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Bridging the academia-industry gap while innovating: Two example projects

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Abstract

This paper discusses methodological issues relevant for successfully designing and executing projects in the area of innovation management. There are some basic considerations that need to be kept in mind falling mostly under the category of "soft skills", i.e. managing social and human capital. Our perspectives are derived from experience of two national-level projects in Poland and an international EU-funded project. Two projects run by Center of Innovatics of Nowy Sącz Business School – National-Louis University, under the "Creator of innovativeness" program, were sponsored in part by the Polish National Center for Research and Development. They comprised mostly a spectrum of educational activities (courses and workshops) aimed at managers, entrepreneurs and academic staff and devoted to building organizational cultures which promote interdisciplinary collaboration and innovation. The Reinvent project, funded by the Marie Curie Industry-Academic Partnerships and Pathways program and coordinated by Reykjavik University, aims to identify and examine ways to enhance the competitive advantage of firms in creative sectors through business model innovation. The core philosophy of the IAPP program is to enable bidirectional industry-academia knowledge transfer through a system of secondments designed to help bridge the industry-academia gap.

5.1. Introduction

Theoreticians, working in their academic "ivory tower", sometimes neglect verification of their smooth and aesthetically satisfying models and theories of management and entrepreneurial activity in real life conditions. The world of practical applications is full of exceptions, special cases, deviations from the rule, anomalies, artefacts, special considerations, and locally specific causes, which cannot be fully accounted for in theory. Indeed, managers and entrepreneurs sometimes view theory with skepticism – often justified. Managers feel separated from theory by barriers of unnecessarily complex terminology and unjustifiably simplistic models. They sometimes feel that theoretical models neglect to incorporate those variables that practitioners consider to be crucial.

The goal of the projects discussed in this paper is to address this invisible, but often very real, barrier between the academic world and the world of managers and entrepreneurs. In Poland such a barrier (or a gap) has been measured in statistical surveys and opinion polls. For example, there are only two Polish firms among the 1000 European firms investing most in R&D, according to the 2012 EU Industrial R&D Investment Scoreboard. Also, financing of R&D by firms, rather than by the state, is much lower in Poland, than the average for OECD countries. Consequently, since it has not been initiated by business or industry, most research in Poland is carried out without strong socio-economic goals. Furthermore, most researchers are employed in state-run institutions – in contrast to the more developed countries of the EU where about 50% are employed in business-run research laboratories.

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In a study of opinions of both researchers and entrepreneurs[4)], researchers thought that universities do not provide sufficient encouragement (42% of polled researchers) and that entrepreneurs do not show enough interest to collaborate (61%). In contrast, 33% of the interviewed entrepreneurs thought that the cost of collaboration with researchers was too high, and 38% thought that there are no incentives from the government (in the form of e.g. favorable tax regulations) that would promote R&D collaboration.

Thus, the industry-academia gap appears to be a reality in the minds of both sides. In this work, we present some thoughts and observations emerging from educational and research projects in the area of innovation management. We highlight ways in which these projects attempt to bridge the industry-academia gap.

5.2. Creator of innovativeness: two projects implemented at WSB-NLU

The two projects coordinated by the Center for Innovatics at Nowy Sacz Business School – National-Louis University under the "Creator of innovativeness" program were sponsored in part by the Polish National Center for Research and Development (NCBiR). The first project, entitled "Innovation and cooperation: a symbiosis of science and business" ran from 2010 until 2012. It was followed by the project "Innovation culture: building a new value" (from 2012 until 2014). There are four basic assumptions upon which the philosophy of these projects is based.

5.2.1. First assumption: learning innovativeness is lifelong and should begin early

The Center for Innovatics has established five areas of educational activity, which target distinct age groups of potential beneficiaries.[5)] The topics of activities and types of educational exercises used during workshops are adjusted to the needs and interests of the audience. The sub-projects are named: Ingenious Children, Brilliant Youth, Creative Students, Innovative Employees and Imaginative Seniors. The first two comprise mostly game-based activities, such as inventing new products or services to be offered by imaginary companies, building marketing strategies and designing promotional materials, logos and advertisements. Workshops for students focus on rethinking their career options after graduation, including studies abroad – the latter topic is also covered in cooperation with the Harvard Club of Poland which runs an annual competition, „Droga na Harvard". Workshops organized for senior citizens emphasize the need to creatively reinvent their model of active life during retirement.[6)] Some activities, such as Morgan's[7)] „imaginization", during which participants generate creative interpretations of selected graphic images, are universal in their application and appeal, and their usage is independent of the age of the audience.

Workshops organized within the Innovative Employees sub-project may target either teaching and administrative staff of academic institutions or employees of businesses. When aiming at the former group, the following topics are among those covered: 1) applying for and managing research and training grants from the National Center for Research and Development, National Center for Science, or from the European Union; 2) using citation analysis and scientometrics as useful tools for both academic researchers and managers, which allow them to assess the quality of R&D, of scientific journals, or of potential collaborators or consultants; 3) building professional profiles, essential for job-related status of the employee, with the use of such online resources as Google Scholar, ResearchGate or LinkedIn. When the workshop is targeting business employees, the focus is on various methods of creative thinking and problem solving and on assessing team dynamics and building organizational culture that fosters innovative spirit.

[4)] Polskie firmy nie dbają o naukę (Gazeta Wyborcza, 4 grudnia 2006) - http://wyborcza.pl/1,75248,3772678.html - data odczytu: 15 maja 2013.

[5)] Amabile T.M., Growing up creative: nurturing a lifetime of creativity, Crown Publishers, New York, 1989.

[6)] Fisher B. J., Specht D. K., Successful aging and creativity in later life, Journal of Aging Studies, 1999, pp. 457–472.

[7)] Morgan G., Imaginization. The art of creative management, Sage, Newbury Park, CA, 1993.

5.2.2. Second assumption: teaching about innovation must be interdisciplinary

Jasieński & Rzeźnik[8)] have used the neologism "innovatics" to emphasize that true development of innovative culture in the organization requires several distinct components and skills, reaching beyond standard innovation management methods. They described a metaphorical mental toolbox which should contain various skills necessary for an innovative manager or entrepreneur – this is an attempt at adapting the concept of a "rennaissance" mind to the area of business and technology.[9)]

Consequently, the project "Culture of innovation" includes a selection of 16 four-hour mini-courses which are offered in four modules, as parts of a "Managing innovativeness" workshop. The module "Building innovation climate and training creative skills" comprises courses on innovation management, process management, psychology of creativity and organizational behavior. The module "Financing innovations and commercialization of new products" includes courses on strategic management (evaluation of risks and chances of success of innovations), financial analysis (business plan and budget of a project), and marketing of innovative products. The module "Building and protecting the intellectual property of your firm" covers database and scientific information management, evaluation of intellectual capital, intellectual property rights, and elements of quantitative analysis of business data. The module "Creativity – analysis of cases from architecture, design, music and literature" comprises meetings with well-known Polish intellectuals (architect, composer, graphic artist, and a poet), active in their respective areas of expertise. Such meetings are meant to stimulate the audience and expose them to real-life examples of creativity, some of which are applied, and therefore must conform to the rules of design, ergonomics, and requirements of technology, and some represent pure, abstract forms of creative thinking.

5.2.3. Third assumption: try closing the „academia-industry gap" yourself

The strategy of passively waiting for entrepreneurs and managers to cross the great „academia-industry gap" is not effective. Both sides end up waiting for the other side to make the first move. Consequently, the Center for Innovatics offered a series of free workshops which were carried out „on location", i.e. on the premises of the companies from southern Poland, from Opole to Rzeszów. The companies ranged from SMEs in various sectors (from advertising, publishing, consulting, to manufacturing, such as Znak, Atmoterm, i3D, Wiśniowski, FAKRO, or WIMED) to large industrial corporations (such as Azoty, Timken, WSK PZL-Rzeszów, or Zelmer). The participants were mostly middle managers. A team from the Center visited the companies, equipped with the necessary educational and audiovisual tools, thus minimizing time investment of the participating employees and cost to the hosting company. Thus, the academic contingent took a proactive role to reach the target audience of managers and entrepreneurs.

5.2.4. Fourth assumption: when building innovative culture emphasize soft skills

Lack of money is not the only barrier to creating a truly innovative culture. Modifications in organizational behavior may be as important. Jasieński & Rzeźnik[10)] and Jasieński[11)] developed the notion of the environment conducive to innovativeness (ECTI), which rests on the premise that such an environment should possess certain characteristics - well-defined, but surprisingly hard to implement. [12) 13) 14)]

[8)] Jasieński M., Rzeźnik M., Innovatics – a new toolbox of skills for innovative production managers [in:] Knosala R. (ed.), Innovations in Management and Production Engineering, Oficyna Wydawnicza Polskiego Towarzystwa Zarządzania Produkcją, Opole, 2012, pp. 63-71.

[9)] Dyer J., Gregersen H., Christensen C. M., Innovator's DNA: mastering the five skills of disruptive innovators, Harvard Business Review Press, Boston, 2011.

[10)] Jasieński M., Rzeźnik M., Innovatics – a new toolbox of skills for innovative production managers [in:] Knosala R. (ed.), Innovations in Management and Production Engineering, Oficyna Wydawnicza Polskiego Towarzystwa Zarządzania Produkcją, Opole, 2012, pp. 63-71.

[11)] Jasieński M., Rules for constructing e-learning tools which foster independent, critical and innovative thinking [in:] Smyrnova-Trybulska E. (ed.), E-learning for societal needs, University of Silesia, Katowice-Cieszyn, 2012, pp. 75-94.

[12)] Alencar E. M. L. S., Bruno-Faria M. F., Characteristics of an organizational environment which stimulate and inhibit creativity, Journal of Creative Behavior, 31, 1997, pp. 271-281.

[13)] Menzel H. C., Aaltio I., Ulijn J. M., On the way to creativity: engineers as intrapreneurs in organizations. Technovation, 27, 2007, pp. 732-743.

According to this view, the ECTI should be: stress-free (because we tend to be easily intimidated), peer-pressure-free (because we tend to be easily embarrassed), hierarchy-free (because we like to be treated as equals), fun (because humor improves creativity), suspenseful (because we tend to be easily bored, even when tasks are not repetitive), routine-free (because we enjoy spontaneity), responsive (because we require immediate feedback), stimulating (because we are lazy, whenever we can get away with it), orderly (because we tend to become easily confused), and interdisciplinary (because we are good at detecting analogies). Also important, is the physical work environment, which can play an important role in supporting creative potential, as postulated by Dul & Ceylan[15] and Dul et al.[16]

Existing organizational cultures and traditional forces in national culture can pose serious challenges. The latter influences will be more difficult to overcome in culture characterized, using the cultural dimensions terminology, by e.g. high power distance, high uncertainty avoidance and high individualism.[17] There are also three, strongly intertwined influences, which impact the contemporary business culture in Poland.[18] First, strong elements of the historically strong feudal relations between superiors and subordinates, characterizing agricultural farms (known as "folwark") owned by nobility and based on serfdom for centuries. Similar dynamics existed in master-disciple systems within artisans' guilds. Second, certain elements of Catholicism – Poland's dominant religion – are not easily compatible with the philosophy of self-reliance, individual responsibility and entrepreneurship. Third, four decades of communism weakened social capital in Poland and affected the ways in which people perceive their roles in business activity, by adding a tradition of corruption and skepticism towards public administration.[19]

5.3. Reinvent: Transforming SMEs in creative sectors through business model innovation

Reinvent is the short name of a research project entitled "Transforming SMEs in creative sectors through business model innovation". Funding for the project is provided by the Marie Curie Industry-Academia Partnerships and Pathways (IAPP) program under the European Union's FP7 program. The project's key concept is that of a business model, understood as a conceptualization of the way a firm does its business.[20] [21] [22] Reinvent focuses on the processes whereby firms develop and introduce business model innovations and the organizational and cognitive barriers that may hinder their development and deployment. Through active collaboration between industry and academia, Reinvent provides a unique perspective that is simultaneously relevant for industry and academically rigorous.

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[14] Hirst G., Van Knippenber D., Chin-Hui C., Sacramento C. A., How does bureaucracy impact individual creativity?, Academy of Management Journal, 54, 2011, pp. 624-641.

[15] Dul J., Ceylan C., Work environments for employee creativity, Ergonomics, 54, 2011, pp. 12-20.

[16] Dul J., Ceylan C., Jaspers F., Knowledge workers' creativity and the role of the physical work environment, Human Resource Management, 50, 2011, pp. 715-734.

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[19] Jasieński M., Rzeźnik M., Stec P., Kapitał społeczny i lokalna synergia oparta na altruizmie odwzajemnionym. Aspekty metodologiczne [in:] Uchnast Z. (ed.), Synergia i dobro wspólne. Wybrane zagadnienia z psychologii kierowania, Towarzystwo Naukowe KUL – WSB-NLU, Lublin – Nowy Sącz, 2012, pp. 67-81.

[20] Johnson M. W., Christensen C. C., Kagermann, H., Reinventing your business model, Harvard Business Review, 86(12), 2008, pp. 50-59.

[21] Zott C., Amit R., Massa L., The business model: recent developments and Future Research, Journal of Management, 37, 2011, pp. 1019-1042.

[22] Jasieński M., Rzeźnik M., Candi M., Understanding and innovating business models: some basic methodological issues [in:] Knosala R. (ed.), Innovations in Management and Production Engineering, Oficyna Wydawnicza Polskiego Towarzystwa Zarządzania Produkcją, Opole, 2013, pp. 51-58.

5.3.1. Empirical focus: real-world SMEs in creative sectors

Reinvent focuses on Small and Medium-sized Enterprises (SMEs), since they are a major, but often unappreciated, force behind Europe's economy. Almost 21 million firms, constituting more than 98% of all enterprises in the European Union, they provide around 87 million jobs and make an important contribution to entrepreneurship and innovation.[23)] These SMEs operate in an increasingly complex and competitive environment. They need to develop strategies not just to survive but to transform their businesses into higher-value, competitive ones. In many cases European SMEs can only survive against competition from low-cost regions by finding ways to positively differentiate their offerings in innovative ways.

The creative sectors present unique opportunities for innovation and economic growth. As much of manufacturing and many types of service delivery are shifting to lower-cost areas such as Asia at a rapid pace, the creative sectors are increasingly important for Europe. At the same time, the creative sectors are experiencing unprecedented rates of change and the more traditional sectors, such as architecture, tend to continue to use the business models that have served them well for decades. The Reinvent project aims to actively address this concern by delivering industry relevant and academically rigorous research on the business models currently used in the creative sectors in Europe and how these can be transformed to reach new levels of competitive advantage.

Businesses, and in particular SMEs, across Europe need approaches, methods and tools to develop competitive strategies. One potential means to this end is business model innovation. The goal of Reinvent is to develop knowledge about how SMEs in creative sectors – SMEs operating in both digital and non-digital markets – can implement business model innovation as a means to enhance competitive advantage, and put this knowledge into practice. Thus, the potential impact for European businesses in the short term and the long term is substantial.

5.3.2. Industry-academia collaboration: benefiting from knowledge transfer

The industry-academia collaboration on which Reinvent is based includes both universities and SMEs. The Reinvent consortium is a carefully chosen group of organizations and persons that provide a strong combination of expertise on the creative sectors and in the areas of creativity, innovation, design and entrepreneurship.

To ensure relevance, Reinvent will not only take the academic literature as its point of departure, but also industry perspectives and industry media. The academic participants (from Reykjavik University and Nowy Sącz Business School – National-Louis University) will contribute their knowledge, research findings and expertise and the industry participants will contribute their practical experience prior to, during and following the transformations. The industry participants will serve as a laboratory of sorts, in which the theories developed are embodied in actual transformations that are likely to result in improved competitive advantage and commercial performance.

In the interest of gaining the greatest possible academic insight and to create opportunities for valuable cross-pollination between widely different creative sectors, the industry participants in Reinvent represent a broad spectrum of activities and business models. One SME (in Iceland) operates in the traditional sector of architecture, designing built environments and using a traditional model for its service delivery based on participating in competitions and selling services based on “time and materials”. The second SME (in Poland) operates in the emerging sector of virtual environment design and development, creating three-dimensional visualizations according to customer specifications. The third SME (in Denmark) is a design service provider offering a wide range of graphic and multimedia services.

To remain competitive and growing, SMEs need to address their specific challenges – those in Iceland to overcome their location on the periphery; those in the Denmark to leverage knowledge and human capital to overcome intense competition from lower cost regions and those in Poland to overcome the residual syndromes of post-communist economy (as expressed in insufficiently modern

[23)] EU SMEs in 2012: at the crossroads - Annual report on small and medium-sized enterprises in the EU, 2011/12. Rotterdam, Ecorys, 2012.

administrative and legal environment and lack of organizational cultures which promote innovative activities).

The SMEs benefit from the knowledge transfer from the academic and other industrial partners – which should enable them to gain commercial benefits from implementing business model innovation. The help and support that the other partners can provide during analysis and implementation should increase the likelihood of smooth, effective and efficient implementations. Further, using the knowledge and experience of the other partners will enable the SMEs to design and implement appropriate kinds of business models and to minimize the time and effort required to implement them. They will thus benefit from collective learning and save time and money, as well as gain the direct commercial benefits arising from business model innovation. Through business model innovation the industry partners can take steps to enter premium markets and charge more for their products/services.

5.3.3. Secondments, the cornerstone of the IAPP program

The metaphorical notion of „cross-pollination" can be used to describe a process of bidirectional generation of benefits through stimulation of intellectual activity. In Reinvent such cross-pollination is accomplished through a system of secondments for knowledge transfer. Academic staff from the universities are seconded to the SMEs and research staff from the SMEs are seconded to the universities. It is worth emphasizing that there are no university-to-university or industry-to-industry secondments in the IAPP program, since such exchanges would not contribute effectively to bridging the industry-academia gap.

The Reinvent secondments are designed to yield valuable transfers of knowledge and experience in both directions as well as opportunities for mentoring and career development. Furthermore, the secondments are used as bases for empirical academic research on business model innovation, both within the partner SMEs and a broader range of SMEs in the partner countries. In addition to secondments, consortium workshops for collaborative work and knowledge-sharing within the consortium ensure cross-transfer between participants and back-transfer to partners' organizations.

5.3.4. Continued collaboration envisioned

Reinvent is essentially "open-ended", i.e. the participants do not foresee a specific end date of the collaboration. Thus, if the collaboration between the partners proves mutually beneficial, it can be expected to continue beyond the four year duration of the project. A long time horizon of expected interactions and frequent contacts within the consortium (provided by secondments and repeated workshops) both are important factors that can increase the likelihood of cooperative behaviors among the consortium partners, as postulated by Axelrod's[24)] theory of cooperation. Such cooperation can be expected to arise and persist both among individual researchers and employees, and also at the level of entire organizations.[25)]

5.3.5. Dissemination and outreach

A comprehensive impact and dissemination strategy has been devised, including dissemination and networking aimed at the general public, policy makers, academia and industry, particularly SMEs. This ensures that the project's research results and implications reach SMEs outside the consortium and, thereby, may be received at a broad European level. Outreach activities for the general public are also part of the dissemination strategy. The expected impact of these outreach activities is an increased awareness among the general public of the opportunities of industry-academia collaboration, of the importance of understanding business models and of the opportunities of business model innovation. This understanding is likely to inform both education and businesses in the partner countries and encourage future industry-academia collaboration.

[24)] Axelrod R., The complexity of cooperation: agent-based models of competition and collaboration, Princeton University Press, Princeton, 1997.

[25)] Jasieński M., Rzeźnik M., Stec P., Kapitał społeczny i lokalna synergia oparta na altruizmie odwzajemnionym. Aspekty metodologiczne [in:] Uchnast Z. (ed.), Synergia i dobro wspólne. Wybrane zagadnienia z psychologii kierowania, Towarzystwo Naukowe KUL – WSB-NLU, Lublin – Nowy Sącz, 2012, pp. 67-81.

5.4. Summary

The projects described in this paper represent very different approaches. Indeed, the issue of the industry-academia gap is multifaceted: it reaches beyond the world of academic researchers being uninterested in seeking contacts with businesses and entrepreneurs being reluctant to reach for expert knowledge to academic laboratories. Such attitudes result from a particular cultural milieu in which economic activity is carried out, with entrepreneurs sometimes being regarded as less desirable collaborators by their academic counterparts. Bridging the gap must therefore involve educational activities targeting a broad spectrum of participants, as organized within the Creator of innovativeness projects.

In the case of the Reinvent project the industry-academia collaboration helps bridge the gap by placing academics in businesses and researchers from the businesses in universities. This creates a fertile environment in which to study the topic of the Reinvent project, namely the opportunities and challenges of business model innovation, as well as broadening the perspectives of participants and making them more open to reaching out across the gap for mutual benefit.

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[10] Hofstede G., Hofstede G.J., Minkov M., Cultures and organizations: software of the mind, 3rd ed., McGraw-Hill, New York, 2010.

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[14] Jasieński M., Rzeźnik M., Innovatics – a new toolbox of skills for innovative production managers. [in:] Innovations in Management and Production Engineering (ed. R. Knosala), Oficyna Wydawnicza Polskiego Towarzystwa Zarządzania Produkcją, Opole, 2012, pp. 63-71.

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Streszczenie

W artykule omówiono metodologiczne zagadnienia istotne dla projektowania i realizacji projektów z zakresu zarządzania innowacjami. Należy mieć na uwadze kwestie związane głównie z "miękkimi umiejętnościami", to jest zarządzaniem kapitałem społecznym i ludzkim. Nasz punkt widzenia wynika z doświadczeń związanych z zarządzaniem projektami z programu krajowego oraz projektu międzynarodowego w ramach funduszy europejskich. Dwa projekty Centrum Innowatyki WSB-NLU z Nowego Sącza, w ramach programu "Kreator innowacyjności" były finansowane w części przez NCBiR. Składały się one głównie z szerokiego spektrum działań edukacyjnych, skierowanych do kadr akademickich, menadżerów i przedsiębiorców i mających na celu budowanie kultur organizacyjnych promujących współpracę interdyscyplinarną i innowacje. Projekt Reinvent, finansowany przez program Marie Curie-IAPP, a koordynowany przez Reykjavik University, ma na celu identyfikację i zbadanie sposobów zwiększenia przewagi konkurencyjnej przedsiębiorstw w sektorach kreatywnych przez innowacyjną zmianę modelu biznesowego. Głównym założeniem programu IAPP jest umożliwienie dwukierunkowego transferu wiedzy pomiędzy przemysłem a światem akademickim poprzez stworzenie systemu wizyt studialnych.