mourne Enterprise Agency (UK)

SUPPORT aims to develop resources to enable SMEs to break down barriers and gain access to dormant research at HEIs. Universities are to be allowed to find outlets for current and previous research, making them more responsive to current market needs.

Beginning at a regional level, resources to help SME and HEI engage in transfer activities and increase the quantity and quality of projects will be developed based on the findings of the study. Besides the definition of existing barriers for transfer activity, training needs of growth oriented enterprises need to be defined. Also, training needs of HEI staffs need to be defined and elaborated on. A roadmap tool outlining the routes SME should take to access HEIs' applied research and the routes HEIs should take to access SME will be developed. Furthermore, E-learning material and an interactive website will be created that will help teach and implement the major findings of the study.

The second key component of SUPORT focuses on researching the current transfer environment. Interviews and focus group meetings were held in order to uncover difficulties as well as strong points in current projects. The needs analysis serves as a starting point to learning material creation. In accordance to the major findings of the survey as well as to the ongoing discussion of results among the SUPORT consortium whose members all bring experience about the target groups to the project, the good practice examples collected earlier were consolidated to a set of representative cases.

## **3. Methodology**

All partners were asked to contribute some regional good practice examples in three categories (1 – successful examples of actual SME/HEI interaction, 2 – working systems of HEI outreach to regional SMEs, 3 – successful public funding schemes for SME/HEI collaboration) to the SUPORT knowledge base. The collected good practices were concentrated into a set of fifteen exemplary items that best matched the survey findings and that may be subject to further use in the learning and dissemination materials to be developed.

The first documented step in the process of research was a methodology report along with a review of the submitted good practice examples. The report included prepared interview guidelines for each of the three target groups. The sets of questions were designed to uncover the different barriers SME and HEI face in order to cooperate.

The methodology applied included ten face-to-face interviews and one focus group in each region. The interviews focused on three categories in correspondence to the project target groups: SME, HEI and individual transfer intermediaries. The set-up of the group

was designed to provide us with a variety of knowledge in different categories. By incorporating participants with diverse backgrounds the partners were able to examine what the preferred levels of transfer might have been and if the applying barriers differed. To start off we gathered information about the participants. Through the guided interviews we intended to find out if the participants had ever engaged in transfer activities before, whether or not it was a good experience and the factors leading to that perception. Another area of interest was, which benefits the parties involved perceived or expected. We looked to learn in detail about the way SME and HEI see each other. Mental barriers were to be unveiled and emphasized by personal experience of the interview participants.

After the initial interviews had been conducted and results analyzed, the second interaction-based layer of the needs analysis survey was prepared. The intention of the focus group sessions was to discuss and specify the major findings of the first set of interviews. Also, this process was an opportunity to develop a strategy on how to implement the findings and lessons learned into to the E-Learning material that is to be created during this project. The partners had multi-hour concentrated work meetings with target group representatives.

The discussions revolved around the major findings of the previously completed individual interviews. Detailed focus group contents were elaborated at the regional partner level with regard to the interview results from all regions in order to re-test the outcomes and fill the remaining gaps in understanding SME-HEI barriers. The main topics reflected included:

- personal experience of the participants with the different possible types of transfer activities
- reciprocal perception of the parties in connection with transfer activity
- personal transfer experience of the participants in reflection to the other party
- Motivation/possible benefits of transfer for the parties involved
- Existing barriers that participants face when engaging in transfer activities
- Expectations of the participants about the transfer process and interaction

#### **4. Results**

SME and HEI both have clear objective training needs in regard to mutual understanding. HEI tend to be more experienced and informed about the opposite side but 28% of the interviewed SME show a lack of understanding of general HEI structures and how they function. Therefore, the SUPORT E-learning material in development should include a comprehensive explanation of what the organizational structure of the typical European HEI looks like. There is a chance that HEI overestimate themselves as far as their understanding of SME is concerned. HEI tend to show deficits in accepting the importance of business and project management knowledge, as the survey indicates.

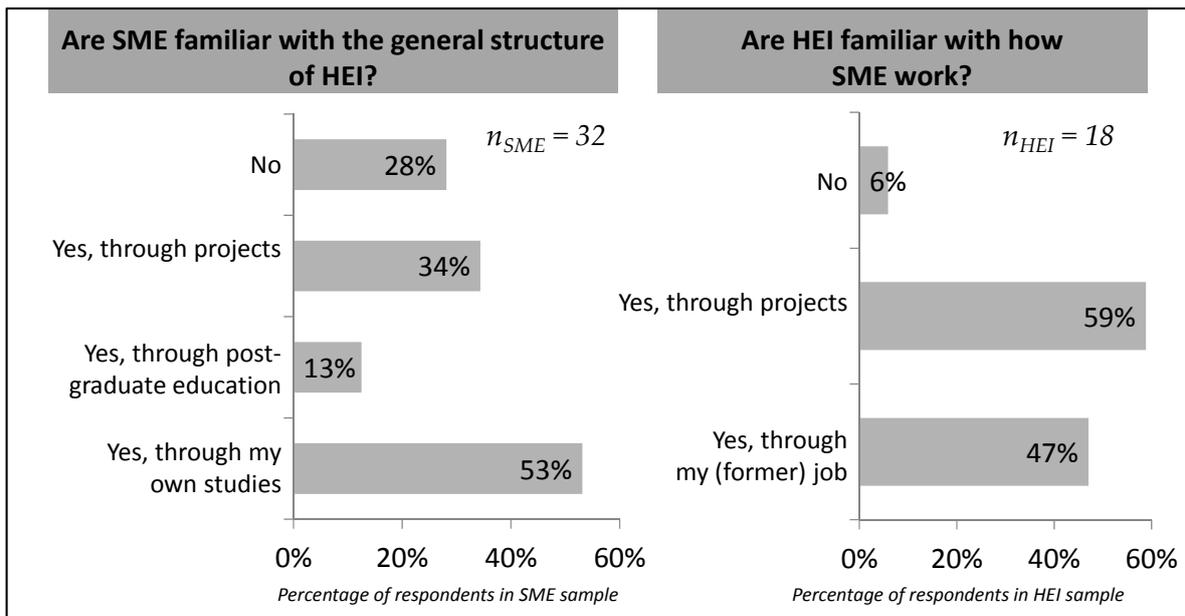


Figure 1: Knowledge about the Transfer Partner; Source: Own Investigation

There are significant advantages for HEI when working with SME as opposed to non-SME. Contact and communication are perceived to be much simpler because of their less complicated structure. Also decision making and responding are much faster because of a shorter channel. Overall the cooperation is perceived to involve less politics. Frequent transfer projects and resulting strategic partnerships with regional SME may benefit HEI, especially in the long term. A gradual standardization of the process is supposed to reduce the bureaucratic effort that regularly forces SME and HEI to decide against entering joint projects. It has to be made clear that transfer activity offers great opportunities, not only in terms of better public funding opportunities.

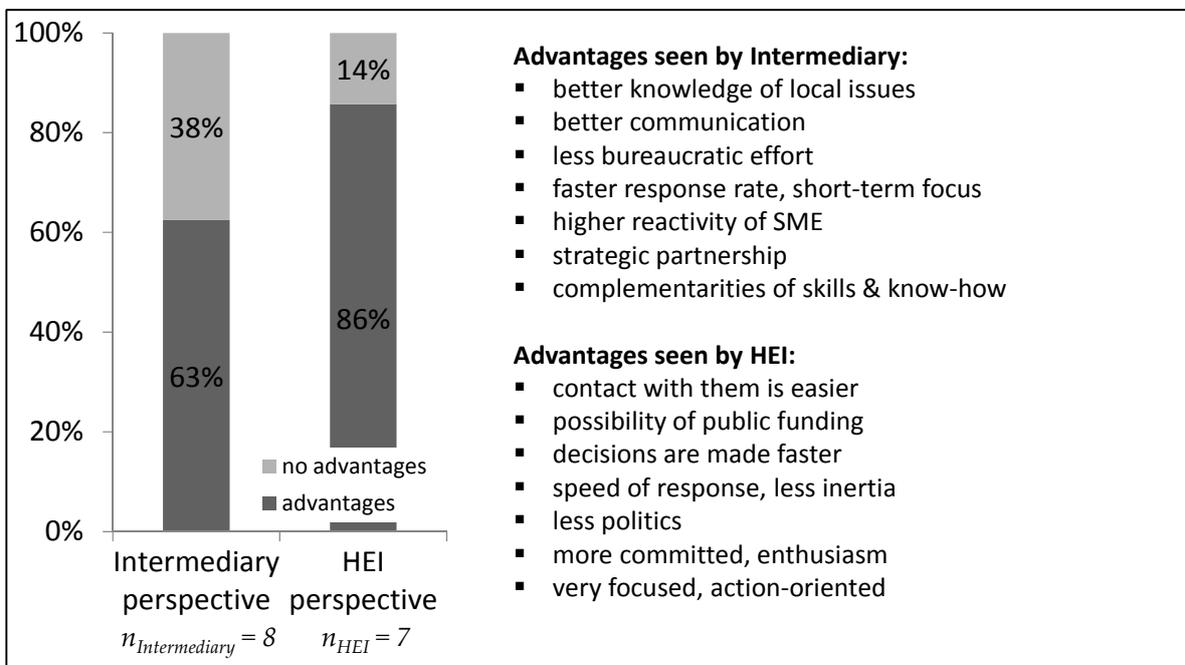


Figure 2: Advantages of Working with SME Compared to Non-SME; Source: Own Investigation

There are also some perceived disadvantages. However, some of these can be resolved. By educating both sides the lack of strategic concepts of innovation management and knowledge and/or technology transfer issues can be improved. Also, appropriate training

can help with the common lack of project management skills. The perception of budget scarcity at the SME side can be relativized by spreading the awareness of public funding schemes. A major issue for SME as well as HEI seems to be the lack of knowledge about suitable entry points to engaging in projects with each other. Frequently, the proper contact persons are not known. This can prevent both parties from getting in touch with each other and from properly setting-up transfer projects.

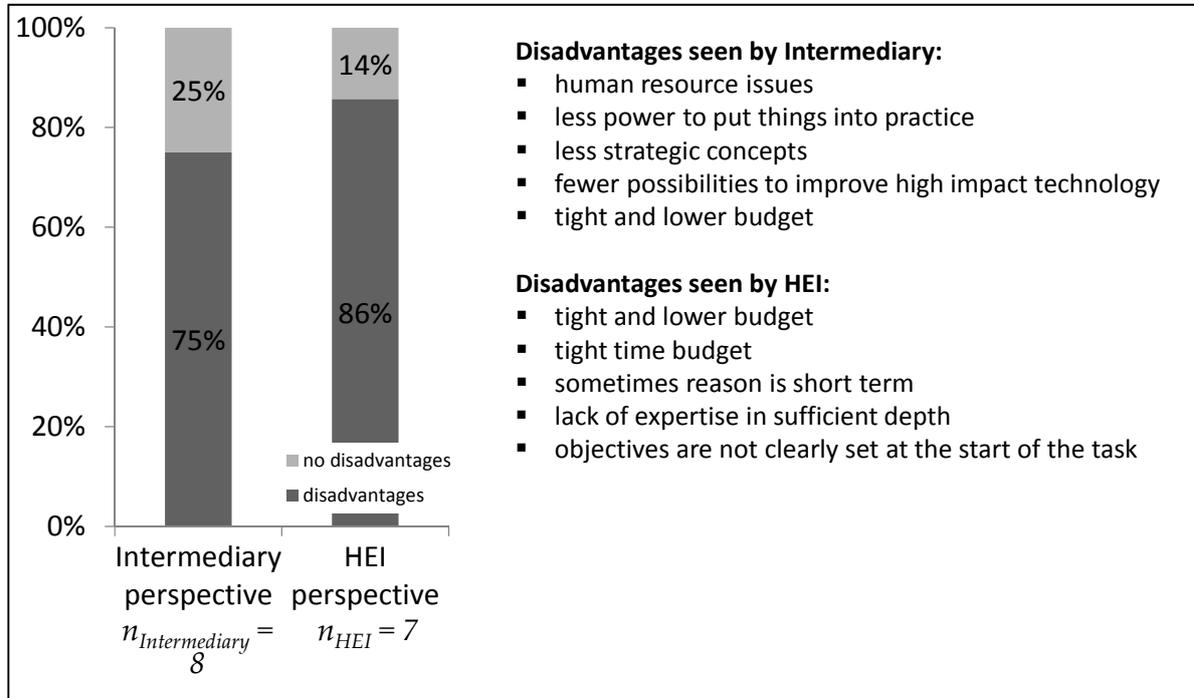


Figure 3: Disadvantages of Working with SME Compared to Non-SME; Source: Own Investigation

Contract research and professional training are very important transfer aims for SME and HEI. A lot of times HEI offers are poorly communicated and SME have a hard time finding them. At the same time, HEI are not fully aware of how important knowledge transfer in terms of staff learning really is to SME. SME on the other hand overestimate HEI interest in gaining practical knowledge from or exchanging experience with SME partners.

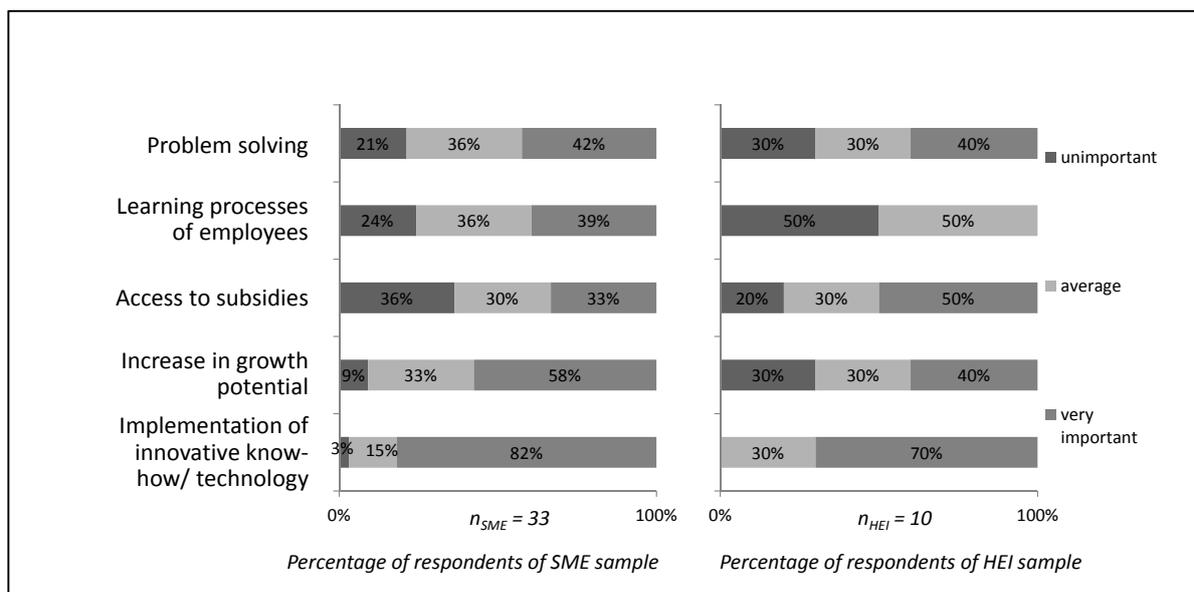


Figure 4: Importance of Stimuli to SME for Engaging in Transfer Activities; Source: Own Investigation

Numerous perceived barriers have been expressed throughout the interviews and focus group sessions. Some of the major success-preventing factors are a lack of communication, too much bureaucratic effort and a tight project schedule and budgets.

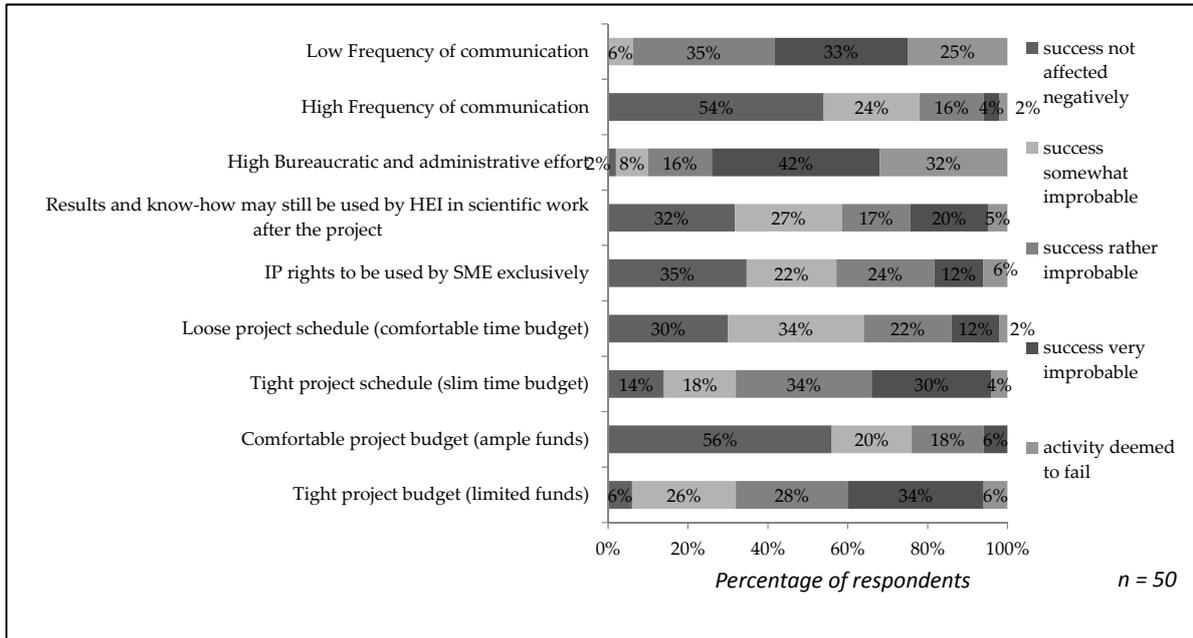


Figure 5: Factors that Prevent Success of Transfer Activities; Source: Own Investigation

It is almost accepted as consensus between SME and HEI that the research and service portfolio currently offered by the “average” HEI, does not meet SME demand. Transfer intermediaries, however, think differently. With their knowledge and good overview of both sides it almost looks like there is a translation problem between offer and demand. Again, entry points and contact persons in the HEI, but also transfer-facilitating intermediary organizations or persons have to be made known to SME.

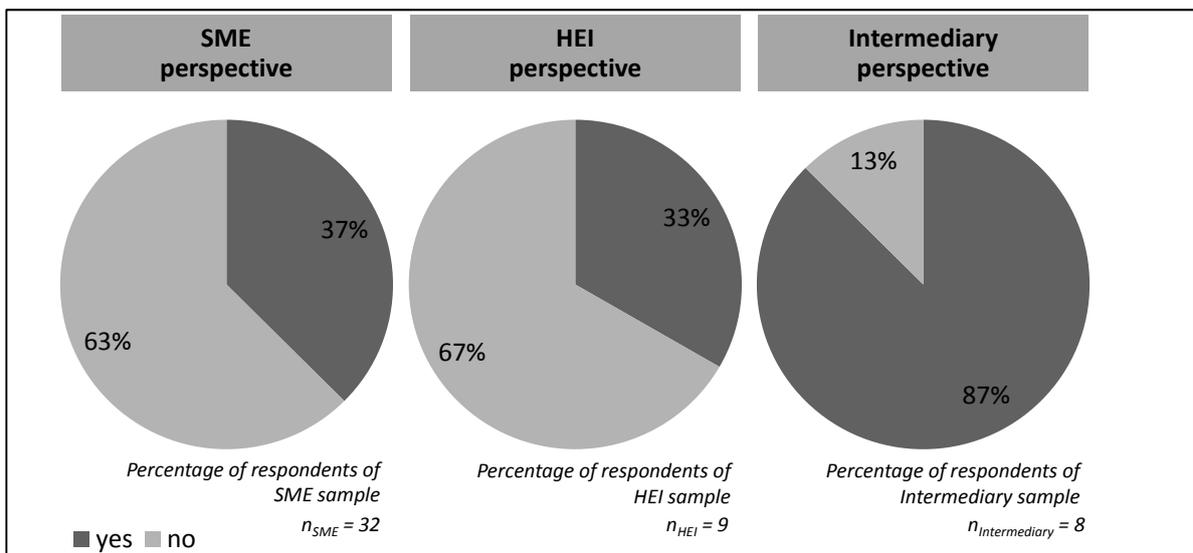


Figure 6: Do Services Offered by HEI Match SME Demand?; Source: Own Investigation

In order to create a healthy environment for transfer activities SME and HEI need to meet halfway. HEI need to adopt a more appreciative approach when it comes to SME needs and motivations. SME on the other hand need to clearly state their project aims so an agreement on the project objectives can be reached by both parties. Generally speaking, HEI and SME need to be brought on the same page about opportunities and challenges of

successful transfer activities between them. Often times their perception of certain facts differs from the opposite side's. Another example is the general transparency of HEI service portfolios as SME experience them to be much less distinct than HEI. Also, SME are frequently concerned about the expectations HEI have regarding qualifications of SME staff assigned to transfer activities. While HEI in general do not tend to demand much in this aspect, SME perceive a cultural difference that may not be all that grave in reality. HEI do not value SME's prior practical knowledge in the specific project areas as much as SME think they would. Another area of high conflict potential can be the use of project-generated IP and the lack of knowledge of different future usage options. HEI usually reserve the right to keep using project IPR for research and teaching (non-commercially) and SME need to learn that through the use of instruments like exclusive commercial-use licenses this issue can easily be taken care of.

It certainly helps that all parties claim to find it important to consider SME problems and priorities. This customer friendly view is a very helpful common denominator. Furthermore, frequent communication between the project partners is essential. As expected, SME still tend to put more emphasis on communication than HEI. Both parties heavily rely on the culture and/or management of innovation at the SME side.

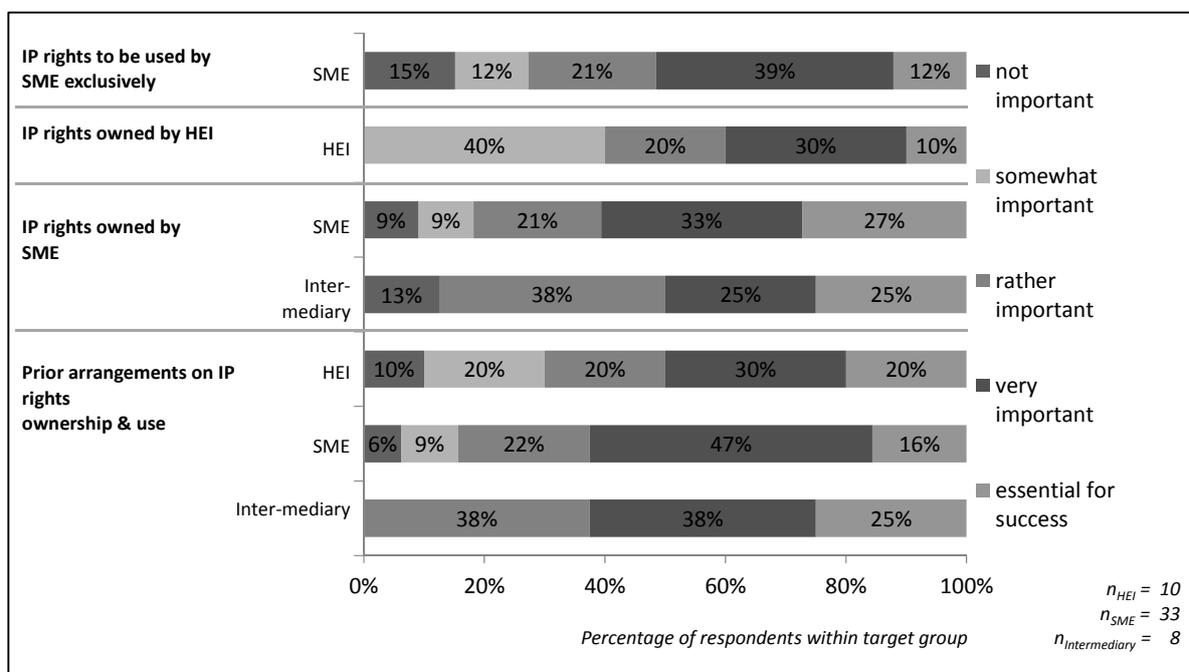


Figure 7: Importance of Fact for Success of Transfer Activity; Source: Own Investigation

## 6. Conclusions

It is evident that a lot of the barriers SME and HEI face result from fears, lack of knowledge and miscommunication, not just actually physical obstacles like funding and resources. This is a great opportunity for SUPPORT to unfold its educational claim.

The different findings in the surveys show different training needs and areas that SUPPORT should target in order to improve the transfer environment for HEI and SME. First and foremost, SME and HEI both need to be educated about each other's typical structures. SME need to learn about their (regional) HEI research capabilities. The institutions need to know and understand each other's expectations and interests. Generally speaking HEI and SME need to be brought on the same page about opportunities and challenges of successful transfer activity projects. While SME need to respect that a clear definition of project goals is in HEI's interest, HEI need to accept the importance of

business and project management skills. Advantages of transfer activities with SME have to be promoted while disadvantages need to be discussed and resolved by introducing the appropriate solutions. Another key factor is training to address each other. HEI need to present more transparent portfolios. SME perceive transparency to be less distinct than HEI believe it to be. HEI have to communicate their entry points and contact persons to the business community. SUPORT also needs to help HEI understand how to market their offers more effectively and how such effort may benefit all parties involved. SME will greatly benefit from additional knowledge about intermediaries and various public funding schemes. Since IPR issues tend to create problematic situations there is a need for training in regards to collaboration agreements. It is generally necessary to resolve certain perceived cultural differences that are not correct. This way, misconceptions that are potentially hindering to transfer activities can be resolved. Both parties have different interests and only by knowing those it will be possible for them to find a solution that they can accept.

Further it will be necessary for HEI to grow more aware to SME expectations in order to become more market oriented. Starting from the earliest planning phase of a transfer project, HEI and SME representatives have to clearly know each other's motivations and adopt frequent communication schemes throughout the course of the entire process. Not less important, it will be a focal point to stress the importance of the innovation culture and management within SME.

Having identified the main barriers to consist in a lack of communication and project management skills, in too much bureaucratic effort as well as in tight project schedules and budgets, the SUPORT needs analysis module set a good starting point to create the roadmap and training material contents.

For more information visit: [www.support-project.eu](http://www.support-project.eu) and contact your regional partner.

## References

- [1] A. Berger, Wissens- und Technologietransfer. In: Das Hochschulrecht im Freistaat Bayern: Handbuch für Wissenschaft und Praxis, Max Emanuel Geis (Ed.), ISBN 978 3 8114 7716 2. C.F. Müller, Verlagsgruppe Hüthig Jehle Rehm GmbH, Heidelberg, 2009, pp. 444-445.
- [2] J. P. Lane, A Model of Technology Transfer for Industrial Competitiveness. In: Assistive Technology on the Threshold of the new Millennium, Christian Bühler and Harry Knops (Eds.), ISBN 1 58603 001 9. IOS Press, Amsterdam, 1999, pp. 90-95.
- [3] M. Saad, Development through Technology Transfer – Creating new organizational and cultural understanding. ISBN 1 84150 028 3, Intellect Books, Portland, 2000, p. 32.
- [4] D. Linke, Transferring Technology Innovations to Operating Business Units. In: Applied Technology and Innovation Management – Insights and Experiences from an Industry-Leading Innovation Centre. Heinrich Arnold, Michael Erner, Peter Möckel, Christopher Schläffer (Eds), ISBN 978 3 540 88826 0, Springer, Heidelberg, 2010, pp. 168 – 179.
- [5] I. Bozovic, The Impact of Social Capital on Economic Performance: Lessons from Small and Medium Size Enterprises (SMES). UMI 3291764, ProQuest, Ann Arbor, 2007, p. 38.