

6TH INTERNATIONAL CONFERENCE FOR ENTREPRENEURSHIP INNOVATION AND REGIONAL DEVELOPMENT 2013

REGIONAL ECONOMIC RESILIENCE THROUGH INNOVATION AND ENTERPRISE

JUNE 20-21, 2013
ISTANBUL, TURKEY



PROCEEDINGS

OF THE 6TH INTERNATIONAL CONFERENCE
FOR ENTREPRENEURSHIP INNOVATION AND
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Dear International Conference for Entrepreneurship Innovation and Regional Development Participants,

On behalf of the Organizing Committee, I am privileged to welcome you to the 6th International Conference for Entrepreneurship, Innovation and Regional Development ICEIRD 2013. Over the past six years ICEIRD has grown to be the major international conference in entrepreneurship and innovations. It is an honor to preside the 6th anniversary issue of the conference themed Regional Economic Resilience through Innovation and Enterprise, which continues the tradition of high-quality, broad international participation in all areas of entrepreneurship and innovation for regional development.

The ICEIRD 2013 conference brings together academicians, researchers, business executives, industry organizational leader, government and non-government representatives, management consultants, service providers, technological and business experts and entrepreneurs and innovators. The program consists of thoughtful leadership, industry research, best-of-breed practices and technology solutions that can be deployed on regional development. While doing this entrepreneurship and innovation are the main pillars of the Conference.

The spirit of the Conference lies in the belief that the global and regional economy favors organizations that can reach across boundaries effectively. It rewards those that can collaborate smoothly with their partners and customers. As a result, business excellence is no longer about individual players—it's about effortless coordination and communication.

We are honored to have Dr. Lars Eklund, Founder & Chairman of Scandinavian Competitiveness Group, Mikel Landabaso, DG Region Head of Unit of the thematic competence center on smart and sustainable growth at the European Commission, Christopher Mondini, ICANN's Vice President and Professor Soumodip Sarkar of University of Evora, Portugal as our keynote speakers.

Istanbul Şehir University provided all the facilities for the Conference. Therefore we thank to the Rector Ahmet Ademođlu for his motivating support and all the personnel of the University. Moreover we thank Istanbul Development Agency, International Competitiveness Research Institute(URAK) and KOSGEB for their supports.

Today's developed world, crisis is everywhere and we come together in order to understand and resist against it. Let us experience value of ICEIRD2013 and bring that energy to your community for positive changes.

Melih Bulu

ICEIRD2013 Conference Chair

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ON THE CHALLENGES OF THE SCIENCE TO BUSINESS (S2B) MARKETING: ROLE OF POTENTIAL AND PARTNERSHIP IN EARLY STAGE TECHNOLOGY TRANSFER

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Knowledge creation and innovation are the cornerstones of today's knowledge-based economy. The number of intellectual properties and patents are in a turbulent augmentation. The intellectual property market is dealing with the same challenge as marketing had in the second half of the last century when the main task was no longer the manufacturing but the selling of products. This situation is particularly challenging for basic research stakeholders - especially universities. In our paper we shed light on the above situation as we analyze the opportunities and challenges universities face during their attempt to commercialize their intellectual property. As a theoretical framework for our investigation we have chosen the science-to-business (S2B) marketing. Our research focuses on the characteristics of S2B marketing with regard to product portfolio management, pricing and difficulties in the use of communication devices. Specific techniques and practices are presented and examined in the paper. We set together best practices from North America, Far East and Eastern Europe in order to deepen our understanding about the applicability of S2B marketing in local circumstances.

Keywords

Innovation management, Science-to-business marketing, Technology transfer,

1. Introduction

Continuous knowledge creation and innovation are the cornerstones of today's knowledge-based economy, which encompasses a very broad spectrum from units specialized in applied research in multinational companies to academic institutions performing basic research. Due to technological development, the processes taking place in the area of intellectual properties are similar to those occurring in western market economies in the second part of the last century, when the main challenge of marketing was no longer product manufacturing but selling the manufactured product. Knowledge creation and the number of innovations are dynamically growing; however, the commercialization and utilization of produced intellectual properties are taking place in increasingly saturated and refined markets. This situation is particularly challenging for basic research and early stage development stakeholders, such as universities.

In the light of the above situation, in our paper we analyze the opportunities and challenges associated with the commercialization of intellectual property created in universities. As a theoretical framework for our investigation, we have chosen an approach yet less widespread in our country – but already applied abroad – the science-to-business (S2B) marketing. According to the basic idea of this new S2B marketing trend – emerging besides

the already known B2C and B2B – the commercialization of scientific innovations and intellectual properties requires a specific marketing approach.

These specificities originate from the product development based on technological push characterizing basic research, which, in contrast to demand pull, is not built on market-demand-based product development, but searches market demands for emerging scientific results. Although with changes in university-industry relations [1] and the transformation of research financing, university research projects also frequently show the effects of demand pull, universities aim to act as a classic knowledge creator in many cases, therefore they seek the utilizability of the results generated based on their own knowledge base even if there is no market demand for them at first sight.

Our study focuses on describing the specificities of S2B marketing, with special regard to product portfolio management, difficulties in pricing and applicable communication devices. Our aim is to set up a theoretical framework which generates a 6P marketing mix matching the characteristics of S2B marketing by completing McCarthy's traditional 4P toolbox [2] with two additional tools, the partnership- and potential-based approaches.

2. The role of entrepreneurial universities in knowledge creation

Higher education is experiencing serious changes both nationally and internationally. A common feature of the changes is that the state attempts to reduce the finance of higher education, thereby setting the task of increasing own income creation as an actual and short-term objective for universities. Instead of the traditional system of knowledge creating universities, this transformation brings the system of entrepreneurial universities into life [3]. In this system, the university has no longer merely educational and research tasks, but it also needs to carry out their commercialization, i.e. it has to create income from these two activities [4]. These new activities of universities, which go beyond traditional academic tasks (education, research) and are typically connected to market, are in general called the third mission of university.

It is important to emphasize that these changes transform the nature of higher education not only on national but on international level as well; the increase in the significance of the third mission can be counted among the tendencies of global economy [4]. The OECD [5] provides concrete guideline regarding this transformation, which focuses on universities becoming entrepreneurial universities. It defines the activities to be performed in the domain of the third mission for universities, which includes the following:

- knowledge creation and technology transfer: commercialization and sale of intellectual properties, basic research results and innovations of universities
- commercialization of educational capacities: beyond traditional higher educational framework, also in the form of professional training, adult education
- commercialization of university capacities: leasing buildings, machines, equipments
- fund raising: acquiring external financing for applied research projects

Becoming an entrepreneurial-university is of course impossible without proper business relations, thus without a proper enterprise sphere [4]. In East Central Europe, this macro-environmental factor is not too favourable for higher education institutions, the reason of which is the underdevelopment of business research-development and innovation infrastructure characterizing the region. Apart from some multinational companies performing considerable R&D&I activities, the companies of the region (whether multi, whether SME) can become involved to a very limited extent in advancing experimental developments and scale up, which typically take place outside the walls of universities on international level as well [6][7].

In addition to the drawbacks of regional conditions, it is important to mention the positive R&D&I changes experienced in the economic environment, from which the emerge of SMEs

as the partners of university innovation activities is outstanding. The increase in the innovation potential of small and medium enterprises is underpinned partly by targeted tender supports [8], partly by the development as suppliers of multinational companies. Although this process is not yet in an advanced state, it is important to realize that for entrepreneurial universities a new type of partnership can be created with local small and medium enterprises.

3. Science to Business (S2B) marketing

S2B (Science to Business) marketing is related to innovation marketing, but it interprets its content specifically in relation to higher education institutions (primarily research universities). Thus according to our understanding, S2B marketing is the entirety of marketing devices related to knowledge creation and innovation activity taking place in research institutions, especially universities, whose aim is to facilitate the market utilization of emerging intellectual properties and innovations.

The Fachhochschule Münster University of Applied Sciences has taken a pioneering role in defining the area of S2B marketing and elaborating this discipline, where they have been dealing with S2B marketing research since 2002 and uniquely an independent research centre (Science-to-Business Research Centre) functions in this area.

S2B marketing is a specific marketing area, which is positioned on the border of three already specific marketing areas. In what follows, we present which marketing areas are related to S2B marketing, but at the same time we refer to the main separating points, which justify the separated analysis of this area:

- **Innovation marketing:** Innovation marketing can be regarded as a form of marketing system which offers a market-oriented and complex approach of the innovation process [9]. Nevertheless, it is important to emphasize that this complex approach of innovation marketing covers mostly the entire innovation process, and assumes that innovation takes place in the studied organization from the emergence of idea to the birth of the prototype. In the case of universities, however, the situation is different, since mainly an early stage (basic) research result is commercialized, which differs from appearing with a prototype in the market in many respects [10][11], primarily in the related risk [12]. Consequently, the domain of innovation marketing only partly provides a proper basis for analyzing the commercialization of innovation activities of universities; it is justified to introduce a marketing area focusing on this issue in particular, the category of Science to Business (S2B) marketing.
- **B2B marketing:** The customers of academic knowledge creation are mainly organizational actors (companies, research institutions, the state itself in given cases). The university, however, functions differently from an enterprise in many respects, thus it can also develop partner relations with other enterprises in a very particular way.
- **Non-business marketing:** In several countries of the world, universities are mainly related to the non-business sphere, thus the specificities of non-business marketing can be applied regarding the marketing activities they perform [13]. Nevertheless, on the one hand, the concept of entrepreneurial university, and on the other hand, the characteristics of technology transfer require activities which go beyond the framework of non-business marketing in the commercialization of innovation results of universities.

The question arises whether S2B marketing requires a separate marketing approach. In our opinion it does because although it is related to the above mentioned three areas, due to exactly its diversity, it cannot be identified with none of the areas respectively. Furthermore, we consider the separated approach justified because this area analyzes the focus of scientific activity, the knowledge creation of the university itself, thus it may expect the interest of a significant part of scientific opinion owing to the personal involvement of actors.

The characteristics of S2B marketing can be summarized by the following:

- It is related to regional image: The effect of the country of origin is also known in the case of products [14] [15], but in the case of S2B marketing it emerges specifically. The enterprise attitude related to a university innovation considerably depends on which university the given innovation was created in. Renowned universities and knowledge regions (Silicon Valley, Harvard, Leuven) have significant competitive advantage in contrast to, for example, Eastern and Central European institutions.
- “Hit or miss” character: The innovation results often require considerable investments and their return is uncertain. It is especially true for the results of basic researches and early developments in the focus of S2B marketing. The significant part of them entails almost no measurable market potential, however, the results which bring market success later on are typically so resounding that they may produce significantly greater income compared to the result achieved by an applied research or development. This character originates from the fact that basic research results generally differ from all already existing solutions – contrary to a development which carries on existing results – thus they can represent a quality leap [16].
- Double risk: According to what has already been mentioned, the market success of basic research results is very difficult to estimate. This represents a risk for the customer of the intellectual property, but at the same time it means a risk for the seller as well, because it can easily occur that they sell the intellectual property for a fraction of the real (later realized) value [12].
- Researcher vs. marketing: the research results considered as the subject of S2B marketing are produced by basic researchers, for whom scientific aspects and objectives are often more relevant than marketing aspects. As a result, S2B marketing has to cope with a specific problem: the producers of its products are not inevitably interested in marketization (or not only and not primarily interested), thus they may disregard market aspects concerning the direction of product development and the related confidentiality.

Based on this we can generally establish that the success of S2B marketing depends on the collective of three factors, namely the potential in technology, the specificities of the targeted market and the characteristics of the involved persons. By involved persons we mean firstly the potential customers, secondly the researchers and thirdly the managers performing S2B marketing. The potential customers are mostly similar to the customers of B2B marketing, mainly institutions dealing with applied research, industrial companies, investors and only rarely consumers. The S2B marketing managers generally work in the technology transfer office of the university. In the followings, we analyze the specificities of S2B marketing within the framework of a model we have set up, through which we intend to create a theoretical basis for S2B marketing stakeholders, primarily for the marketing managers working in this area.

4. The marketing mix model of S2B

In the foregoing, we have described the concept and general approach of S2B marketing. In what follows, we summarize the S2B marketing devices and the specificities of the related marketing activities in a model we have developed.

We have used McCarthy's [2] widely known [17][18] marketing mix model as a basis, which concentrates the marketing toolbox into four factors. We have applied these four factors to S2B marketing on the one hand, and extended it with two additional factors on the other, thus we have developed a 6P marketing mix model based on McCarthy's 4P model. We have summarized each component in Figure 2.

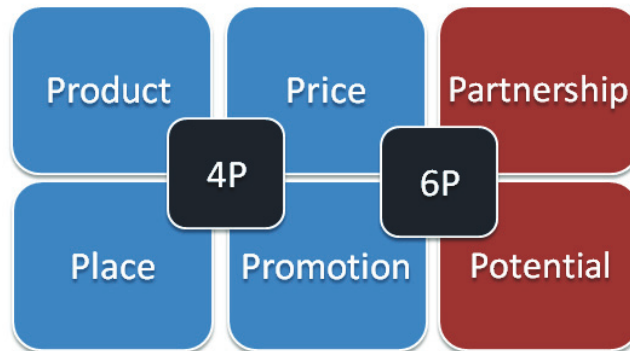


Figure 1: Marketing mix 6P model of S2B

In the followings, we provide a detailed description of each marketing mix component, focusing on the S2B marketing characteristics a certain component has in every case. It means that we do intend to overwrite the literature views concerning the four factors of the general marketing mix but to complete them in our model.

4.1. Product

In the course of developing product policy, marketing experts carry out the elaboration of the specificities and characteristics of the product and the management of the product mix, also known as product portfolio [18]. Product policy and innovation are traditionally linked within the category of new product development, as the creation of a new product is normally connected to a kind of research-development or innovation activity. New products may originate basically from two sources: from an innovation developed to satisfy a so far unsatisfied demand (it is called innovation of demand pull type) or from a technological solution which could not be produced on the earlier technological level and there was no demand for it (innovation of technological push type). In the former case technological implementation, in the latter arousing demand is the most important marketing task [19].

In S2B marketing, the results of innovation processes, i.e. the produced intellectual properties are considered as a product. Portfolio management is the central component of S2B product policy. A particular problem of marketing related to university research-development is that (marketing) decision-makers themselves are not aware of their own product range. In a university, several research workshops, departments and laboratories performing continuous research-development activity operate, but only a very limited number of emergent innovations are reported by the researchers to the technology transfer office of the university.

In the area of S2B marketing, the focus of product policy may vary based on the type of the research-development activity. In the followings, we provide details about the main marketing activities related to product policy according to research-development activity:

- In the case of basic research: The main marketing task is the up-to-date management of the product portfolio, which involves portfoling and up-to-date registering the emergent – moreover, the earlier emerged – innovation results, and evaluating the processes.
- In the case of applied research: The parameters of the product are often defined by the business partners. In this case, S2B marketing managers' first task is keeping contact with partners, ensuring proper information flow and ensuring the proper specification of products.
- Experimental development: In this field, the marketing latitude of East Central European universities is rather narrow. Partner relationship development, closer cooperation with

partners and attracting investors can basically found experimental developments [20]. In practice, however, experimental development rarely occurs under university management due to the lack of funds in the university, thus experimental developments are preceded by the commercialization of the intellectual property by the university or its exportation to a spin-off company.

- Service – One of the central components of the OECD [5] proposals is the commercialization of university capacities and the offer of university services on market basis. Assessing the capacities and marketizing them in a proper form (service package) are related marketing tasks.

As a conclusion, we can establish that the conscious and continuous portfolio management stands in the focus of the product policy activity of S2B marketing. In this activity, on the one hand, registering the existing intellectual properties represents a challenge, and on the other hand, portfolio cleaning is difficult because although keeping intellectual properties in a portfolio is quite expensive (due to patent maintenance costs), parting with certain innovation results may raise business and personal concerns.

4.2. Price

The price formation of S2B marketing is generally done with individual pricing, since individuality is an inherent characteristic of innovations. This represents an opportunity in terms of higher pricing due to individuality on the one hand, but it also means a barrier on the other because it is difficult to find a starting point to define the price [21].

The traditionally most simple cost-push pricing [18] cannot normally be applied in S2B marketing, since the costs are so high that the price matched to them generally exceeds the customers' reservation price. Nevertheless, it has to be noted that these costs do not normally arise directly due to the production of the given intellectual property, but they are the fixed costs of regular research work, thus their return is not a primary concern.

As a consequence of the above, the counter value of intellectual properties can generally be defined with market-based pricing. It renders it more difficult that due to its individuality and novelty, the future profitability of an innovation is very hard to define.

As a result of the above issues, uncertainty is mitigated by that, in contrast to general marketing, not only a complete divestiture may occur but its partial forms as well: licensing, leasing and cost share.

Therefore, the most important considerations in terms of the price policy of S2B marketing are the utilization of pricing opportunities deriving from individuality on the one hand, and the flexible choice of commercialization and pricing methods on the other.

4.3. Place

The commercialization of intellectual properties is similar to the commercialization policy of B2B marketing in terms of requiring considerable personal negotiation. Commercialization normally happens through a short channel and the product itself is very complex, its overall understanding necessitates profound scientific knowledge. Nevertheless, it characterizes commercialization policy that frequently neither commercialization, nor purchase is carried out by skilled researchers but by economic experts and managers, thus, in a unique way, they only partially know the given product. From the aspect of the seller, it means that marketing managers need to have well-developed information channels towards researchers. From the aspect of the customer, it considerably increases the risk of purchase [12], thus even in the case of experienced investors – moreover, often particularly in their case – besides measurable data, intuition has a significant role in making the buying decision.

One of the main challenges of S2B commercialization policy is finding customers. The standard devices of locating potentially interested people are structured databases, as well as business conferences and partner meetings. The latter are crucial, since they represent not merely opportunities to sell, but platforms to collect important industrial feedbacks. In a partner meeting, innovation marketing managers can evaluate the extent of potential and occasional deficiencies the industry finds in their product based on the experience of personal discussions. Since the negotiating partners are expert businessmen, we may get new information about earlier undiscovered competitors and competitive technological solutions in such meetings.

Based on this, the significance of S2B commercialization policy lies in intensive presence and developing relationships [22], whose devices range from online databases to partner meetings resulting in personal contacts.

4.4. Promotion

The narrowly defined objective of S2B marketing communication is familiarizing the intellectual property and arousing the interest of potential customers; its broadly defined objective is to promote the institution, the university itself and its innovation activity.

The traditional communication related to innovations is confined to scientific publications and conferences. S2B marketing communication applies a more market-oriented approach, which rather focuses on image building and broad marketing communication. We can divide S2B marketing communication into internal and external dimensions.

The main point of S2B internal marketing communication is to adequately inform researchers and to build trust. It includes proper internal PR development, which is served by regular events, internal workshops, where those involved in university knowledge creation can consult and get feedbacks from the business partners of the university, thus they can expand their essentially scientific position with business views. Supporting and managing the development of a communal character, research communities and clubs are important in internal communication.

In external marketing communication, great emphasis needs to be put on form besides the detailed but clear content description of intellectual properties. The single image, publications matching this image and online interfaces are essential components of successful image building and communication [23]. According to what has already been mentioned, S2B marketing specifically depends on regional image, i.e. in addition to the characteristics of the intellectual property, its place of origin is also important, thus positioning the institution from innovation aspect has to be emphasized. The main stages of communication are online space and professional workshops. In the case of the latter, the personal nature is important in accordance with the discussion on commercialization policy, consequently choosing the proper commercialization staff is also crucial.

As a conclusion, successful S2B marketing communication is characterized by proactivity and market orientation, in the course of which both intellectual properties and their producing institutions are presented with a content comprehensible for managers as well and in a form that matches the common image.

4.5. Partnership

It characterizes S2B marketing that due to the complexity of the product, many actors participate in both the production and the commercialization of the product. To develop good synergy between involved parties, special attention has to be paid to the cooperation with them, i.e. to partnership. In S2B marketing by partnership we mean the activities whose aim is to create accordance between external and internal stakeholders.

The main point of S2B internal partnership is to create an atmosphere of partnership within the organization. This includes the cooperative collaboration with researchers on the S2B marketing managers' part, ensuring the two directional (industry – researcher; researcher – industry) information flow. It is useful to mention two unique methods of creating an atmosphere of partnership. One method is when the so-called "opinion leader" researchers are supported by the technology transfer office, thereby gaining their support, and it can develop a good relationship with the entire research community through their mediation. The other is the establishment of a research centre within the institution, where interdisciplinary cooperation is created within institutionalized framework. Thus a partnership can also be developed between the research areas located further from each other. Moreover, joining in the work of the centre, S2B marketing managers can also create a broader system of relations within the university. Furthermore, research centres have larger capacity and better bargaining position towards external commercialization partners.

The main point of S2B external partnership is that the university steps out of its role performing applied research work given merely as a business task – particularly typical of Central and Eastern Europe – and is present as a competent partner for industrial actors [4]. It requires openness on the university stakeholders' part in terms of the direction, actors and content of the relationship. The direction of the relationship has to be concentrated on the international stage, beyond traditional local partners [16]. As for the content of the relationship, process orientation has to take over the place of implementation and commercialization orientation. Such partnerships have to be developed which focus on not mere implementation but on joint development, since in the case of the latter, much greater commercialization potential can be achieved than by the simple commercialization of early stage researches or completing industrial assignments.

Consequently, the aim of devices called partnership by S2B marketing is to represent the university as a competent and open partner in the eyes of both its external and internal stakeholders.

4.6. Potential

In addition to traditional marketing mix components, we consider this group of activity important to be introduced because intellectual properties are distinguished from general products by the much higher uncertainty associated with them and the necessity of focusing in the long term.

The commercialization of intellectual properties often (in almost each case for universities) happens before the level of the concrete, marketizable product, i.e. we can talk about a "product" in only a limited way in this sense. What changes hands in the course of such transaction is rather a kind of promise, a potential. For this to become an actual product, further investments and developments have to be applied, which requires considerable time and energy expenditure, and as a result, patience [16].

The university has to consider the innovations it has produced as potentials, which, however, it has to evaluate based on market-based efficiency analysis. We have already outlined in product policy that keeping in portfolio may entail considerable costs, thus it requires serious considerations. The product as potential approach means that market feedbacks regarding the quality of this potential have to be obtained in several phases in the course of research-development. If the potential is considerable, further developments and expenditures are justified, and it is worth choosing a higher price and only partial divestiture in the course of commercialization. In the case of innovation results, however, which have lower potential based on market feedbacks, it is useful to consider complete commercialization or, in a worse case, their removal from the portfolio (e.g. assigning back to the researcher).

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The evaluation of potential and the related portfolio management can be performed on a high level through elaborating proper protocols [18]. These protocols cover the steps of collecting market feedbacks, the aspects of evaluation and the conditions of keeping in portfolio, as well as the course of being removed from it.

In the case of potential evaluation, the question of security is also important to be noted. To preserve the potential of an intellectual property, the protection of its novelty content is essential. In practice it requires cautious communication, avoiding novelty destruction and extended confidentiality protocol.

As a conclusion, the evaluation of S2B potential represents activities which rest on market-based utility approach and form the portfolio evaluating intellectual properties with a long-term focus, according to defined protocols and by strict confidentiality.

5. Conclusion

In our paper, we have made an attempt to provide a Central East European interpretation and extension of a marketing area with more than ten years of history, the science to business (S2B). This discipline includes the specificities of the marketing activities of institutions, primarily universities dealing with knowledge creation.

Defining S2B marketing as a separate marketing area is necessary due to the characteristics of intellectual properties. In contrast to general products, the innovations commercialized in the course of S2B marketing mostly cannot be considered to be products but rather a kind of promise, possibility, potential. Considerable risks can be attached to their commercialization both on the seller's and the customer's side, since the market utility deriving from their further development is difficult to estimate and can be utilized only in the long term. These products are specific because their "producers" (universities) often only slightly know their own product, moreover, on institutional level they are often not aware of the innovations hiding in certain departments. However, the problem with the innovation results which once have got in the portfolio is that keeping them in the portfolio is unnecessary and expensive.

S2B marketing directly concerns a very broad range of stakeholders, who typically have different knowledge and motivations. The researchers know the product itself the most, but they are often the least interested in its commercialization. On the other hand, the customers and sellers interested in commercialization are often able to get familiar with the technological details of the innovation only in a limited way.

These characteristics require a special marketing approach, regarding which we have aimed to create a theoretical basis by setting up a theoretical model for the further analysis of this area. In the model, we have applied the components of the 4P marketing mix known through McCarthy to the specificities of S2B marketing on the one hand, and extended it with two additional marketing devices on the other. The first device is associated with the already mentioned specificity of innovations, their character of potential, therefore we have named it potential evaluation. The other device starts out from the wide range of S2B marketing stakeholders, and it concerns the development of proper partnership between them and the role of university as a competent partner, therefore we have named it partnership. We hope that the connections and ideas outlined in our study prove to be useful for those involved in the profession of innovation and inspiring for the authors of further S2B marketing analyses.

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