

Indirect commercialization of psychological research based on results of the DESMoPSI project

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ABSTRACT

Objective

The paper focuses on the concept of commercialization and the specificity of commercialization processes in social sciences. In line with the Knowledge Triangle approach which underpins the majority of modern scientific policies, universities should integrate their activities in research, education and innovation. Commercialization of research is an example of such activity. Commercialization may proceed in a direct manner, when the university assumes control over the implementation process, either independently or through a special-purpose vehicle. Research results can also be commercialized indirectly by spin-off organizations that are established specifically for this purpose and operate on market principles.

Theses

- 1) The results of research in social sciences are incorrectly perceived as having negligible potential for commercialization.
- 2) Researchers involved in indirect commercialization projects face numerous competence and organizational challenges.

Conclusions

An analysis of the research project conducted in 2015–2018 by the Faculty of Psychology of the SWPS University of Social Sciences and Humanities in Warsaw with the aim of developing a digital platform for designing, sharing and evaluating online psychological interventions (DESMoPSI, market label: Beviado) revealed the challenges that are faced by scientists who are involved in the indirect commercialization of research results. To guarantee the success of such projects, members of the academic community should be

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able to identify market requirements, develop market communication skills, and improve their knowledge of law and finance.

Keywords: Commercialization, spin-off, social sciences, psychology, research and development (R&D)

INTRODUCTION

In addition to research and education tasks, modern institutions of higher learning are also expected to pursue and further scientific innovation as part of their statutory mission for the effective increase of their socio-economic influence (Gałat, 2018). University activities in this area should provide active support for social and economic development of the nation. On the one hand, academic institutions are bound by the duty of responding to the needs of their external stakeholders. On the other hand, they are also expected to generate an independent stream of innovations which may then be implemented and employed by public, private and non-governmental institutions. Some of the aspects related to the third pillar of the academic involvement have been reflected in the ministerial Programme for the Development of Higher Learning and Science for the years 2015–2030 (MNiSW, 2015). The document provides a number of postulates for the effective development of university cooperation with business entities and a broad set of popularization forms, including support for commercialization processes in all areas and disciplines of science.

The concept of commercialization

Commercialization is defined as a profit-oriented process involving practical or potential transformation of effects of research and development into a marketable product (Radło, Baranowski, Napiórkowski, Chojecki, 2020, p. 12). In line with the OECD definition (2018), the R&D activities may comprise fundamental research, applied science research (or industrial research – a term postulated by the National Research and Development Centre, the Polish governmental authority responsible for innovation support), and development work. Fundamental research provides new knowledge derived from theoretical deliberations or empirical studies. Applied science research may also impart new knowledge, but research activities in this context are focused on effective realization of specific practical objectives. Development work may involve integration of knowledge from various areas (including science and business) to provide effective methods for planning, design and realization of new or revised products, services or processes.

The Act on Higher Education and Science (Off. J. 2018. pos. 1668 with amendments) recognizes two types of commercialization: direct and indirect. Direct commercialization involves the trade of effects of scientific research to other entities, under the management of university centres for technology transfer (otherwise known as centres of knowledge transfer) or special purpose vehicles (SPV)

formally established by the university. Indirect commercialization, on the other hand, employs the use of an independent spin-off entity responsible for conducting market trade on the basis of the effects of scientific research in a specific area of expertise. University involvement in market activities of the spin-off unit may only be effected through a special purpose vehicle and is defined by the legal and organizational formula of the new unit. The SPV may be a shareholder, stockholder or holder of any other securities or instruments issued by the spin-off unit.

As observed by Rudnicki (2013), commercialization is often misinterpreted as a process involving product conceptualization and sale. However, in practical application, the process includes extensive interactions, consultations and feedback responses focused on testing and improving not only the product, process, or service, but also the business model and the organizational form of the unit. Depending on the type of commercialization, the burden is placed on various entities. With direct commercialization, the responsibility for providing the final shape of the product or service on offer is borne by the university unit, by its SPV or by the purchaser of the product. With indirect commercialization, the task of adjusting the effects of scientific research to the requirements of the market is borne by the new spin-off enterprise.

Commercialization in social sciences and psychology

For decades, the public policies, research projects and academic disputes had largely disregarded the realm of social sciences as a source of potential commercialization projects. In comparison to other disciplines based on purely scientific approaches, findings obtained in the realm of social sciences are more dispersed and more difficult to estimate (and capitalize, at that) (Benneworth, Jongbloed, 2010; Olmos-Peñuela, Castro-Martínez, D'Este, 2014). Bukowski and Strycharz (2013) link this trend to the specificity of the scientific results provided by social sciences. Specialists in the realm of social sciences typically lack the engineering knowledge required for independent design of tangible products suitable for commercialization.

As pointed out by Otręba-Szkłarczyk and Szkłarczyk (2011), the main forms of marketable items generated by researchers in the realm of social sciences include consulting and advisory services, expert opinions, analyses, training services, and learning programmes. At times, social researchers are employed in the design of production or distribution processes, i.e. those related to marketing or sale (Bukowski, Strycharz, 2013).

Another reason for the observed difficulty in assessing the real impact of social sciences upon the economic development on a national level may be related to the fact that entities employing specialists in the field have no real knowledge of the full extent of their activities and services rendered to third parties. A German study revealed that cooperation between social science researchers and third-party entities is quite often largely informal in character (Grimpe, Hussinger, 2013). As such, this part of work is not properly registered or valued in any reliable manner. It was also observed that researchers are quite reluctant to share

information with their formal employer on any profitable activities rendered by them to third parties (Olmos-Peñuela, Molas-Gallart, Castro-Martínez, 2014). In the context of social sciences, this type of approach is more feasible compared to that in traditional science, as scientific research in psychology or sociology typically presents a small load to the academic infrastructure or university resources. The reluctance to share information on commercial activities may further be strengthened by the general lack of acceptance for commercial involvement on the part of the academic community. As observed by Johnson (2017), the involvement of researchers in commercialization projects may be perceived as contrary to the established standards of the scientific community. The research ethos and the essence of the scientific culture formulated by Merton (1973) is expressed in the following norms: disinterestedness, organized scepticism, universalism, and communalism. The norm of disinterestedness postulates that the progress of knowledge be oriented on knowledge acquisition – in this context, commercialization is focused on specific objectives and motivated by profit. Organized scepticism relates to the established social order, which serves to reinforce the internal validation of scientific output quality. In the context of commercial activities, the role of peer reviewers is served by customers, which does not produce the expected increase of the commonly available knowledge. Communalism is an expression of the belief that scientific knowledge is a product of collective effort and, as such, should be freely disseminated and not kept private. Commercial use of scientific knowledge may be viewed as an attempt to privatize a public good produced by the academic community. Lastly, the norm of universalism postulates that the scientific output, appointments, advancement, grants' applications, and recognitions should be evaluated in accordance with the established criteria of intellectual value rather than those of commercial value determined by market.

Etkowitz (2010) argues that the aforementioned reluctance of the academic community related to the perceived breach of academic standards that define relations between universities and their immediate socio-economic environment may result from the lack of revisions to the established set of standards to properly reflect the global changes and the new roles served by higher education institutions. The evident lack of standards or best practices in external relations of universities was emphasized by the Australian Council for the Humanities, Arts and Social Sciences (Gascoigne, Metcalfe, 2005). This particular factor was recognized as one of the main barriers to the development of commercialization processes in the realm of social sciences.

Moreover, as evidenced by Bukowski and Strycharz (2013), the prevailing conviction of the academic community in Poland reinforces the isolation of social science from the real challenges of the modern world, forming an obstacle to effective development of academic cooperation with external entities. Cooperation with socio-economic environment for commercial value is at times perceived as a threat to the academic autonomy. The authors suggest that this belief is based on misperception of the concepts of both the academic autonomy and of commercialization as such. The autonomy of science, defined in terms of independence of researchers in their pursuit of scientific truths, is thus wrongly associated with pure academism, expressed in the belief that knowledge generated by the

academic community is a value in itself and may only be verified by peer review. A similar misconception applies to commercialization, typically perceived as trade of knowledge, without regard for the nature of knowledge exchange, as the process offers benefits not only to external recipients, but also to the academic community as such. This type of exchange offers researchers a chance to formulate their research problems on tangible fundamentals of the economic practice. Another benefit is the potential for verifying their theories in business practice with potential to further the development of fundamental science.

Despite some difficulties in assessing the true extent of cooperation between researchers in social science and institutions of the socio-economic environment, many potent examples of such involvement can be observed in practice (cf. Rudnicki, 2013). Social science specialists prove very effective in the design of marketable products. These may, for instance, come in the form of specialized research and diagnostic instruments. For example, Pracownia Testów Psychologicznych – the largest provider of psychological tests on the Polish market – offers more than 150 individual products on a commercial basis, utilized extensively by entities of both the public and the private sector.

Another example of effective cooperation between specialists in the realms of social and exact sciences is the Photon project involving design and production of a robotized unit to serve as an educational tool supporting the acquisition of programming skills. The project was realized by students of Bialystok University of Technology under the guidance of a tutor and with substantive support from psychology specialists at the SWPS University. At present, the unit is successfully distributed by the Photon Entertainment Ltd. to schools and education centres to be used in IT classes. The product has also been made available to the general public.

Social science researchers utilize various forms and approaches to commercialization. They can use their findings in self-employment activities, leading non-governmental organizations, or providing services as natural persons or as representatives of the University. They may also participate in joint initiatives formed in indirect commercialization under supervision from the university or from the special purpose vehicles assigned for the purpose. Lastly, their commercialization activities may be pursued individually or as part of broader interdisciplinary partnerships.

THE DESMOPSI PROJECT – AN EXAMPLE OF INDIRECT COMMERCIALIZATION

The project ‘DESMoPsi system to design, evaluate, and share psychological interventions for mobile devices’ was carried out in 2015–2018 at the Faculty of Psychology of the SWPS University of Social Sciences and Humanities. It was founded by the National Centre for Research and Development (call for proposals – TANGO, project value: PLN 1,387,250). The project was conducted under a formal requirement of cooperation between the university and a third-part business organization.

The DESMoPsI project was aimed at presenting an effective mobile app solution to provide assistance to specialists in the design and sharing psychological online interventions. This type of specialist intervention is defined as ‘program or service delivered through the Internet (e.g. a website), designed to create a positive change in behaviour or health status (Hollis et al., 2017). Interventions may target various areas and aspects of human condition, including mental and physical health, and personal development (Cieślak, Kozłowska, Michalak, Koch, Rogala, 2018). An online psychological intervention is typically composed of modules with psychoeducational content in the form of text, graphics and video clips, supplemented by various types of practical tasks. Users may also monitor their health using psychological surveys and devices (such as wearables).

The concept for the DESMoPsI project was developed on the basis of copious findings in the realm of fundamental science confirming the effectiveness of online psychological interventions (cf. Andersson, 2018). A more direct inspiration for the project was the practical experience gained in the course of another project of this type – the first Polish attempt at producing an psychological online intervention. The ‘Stres pomagających’ pilot project involved the design of a psychological intervention instrument to reduce the burnout and to increase the involvement of professionals working with trauma victims (Rogala, Smoktunowicz, Żukowska, Kowalska, Cieślak, 2016). Despite the notable effectiveness and convenience of online interventions (both in terms of cost and accessibility), the main barrier to developing this type of instruments lies in the design of IT system infrastructure – as this task requires special IT knowledge and programming skills. The majority of specialists active in the sphere of psychological services have no skills in this field and no willingness to employ private resources for the purchase of IT services on a commercial basis. The DESMoPsI project was intended to eliminate this barrier. For the purpose, the authors recruited an IT services provider to design a system that psychology specialists may utilize without any programming skills.

Throughout the project, a series of industrial research and development work assignments were conducted to identify, with the help of potential users, the system’s basic functional properties and produce a preliminary industrial design of the system for further tests. The scope of work yielded the final design for the DESMoPsI system, consisting of three content management system panels (CMS) and three apps: two mobile apps (for iOS and Android systems) and one accessible from web browsers. The panels are addressed to the following groups of users: 1) content author, with support for the design of online psychological interventions complete with text, graphics, video content, surveys, and questionnaires; 2) organization responsible for the management of the content produced in cooperation with the authors; 3) the university (or other authorised unit) responsible for the substantive and ethical aspects of the published content.

Commercialization of the DESMoPsI project was based on the indirect approach. In 2019, a separate limited liability company was formed for the purpose, under the name of Beviado. The university’s SPV brought in the effects of the project as own contribution. The shares were distributed between the authors of the project (researchers and the technical support partner) and the SPV. From the

onset, the spin-off became responsible for the effective management of market activities and the development of the system, which took the market name of Beviado.

Challenges of the indirect commercialization

Researchers planning their involvement in indirect commercialization projects face a number of challenges; these can be divided into competence challenges and organizational challenges.

Gascoigne and Metcalfe (2005) provide a list of competences required from researchers planning to commercialize the effects of their scientific work. These are mainly related to various communication skills as well as knowledge of legislative and financial aspects of such involvement.

In the context of communication skills, the authors emphasize those associated with presentation of research effects and ideas, both in speech and in writing. One of the most frequent barriers to cooperation between academic institutions and business organizations is the impenetrable lingo often employed in scientific disputes. Scientific presentations typically abound in detailed terminology and complex descriptions that are not easily understandable to other professions or trades members. Moreover, their content is seldom adjusted to meet the specificity and competencies of the listener. In the context of commercialization, researchers need to communicate with potential recipients of the product or service, with project partners, investors, and media. Each of the above groups is characterized by different competencies and levels of expertise; their relations with the scientist serve different purposes. It must also be remembered that building good relations with stakeholders is a valuable skill in itself, as information obtained in the process may be effectively employed to support the development of the project as well as any future endeavours that may occur.

Similarly, one of the most specific challenges in interdisciplinary projects is to find common grounds for effective communication among representatives and specialists of various fields and disciplines of science (Levi, 2019). The initial phase of the planned cooperation should, therefore, serve to establish a shared understanding of the terms and notions employed by each party to ensure that their meaning is conveyed in an unambiguous fashion. For instance, a person with no programming skills may utilize the term 'website' to address any organized content accessed from a web browser. However, if such a site requires active interaction with the user, it should be properly recognized as a 'web app', as this type of solution requires the use of quite different programming instruments and procedures.

Another class of communication skills is effective negotiation. Concerning indirect commercialization projects, negotiation skills are required from the onset, as they form the fundament for any future partnerships and subcontracting. At a later stage, when the spin-off's plans are well under way, researchers naturally become a party in negotiations concerning the formal form and the objectives of the new organization. Later on, negotiation skills are also useful and indispensable in day-to-day arrangements between the contracting parties.

To ensure the effectiveness of negotiations and the fittingness of decisions made concerning modes of operation or practical employment of research effects, scientists also require fundamental skills and knowledge of the project's legal, economic, and managerial aspects.

The effective selection of a legal formula for the newly established spin-off also places high demands on the scientific partners. They need to analyse the available solutions and should have a good understanding of the burdens placed on them in each of the examined scenarios. Even if the new spin-off receives full support from a dedicated accounting office and has a good representation of personnel with ample business experience, the researcher is still involved in decision-making processes and is expected to evaluate current operating activities. This requires at least elementary knowledge of the pending regulations and rudimentary awareness of the market rules. Researchers should be particularly conscious of the aspects related to the protection of intellectual property and trade secrets, because they typically continue the popularization of research related to business activity. Researchers involved in commercialization projects have to also reconcile typical academic work with new duties – this presents an additional challenge of organizational nature. As members of the commercialization team, academics are required to redefine the priorities in their professional assignments.

Each participant of the commercialization project – the university, the research team, and business partners – perceives their tasks differently (Pattnaik, Pandey, 2014). For researchers, the key objective is the application of research results in business practice as a source of inspiration for future scientific endeavors. The university expects to satisfy the public expectations of its involvement in socio-economic development. In addition, new knowledge obtained by the scientific team throughout their market activities is reflected on a purely academic level. It may be employed in didactic activities, serving as case studies. Lastly, commercialization activities may also help supplement the scientific output, which serves as a basis for the evaluation of the academic bodies. On the other hand, business partners mainly emphasize the economic effects derived from their involvement in an academic spin-off. However, it must be noted that this objective does not necessarily entail purely financial profits. Business partners may be equally interested in raising their potential of innovative development and solutions to improve their competitive advantage in a long-term perspective. In addition, when cooperation between partners is solidified by introducing a dedicated spin-off entity, business partners may be more inclined to bet on long-term cooperation, as this type of arrangement warrants the intellectual involvement of the scientific partner. Reconciliation of interests of all parties to the project presents yet another challenge in itself, which may be overcome solely based on open-minded and systematic involvement of each party in constituting a vision of their future cooperation.

It seems that the key organizational challenge in the context of indirect commercialization is the initiation of the operational capacity of the new entity. Apart from such obvious tasks as bookkeeping and reporting obligations, the new entity must ensure ample provision of resources for their operational activities. This objective may be satisfied by attracting potential customers, investors or applying for project support from public resources. If the new unit intends to

maintain continuity of its operation, exploration of potential funding sources should be initiated at the earliest possible moment to ensure that the start of operation will not be put on hold due to the scarcity or postponement of the available funding. The initial phase of operation verifies the postulated endeavor's market viability. At this point, it may be necessary to introduce modifications to the product itself or to reconsider the distribution channels. It must be remembered that this type of optimization should be made in response to customer expectations and maintain the profitability of all activities realized in this context.

The competencies required to face the above challenges go beyond the scope of standard academic training offered by doctoral schools in the field. Each researcher needs to develop these skills independently, based on extracurricular training of formal or informal character. Moreover, as dictated by the pending legislation on the organization of academic units (Off. J. 2018. pos. 1668 wit amendments), university employees may perform their duties solely in research or academic (didactic) capacity. This means that the formal academic path of vocational development lacks the organization method to allow for researchers' involvement in commercialization activities.

CONCLUSIONS

Over the last few decades, universities have been burdened with new expectations related to their active involvement in socio-economic development on a national level. Indirect commercialization is a good example of such involvement, as it entails the constitution of dedicated units responsible for the marketization of results of scientific research. Since this form of involvement is still relatively novel, at least in social sciences, researchers willing to involve themselves in innovative projects and activities face numerous challenges. Most of them require improvement of their skills and competencies as well as understanding of the determinants and mechanisms of the market. On the other hand, commercialization projects serve to stimulate research of practical problems in response to real expectations of the socio-economic environment which may lead to effective development of fundamental research. Lastly, projects of this type offer good potential for effective diversification of sources for funding the research activities.

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