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THE IMPORTANCE OF INTERPERSONAL AND SOCIAL FACTORS IN UNIVERSITY–INDUSTRY COLLABORATION

Abstract:

University–industry collaboration has gained in importance and been the subject of much research during recent decades. When it comes to factors that influence the success of collaborations such as these, the literature focuses mainly on resources, objectives, structure, flexibility, political environment or geographic distance. The social and interpersonal facets of these collaborations are often seen only as side aspects. In the course of this study, we reviewed the relevant literature regarding university–industry collaboration and examined the social and interpersonal factors that might influence success. We investigated peer-reviewed journal articles published between 2000 and 2016 in the English language. Our results indicate that communication, trust, commitment and culture are the most relevant factors in this regard and need to be considered carefully. These factors are important at all levels, from ordinary staff members to leadership and management. The participating partners and individuals are well advised to be aware of cultural differences between universities and industry and must handle dissimilarities and challenges adequately, because good social and interpersonal relationships are necessary for a successful partnership.

Keywords:

collaboration, university, industry, success, social factors

JEL Classification: I20, I23, M14

Introduction

The fast-moving competitive environment requires constant improvement in innovation, efficiency and R&D in the private as well as the public sector. One way to keep pace with these developments is the collaboration between industry and universities. As discussed by Bekkers and Bodas Freitas (2008) about 10 per cent of new products or processes are based on the direct contribution of academic research (Bekkers & Bodas Freitas, 2008). As a consequence, university–industry collaboration have become increasingly important during the last few decades in several countries around the world (Ankrah & AL-Tabbaa, 2015). Alliances like university–industry collaboration are able to combine university research and science on the one hand with industry equipment and applied knowledge on the other (Barnes, Pashby, & Gibbons, 2002). The advantages for both partners are remarkable, but there are also some challenges for such collaborations. University researchers have, for example, different time schedules, goals and interests to those of industrial employees. Furthermore, the literature shows that risk factors related to resources, objectives, structure or flexibility have to be considered (Rybnicek & Königsgruber, 2016). Moreover, there is evidence that geographic distance, the societal and political environment as well as contracts and patents can influence the success of a partnership (Schofield, 2013).

In addition to these factors, challenges regarding social and interpersonal aspects are often underestimated. As analysed in a systematic literature review by Ankrah and AL-Tabbaa (2015), a large body of literature focuses on motivation, organizational forms, processes and outcome (Ankrah & AL-Tabbaa, 2015), but less attention has been paid to interpersonal and social factors. Therefore, this literature review is guided by one question: “Which interpersonal and social factors might influence the success of university–industry collaborations?” For the purpose of our research, we developed a framework that allows relevant literature to be organized on three different levels, namely on the institutional level, on the level of the leaders and on the level of the staff.

The rest of the paper is organized as follows. After describing the methodology, we present our results based on the aforementioned framework. Subsequently, we present some discussion and a brief conclusion. The final section contains the limitations of this study and some suggestions for further research. This article addresses both practitioners and researchers who are interested or currently involved in a university–industry collaboration. Our results offer a basis for a better understanding of the importance of interpersonal and social factors in university–industry collaboration and might encourage future research by identifying gaps in the literature.

Methodology

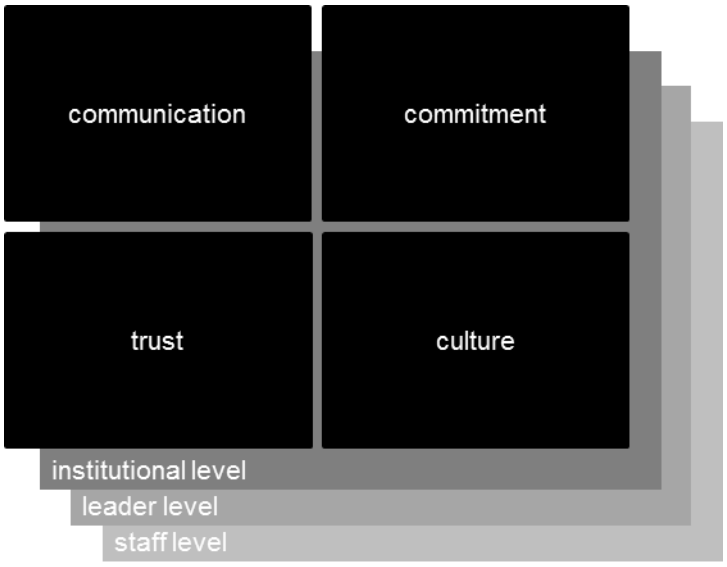
This paper focuses on surveying the knowledge regarding the social and interpersonal relationships within a university–industry collaboration through a literature review. We investigated literature written between 2000 to 2016. Therefore, a standard literature review was conducted. First, relevant keywords (e.g. 'universit* collaborat*'; 'universit* cooperat*') were defined to ensure a broad perspective on the topic. Afterwards a search in the scientific database 'Business Source Premier (EBSCO)', which includes around 15,000 peer-reviewed journals, was conducted. The search was limited to peer-reviewed journals in English. We excluded 'grey' literature, conference papers and book reports from our investigation.

Based on the scope of the article we then analysed the identified literature regarding the interpersonal and social factors and categorized them with respect to the institutional, leader, and staff levels. Multiple assignments of studies to different levels were possible.

Results

In the subsequent sections, we present the survey results based on our framework. In order to categorize our results we established a framework as depicted in Figure 1. This framework has three different levels and four factors. The factors were derived from the literature. Communication, commitment, trust and culture were the most mentioned factors in our literature review when it comes to social and interpersonal relationships within a university–industry collaboration.

Figure 1: Framework.



Source: Authors' illustration.

The levels, however, should illustrate that those factors are relevant within the whole organization and each level has special challenges and tasks regarding the investigated factors. We determined three different levels. The staff level refers to aspects that mainly concern the ordinary employees, researchers or team members. The leader level refers to the leaders and managers of a university–industry collaboration. The institutional level is related to the challenges of the institutions as a whole. The latter level allows a superordinate perspective and focuses more on the entity and less on the individuals. It is important to acknowledge that these levels are strongly connected to each other, for which reason some findings might concern multiple levels.

Institutional level

In the course of this section, we discuss the social and interpersonal factors communication, commitment, trust and culture on an institutional level. Communication can be seen as a main factor in all phases of a collaboration (e.g. planning, implementation and establishment phase). For a successful collaboration, frequent communication through regular exchange and updates about current happenings and present activities is both very important and challenging for partners. As highlighted by Hong, Heikkinen, and Blomqvist (2010), frequent communication is particularly essential at the beginning of a collaboration, because at this phase the partners' goals and intentions are not clearly defined and collaboration per se is not specified. Therefore, collaboration partners should pay close attention to communicating each other's purpose and interests at the early stage of a collaboration (Hong et al., 2010). In order to enhance frequent communication, Hong et al. (2010) suggest a mix of different channels, such as meetings, e-mails and face-to-face communication. In this regard, Guan, Yam, and Mok (2005) stress the lack of efficient communication channels as a main obstacle in collaboration. Therefore, different channels are not only important; they should be selected carefully to enhance partnership. Besides the useful mix of different communication channels, Baba, Yarime, and Shichijo (2010) also mention the significance of a common language – a language that is suitable for both partners, since academics and practitioners often use a different language (Gawel, 2014). For the sake of completeness, difficulties in managing *foreign* languages must also be considered when it comes to international collaborations (Vangen & Huxham, 2002).

In addition to communication, commitment is another crucial factor for successful partnerships. Commitment refers to the extent of identification, loyalty and engagement within the collaboration project. In this regard, Attia (2015) analysed 162 companies and investigated barriers and drivers in their collaboration with a university. The results show that 95% of the investigated companies assessed a mutual commitment as a major driver in university–industry collaboration. There is also evidence that researchers with a positive attitude towards collaboration and commercialization are more likely to engage in

university–industry collaboration (Sellenthin, 2011). This result might also indicate that the commitment to a collaboration is influenced by the attitude of the researchers. Another side aspect is the time commitment of both partners. A lack of time commitment might be interpreted as disinterest in the collaboration. In this context, Poston and Richardson (2011) highlight that university collaboration requires intense time commitment, especially at the beginning of the partnership. Goduscheit and Knudsen (2015) mention in this context that the difference in the perception of time on the part of the universities and companies can cause problems and is also a barrier in such collaborations.

The next factor refers to mutual trust, which is an essential factor for the establishment of a successful university–industry collaboration. Many authors, for example Barnes et al. (2002) or Attia (2015), emphasize the importance of trust between collaboration partners. A lack of trust influences information flow and can even result in drifting apart from the original focus of the collaboration project (Barnes et al., 2002). Consistently, collaboration partners have to build and enhance trust as a basis for a fruitful partnership. Hemmert, Bstieler, and Okamuro (2014) examined different aspects that foster trust formation in a university–industry collaboration. In their study they investigated 618 companies in the U.S., Japan and South Korea and showed that strong ties, a good partner reputation and contractual safeguards regarding potential insecurities support building trust in a collaboration (Hemmert et al., 2014). Besides these positive effects, they also found that a combination of tie strength and contractual safeguards negatively influences trust. Hence, the intensive focus on contractual safeguards can have a negative impact on partners' trust, when there is already a strong partnership established (Hemmert et al., 2014).

When conducting a university–industry collaboration, cultural differences have to be considered. This factor refers to cultural differences between organizations as well as between countries. Starbuck (2001), for example, highlights cultural differences between universities and companies. For instance, meetings in companies are based on a strict schedule, whereas meetings in universities seem to be less formal. Barnes et al. (2002) investigated collaboration projects between universities and industry and identified cultural issues as a main factor for successful collaboration and they mention different priorities or different time horizons between universities and companies as examples. They strongly recommend handling this cultural gap appropriately in order that a collaboration can succeed. Besides these organization-related differences, collaboration partners should also consider differences between countries. In this regard, Borgia, Bonvillian, and Rubens (2011) highlight differences between China and Western countries and recommend the use of intermediaries, who can assist in understanding and dealing with cultural differences. Even though their investigation focuses on an academic partnership, their assumptions will also apply to university–industry collaboration.

Leader level

In this section, we focus on the leadership and management level and represent literature that refers to the social and interpersonal relationship of leaders within a university–industry collaboration. According to our framework, we again summarize the literature regarding the factors communication, commitment, trust and culture.

Leaders on a university and industry level have a significant impact on the success of collaboration. Communication is a crucial factor and leaders can play a key role in this regard. As investigated by Dindire, Asandei, and Ganescu (2011) in a study with 432 company managers about communication barriers in university–industry collaboration, more than 50% of all respondents perceive very large or large communication barriers in collaboration. The level of communication was assessed by 81.4% of the respondents as very low, low or medium, whereas only 18.6% gave a favourable feedback regarding the level of communication (Dindire et al., 2011). This study emphasizes the high significance of communication in such collaborations and all persons involved should engage in frequent and efficient communication (see above). Leaders can have an enormous influence on the communication within a collaboration. Barnes et al. (2002) stress that leaders can foster trust between collaboration partners and have a strong role model effect and therefore should pay attention to setting a good example. This includes, amongst others, conducting open and honest communication, fair treatment and having the willingness to provide information to all relevant persons (Barnes et al., 2002).

As already discussed, commitment between partners is a necessary foundation to fostering collaboration. Commitment to a collaboration affects the willingness to share resources. However, commitment is a matter for all persons involved, from ordinary team members to the top management. In their systematic literature review about university–industry collaboration, Ankrah and AL-Tabbaa (2015) identified the commitment and support of the leadership as a factor that facilitates or impedes collaboration. Hence, for a successful partnership, it is not only those people who are directly affected but also the leaders who need to be fully committed to the goals and the collaboration as a whole.

Attia (2015) demonstrates that mutual trust can be seen as a key factor in university–industry collaboration. In their study, they investigated 162 companies and 96% of the respondents stated that mutual trust is a very important or important driver in such collaborations. Barnes et al. (2002) claim that leaders have significant influence in fostering trust between collaboration partners. However, Gawel (2014) stresses that the formation of mutual trust between collaboration partners takes considerable time. Leaders should keep that in mind and take the time-consuming process of trust building into account (Gawel, 2014). In this regard, Barnes et al. (2002) recommend that collaborations with new partners should include smaller projects in order to enable trust building. They also emphasize the advantages of mutual collaborations in the past. Partners with historical experience already know how to work together and can

concentrate on the collaboration itself instead of on trust-building measures (Barnes et al., 2002).

With respect to cultural differences, Schofield (2013) conducted a questionnaire with university managers, industry managers, researchers and government representatives. Findings indicate that different cultures between university and industry have a negative impact on project success (Schofield, 2013). Similarly, Vangen and Huxham (2002) stress that many collaboration problems arise in managing different cultures and languages. Therefore, the challenge for university–industry collaboration is being aware of cultural differences between the partners (Hong et al., 2010). Managing this cultural gap is a very important task for leaders. They can sensitize the staff and encourage understanding of different cultures.

Staff level

Highly qualified human resources (e.g. specialists, researchers) are one of the core assets of universities or companies. When building a university–industry collaboration, both partners can profit either from research experts on the one hand or industry professionals on the other (Myoken, 2013). Communication among the workforce of the partners is one of the first steps to building trust and commitment and the relevance of the communication on a staff level should not be underestimated. As well as regular communication in general, Hong et al. (2010) emphasize the importance of multiple communication channels for the university and industry workforce (see also the sections above). Through frequent communication between the participants on both sides of the collaboration, the goals and targets of each other become transparent and clear (Hong et al., 2010). Similarly, Johnson and Johnston (2001) suggest that the objectives and milestones as well as the technical and business goals of a collaboration project have to be explicitly communicated at the beginning. Lee (2011), however, emphasizes the need for constant feedback, which influences the success of an alliance. And Gawel (2014) discusses the necessity of a mutual language, a challenge that occurs especially in collaboration between universities and the industry, since academic and business staff (i.e. researchers, engineers or managers) often speak a different language (Gawel, 2014). A common language among the staff members of both partners is required for the success of a university–industry partnership (Baba et al., 2010).

In a collaboration project, the loyalty and commitment of the staff members are a prerequisite for beneficial partnership. Therefore, commitment from top management to ordinary staff members should be established. As shown by Sellenthin (2011), the staff's commitment depends on their general attitude towards collaborations. A lack of commitment can result in delays, postponements or negligence. With respect to a global university alliance, Gunn and Mintrom (2013) claim that university members, who do not realize the collaboration's benefits, will not support the alliance with their full energy and commitment. Furthermore, the staff members must bear in mind that their behaviour and

work is observed and interpreted by the partners. For instance, postponements are easily misinterpreted as a lack of commitment. Therefore, a tight time commitment is needed by staff members of all partners (Poston & Richardson, 2011).

To establish a successful collaboration it is necessary to build trust between the staff members. Here, an open and honest communication throughout the collaboration process can strengthen interpersonal trust (Barnes et al., 2002). At this juncture, interpersonal links and networks are significantly important (Collier, Gray, & Ahn, 2011). Mashhadi, Alänge, and Roos (2014), for instance, report a case where a very close learning relationship between actors on both sides leads to more trust and commitment, and moreover to friendship.

As already mentioned, there are strong cultural differences between companies and universities, which affect how staff members work and think. Strict agendas and concrete action plans are quite usual in the private industry, whereas university work is more open and informal (Starbuck, 2001). Especially at the beginning of a collaboration such differences have to be considered by staff members (Starbuck, 2001). Even when some issues seem trivial, they can cause strong discord within the staff and can endanger collaboration. Furthermore, there is also the need to understand the different cultures in different countries. This is essential to build up personal relationships in international collaborations.

Discussion and conclusion

When establishing a collaboration between universities and industry much thought is given to resources, infrastructure, goals, outcome, and patenting contracts. This is absolutely legitimate and it would be careless not to consider these aspects. Nevertheless, a collaboration depends not only on hard facts but rather on the people working on it. It is a major fault to believe that ‘numbers’ or a perfect strategic fit will be sufficient for a successful collaboration. In the course of this article, we investigated the relevant literature regarding social and interpersonal relations; in particular, we discussed the factors communication, commitment, trust and culture. Generally, these factors are strongly interconnected. For example, culture influences how people communicate and communication again is an instrument with which to build trust. Hence, it is important to be aware that a holistic view of these social facets is necessary, which cannot be seen independently from each other.

To look at the entirety is also necessary when it comes to the different levels we investigated. On an *organizational* level, it is important to acknowledge that there is a cultural gap between universities and industry. To be aware of these differences and their accompanying problems is a first step to successfully handling cultural dissimilarities.

There are surely different goals and interests, a different language or ‘style’, and there may even be inherent mistrust between the participating partners.

The *leaders* can play a crucial role in this context. It is important that they pay attention to those differences, and that they make others aware of and help them to cope with those differences. Leaders have to set a good example (e.g. conduct open and honest communication), they have to establish clear rules and they can encourage staff members to overcome differences and mistrust. Leaders are role models in this regard. Their behaviour towards the partners and their commitment to the collaboration will influence others and is essential for success.

The *staff* – researchers, practitioners, engineers or ordinary team members – are those persons who breathe life into a collaboration. It is obvious that the workforce of all participating institutions have to get along well together, for which reason the social and interpersonal links have to be fostered. A frequent and continuous communication helps to establish a common understanding of the collaboration’s objectives and individual interests. Every measure that assists in building trust should be seized upon and even ordinary staff members must know that they should avoid behaviour that contradicts those measures. Even trivial incidents, such as the postponement of meetings or reports can result in suspiciousness on the part of the partner. The challenging issue here is to consider cultural differences. For example, minor postponements or delays might be commonplace for one partner, but absolutely unusual for the other. Finally, yet importantly, the commitment of staff members to the collaboration is a necessary requirement in order to ensure that all the energy and power needed is invested in the collaboration.

It would appear that the three levels are strongly interconnected, which hints at the complex relationship we are speaking of. In this fragile environment a holistic perspective and a cautious approach are necessary to overcome differences between the university and industry to align goals and interests. A good fit of partners, mutual strategies and appropriate procedures are prerequisites for collaborations. But only good social and interpersonal relations within and between the institutions will make them successful.

Limitations and further research

As with every literature review, there are some limitations to consider. First, it is not possible to find and present all knowledge. Some constrictions have to be made, for example regarding the search database, the time period or the language. Secondly, we excluded practical reports, books or grey literature from our examination. Thirdly, the assessment of the reviewers can influence the emphasis of the analysis or the categorization. Further research might focus on the question of how exactly the

interaction between the different players can be improved in a way that both partners can identify with.

References

ANKRAH, S. and AL-TABBAA, O. (2015) *Universities–industry collaboration:* A systematic review. *Scandinavian Journal of Management*. Vol. *31*, No. 3, 387–408.

ATTIA, A. M. (2015) *National innovation systems in developing countries:* Barriers to university–industry collaboration in Egypt. *International Journal of Technology Management & Sustainable Development*. Vol. *14*, No. 2, 113–124.

BABA, Y.; YARIME, M. and SHICHIJO, N. (2010) *Sources of success in advanced materials innovation:* The role of “core researchers” in university-industry collaboration in Japan. *International Journal of Innovation Management*. Vol. *14*, No. 2, 201–219.

BARNES, T.; PASHBY, I. and GIBBONS, A. (2002) *Effective university–industry interaction:* A multi-case evaluation of collaborative R&D projects. *European Management Journal*. Vol. *20*, No. 3, 272–285.

BEKKERS, R. and BODAS FREITAS, I. M. (2008) *Analysing knowledge transfer channels between universities and industry:* To what degree do sectors also matter? *Research Policy*. Vol. *37*, No. 10, 1837–1853.

BORGIA, D.; BONVILLIAN, G. and RUBENS, A. (2011) *Case study of Chinese and U.S. University, College of Business Partnerships:* Form, process, opportunities, and challenges. *Journal of Management Policy and Practice*. Vol. *12*, No. 1, 98–107.

COLLIER, A.; GRAY, B. J. and AHN, M. J. (2011) *Enablers and barriers to university and high technology SME partnerships*. *Small Enterprise Research*. Vol. *18*, No. 1, 2–18.

DINDIRE, L.; ASANDEI, M. and GANESCU, C. (2011) *Enhancement of cooperation and communication between universities and the business environment, requirement for a good functioning of the knowledge triangle:* Education, research, innovation. *Theoretical & Applied Economics*. Vol. *18*, No. 9, 89–102.

GAWEL, A. (2014) *Business collaboration with universities as an example of corporate social responsibility:* A review of case study collaboration methods. *Poznan University of Economics Review*. Vol. *14*, No. 1, 20–30.

GODUSCHEIT, R. C. and KNUDSEN, M. P. (2015) *How barriers to collaboration prevent progress in demand for knowledge:* A dyadic study of small and medium-sized firms, research and technology organizations and universities. *Creativity and Innovation Management*. Vol. *24*, No. 1, 29–54.

GUAN, J. C.; YAM, R. C. M. and MOK, C. K. (2005) *Collaboration between industry and research institutes/universities on industrial innovation in Beijing, China*. *Technology Analysis & Strategic Management*. Vol. *17*, No. 3, 339–353.

GUNN, A. and MINTROM, M. (2013) *Global university alliances and the creation of collaborative advantage*. *Journal of Higher Education Policy and Management*. Vol. *35*, No. 2, 179–192.

HEMMERT, M.; BSTIELER, L. and OKAMURO, H. (2014) *Bridging the cultural divide:* Trust formation in university-industry research collaborations in the US, Japan, and South Korea. *Technovation*. Vol. *34*, No. 10, 605–616.

HONG, J.; HEIKKINEN, J. and BLOMQVIST, K. (2010) *Culture and knowledge co-creation in R&D collaboration between MNCs and Chinese universities*. *Knowledge and Process Management*. Vol. *17*, No. 2, 62–73.

JOHNSON, W. H. A. and JOHNSTON, D. A. (2001) *Aligning technical and business goals in industry-university collaborative R&D projects:* A tale of two projects. *Engineering Management Journal*. Vol. *13*, No. 1, 23–27.

LEE, K.-J. (2011) *From interpersonal networks to inter-organizational alliances for university-industry collaborations in Japan:* The case of the Tokyo Institute of Technology. *R&D Management*. Vol. *41*, No. 2, 190–201.

MASHHADI, A. F.; ALÄNGE, S. and ROOS, L.-U. (2014) *A learning alliance for robust design in product development:* The case of Volvo 3P and Chalmers University of Technology. *Total Quality Management & Business Excellence*. Vol. *25*, No. 9, 1054–1071.

MYOKEN, Y. (2013) *The role of geographical proximity in university and industry collaboration:* Case study of Japanese companies in the UK. *International Journal of Technology Transfer and Commercialisation*. Vol. *12*, No. 1/2/3, 43–61.

POSTON, R. S. and RICHARDSON, S. M. (2011) *Designing an academic project management program:* A collaboration between a university and a PMI chapter. *Journal of Information Systems Education*. Vol. *22*, No. 1, 55–72.

RYBNICEK, R. and KÖNIGSGRUBER, R. (2016) *Effects in university cooperation:* Resources – risks and benefits. In M. Cingula, R. D. Vlahov, & D. Dobrinic (Eds.), *Economic and social development. Proceedings of the 15th International Scientific Conference on Economic and Social Development* (pp. 156–163). Varazdin, Croatia: University North.

SCHOFIELD, T. (2013) *Critical success factors for knowledge transfer collaborations between university and industry*. *Journal of Research Administration*. Vol. *44*, No. 2, 38–56.

SELLENTHIN, M. O. (2011) *Factors that impact on university-industry collaboration:* Empirical evidence from Sweden and Germany. *Brussels Economic Review*. Vol. *54*, No. 1, 81–100. Retrieved from http://content.ebscohost.com/ContentServer.asp?T=P&P=AN&K=85607836&EbscoContent=dGJyMMTo50SeqLA4yNfsOLCmr06eprRSsqi4SrGWxWXS&ContentCustomer=dGJyMPGot0i0ra9LuePfgeyx%2BEu3q64A&D=buh

STARBUCK, E. (2001) *Optimizing university research collaborations*. *Research Technology Management*. Vol. *44*, No. 1, 40–44.

VANGEN, S. and HUXHAM, C. (2002) *What makes partnerships work?* In S. P. Osborne (Ed.), *Public private partnerships. Theory and practice in international perspective.* London: Routledge.