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Relationships matter : towards understanding university-industry links

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Abstract. The main aim of this paper is to better understand the influence of relationships on the value created within university–industry links. Organizational and environmental differences (OED) between a university and a company create one of the main sources of barriers in their cooperation. The author suggests that the quality of the relationships may mediate the OED influence on the co-created value. The variables identified in three groups, i.e., organizational and environmental factors, the value created, and the quality of relationships, contribute to creating a relationships management model within the university–business networking.

Introduction

Cooperation between companies and scientists can bring a significant increase in research leading to the introduction of new products. These, in turn, will drive further research in order to obtain innovation. The specificity of the university−business relationship is mainly due to more ambitious research, high risk of achieving planned results, more complex networks, and interactions occurring in it. The role of relationship management in commercialization processes is to create bilateral value. It has also been noticed that organizational and environmental differences (OED) create one of the main sources of barriers in cooperation between

universities and companies. The author suggests that relationships may mediate OED effects on creation of value in academia–business partnerships. This paper presents the results of a literature review exploratory study, supported with primary research results, which demonstrates key elements in three groups of variables: 1) organizational and environmental differences, 2) value created for universities and companies, 3) key relationship quality characteristics.

Literature

University‒industry links and their impact on innovation processes have been an object of analyses of many researchers in management studies, technology transfer and policy, economics of innovation, and sociology (Agrawal, 2001; Foss, Gibson, 2015; McMillan, Hamilton, 2003; Mowery, Nelson, 2004). Several frameworks have been suggested to study different dimensions of university‒industry links (Perkmann, Walsh, 2007). Some researchers have studied the concept of relationship marketing in commercialization processes (Siegel, Waldman, Link, 2003; Siegel, Waldman, Atwater, Link, 2004; Plewa, Quester, 2005; Plewa et al., 2013; Trzmielak, Grzegorczyk, 2010; Grzegorczyk, Trzmielak, 2015). Tijssen (2006) has divided the evolution of university‒industry links (UIL) collaborative relationships into three stages: relationship-oriented, product-oriented, and business-oriented. There are different types of links with universities at different stages. Some studies have captured and defined different types of university‒industry links, but they have not characterized the relationships in depth nor provided the assessments of impacts and consequences (D'Este, Patel, 2007; Perkmann, Walsh, 2007; Carayol, 2003; Cohen, Nelson, Walsh, 2002; Caloghirou, Tsakanikas, Vonortas, 2001; Lee, 2000; Mansfield, 1995).

Methodology

The secondary evidence was derived from a comprehensive survey of peer-reviewed empirical articles using the Web of Science and EBSCO Business Premier. A simplified version of the process underlying a systematic literature survey (Tranfield, Denyer, Smart, 2003) was used to filter and summarize the results. The paper also presents the results of the primary research conducted in a form of an online survey mirroring a series of target groups: scientists and entrepreneurs in Poland, two developing EU countries (the Czech Republic and Hungary), two developed EU countries (Norway and France), the USA, and Canada. In 2014, an online questionnaire has been sent by e-mail to 10,000 respondents from two target groups: scientists and business representatives in Poland, four EU countries, and the United States. The research population was created according to the criteria of an institution: a scientific research institution and enterprise from a chosen sector.

An additional criterion for the selection of companies was experience in cooperation with research centers and innovation. From the 10,000 sample, we received 554 answers. The survey yielded a response rate of 5.54%. After removing the cases with missing data, the results presented here are based on a final N of 361 responses.

Results and discussion

Value created by university−industry links

As market exchanges take place, all the parties involved in relationships expect to gain value (Ulaga, 2003). Sheth and Parvatiyar (2002) argue that value creation is a core issue in relationship marketing. According to some scholars, value is subjective as a single product or service will have a different value for different buyers, or even for the same user under different circumstances. Some authors see value as a value-in-exchange process, some as value-in-use, some as both. According to Gummeesson (1994), value creation is possible only when a good or service is consumed. In UIL, the value is co-created through interaction between an inventor and a company buying or using technology or research results. According to Möller and Svahn (2006), "value is conceived through relationship itself." Relationship marketing assumes that both parties in a relationship must benefit from it to continue in the long run. It means that partners review the benefits they receive and the sacrifices they invest to maintain it.

Several types of value were identified in the primary data. The research conducted among researchers and entrepreneurs from Poland, four other European countries, Canada, and the USA, shows that for companies the most important is an access to experts, gathered knowledge, and the creation of new technologies (Table 1). Additionally, Polish companies pay more attention to the improved image of an organization than the respondents from other countries in the survey.

Table 1

Hierarchy of cooperation effects (%)

	SciencePL	BusinessPL	ScienceInter	BusinessInter
Access to new ideas	25.4	23.1	52.4	62.8
Creation of new technologies	25.4	29.6	42.8	69.8
Improved image of organization	40.9	55.7	66.6	44.2
Access to new sources of funds	24.3	32	61.9	40.5
Knowledge gathered	50.7	33.9	57.1	72.1
Improved international cooperation	19.4	25.5	60	60
Improved competitive position	26.9	37	52.4	62.8
Access to experts	29.9	39.6	57.2	72.1

Source: own elaboration.

Scientists also evaluate highly the improved image, and additionally, appreciate an access to additional funds. An access to industry experts and knowledge is seen as important in terms of bringing new ideas and making the research more practical (Table 1).

This research supports other studies. Some researchers describe the value perceived by entrepreneurs including: financial gain, acquisition of knowledge and technologies, access to talent and facilities, public awareness and image, generating new ideas, relevant topics, and sharing of networks. From the researcher's perspective, the key values created include: development and use of technology, financial gain, financial support for students, strategic positioning, image and word of mouth, and sharing of networks.

Organizational environment difference

Many studies underline the differences in the organizational environments and cultures between a university and industry as an important source of barriers in cooperation. The author of the study identified the following relationship barriers:
   – passive attitude of scientists towards cooperation with enterprises,
   – lack of openness of researchers to the business needs,
   – no reaction of scientists to offers from businesses,
   – low communication skills of researchers,
   – lack of implications of scientific results in business activities.

The above were pointed by entrepreneurs from four European countries, the USA, and Canada. Among the negative factors that lie on the side of entrepreneurs, as pointed out by the researchers, was unavailable offers of entrepreneurs. These factors result from misalignment of goals and reward systems (Smith, Barclay, 1997).

To create the relationship management in commercialization processes model four OED dimensions have been taken into consideration after Plewa and Quester (2005). These include: (1) motivations, (2) time orientation, (3) market orientation, and (4) organizational bureaucracy and flexibility. Researchers and entrepreneurs have different motivations that result in a 'commercial' versus 'knowledge creation' view. It can also be described as an outcome- versus process-oriented approach. Companies are always interested mainly in cooperation outcomes that solve their problems, as well as financial gain, while academic promotion is based on research performance and publications. This creates motivational differences. It is also important to note that university scientists are also motivated by personal financial gain. Of particular importance for faculty involvement are the terms of the university royalty distribution formula that determines the fraction of the licensing

revenue allocated to the inventor being a faculty member (Siegel et al., 2003; Siegel, Waldman, Atwater, Link, 2004).

Companies and universities differ also in terms of time orientation in two aspects: 1) adherence to deadlines and 2) time frame (Cyert, Goodman, 1997). The key issue for companies is "time-to-market" as it determines products chances on market. Researchers usually have time frames determined by research grants. A further barrier in the value creation process is the lack of market orientation at universities, and high bureaucracy.

Relationships

Research on university−industry links traditionally has focused on the transfer of intellectual property. However, some authors suggest that the links vary according to what can be called "relational involvement" between universities and industrial organizations (Schartinger, Rammer, Fischer, Frohlich, 2002). Thus "relationships" are defined as links with high relational involvement. It includes situations where individuals and teams from academic and industrial context work together on specific projects, and produce common outputs (Perkmann, Walsh, 2007). These are opposed to mobility and transfer links, as those of lower relational involvement, limited to transferring generic skills or formal IP transfer activities. Perkmann and Walsh (2007) differentiate between the generic category university−industry 'links' for defining the various ways in which publicly funded research potentially benefits industry and the economy (Salter, Martin 2001), from the relationship− intensive links named "relationships." An interesting question arises: how do the quality of relationships and level of relational involvement influence the value created in university−industry cooperation?

Relationship quality can be regarded as a metaconstruct composed of several key components reflecting the overall nature of relationships between companies and consumers. There is a general agreement that satisfaction with the partner performance, trust, and commitment to the relationship are the key components of a relationship quality (Baker, Simpson, Siguaw, 1999; Palmer, Bejou, 1994; Smith, 1998). According to Plewa and Quester (2005), trust and commitment tie the parties of the relationship, and can be named as linkage mechanisms. In particular, trust emerged as the essential element of UILs, with many researchers underlying its crucial role for the relationship success.

The empirical study conducted also shows trust among the most significant relationship drivers in all the participating countries (Grzegorczyk, Trzmielak, 2015). However, one may notice that Polish respondents underestimate the role of trust. It is also shown that the respondents from developed countries, with high innovation

rates, rate relationship drivers higher than the respondents from Central and Eastern Europe, who are more concerned about the functional benefits of cooperation. Both academics and entrepreneurs rank very high the existence of mutual understanding of each other's needs and commitment.

Conclusions

In order to build a model of relationship management in university−industry links, three groups of variables were identified:

1. Organizational and environmental differences: motivations, time orientation, market orientation, and organizational bureaucracy and flexibility.
2. Value created: financial gain, acquisition of knowledge and technologies, access to talent and facilities, public awareness and image, generating new ideas, sharing of networks, development and use of technology, strategic positioning, and image and word of mouth.
3. Relationship quality: trust, commitment, and communication.

Further research should concentrate on creating and empirically testing the model. A hierarchy regression analysis should be used to check if relationship quality moderates the influence of organizational and environmental differences on the creation of value in university−industry links.

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Relacje mają znaczenie – w kierunku zrozumienia powiązań między uczelniami a przemysłem

Słowa kluczowe: relacje, uniwersytet, biznes, powiązania, wartość, kreacja

Streszczenie. Głównym celem artykułu jest lepsze zrozumienie, w jaki sposób relacje wpływają na wartość kreowaną w ramach współpracy uczelni z biznesem. Różnice organizacyjne i środowiskowe między uczelnią a firmą stanowią główne źródło barier współpracy. Autorka stawia hipotezę, że jakość relacji moderuje wpływ tych różnic na współtworzoną jakość. Zidentyfikowane zmienne w trzech grupach, takie jak: czynniki organizacyjne i środowiskowe, kreowana wartość oraz jakość relacji, stanowią wkład w stworzenie modelu zarządzania relacjami w ramach powiązań między uczelnią a biznesem.