6. UTILISING SCIENCE–BUSINESS RELATIONS IN DISSERTATIONS DEVELOPED AT UNIVERSITIES

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Abstract

This article presents theoretical background based on research results that is related to the issue of creating applied diploma theses at universities in Poland. On the one hand, this issue is very important for improving the quality of higher education and broadly understood innovation of the economy, and on the other hand, it is still treated as a set of expectations and demands towards universities.

The aim of the paper is to identify and investigate the possibilities of increasing the applicability of dissertations developed in higher education institutions. The main research question was: "How to increase the applicability of diploma theses developed by its students?". The applicability of diploma theses developed by its students is positioned here as one of the tenets of the Third Mission (TM) in universities. The paper aims to make a contribution to the efforts aimed at explaining the engagement of universities in the TM implementation. The TM-driven approach to operating a university represents a radical (and often contested by academics) departure from their traditional 'ivory tower' stance in which teaching and research have always been treated as ends in themselves (Nakwa & Zawdie, 2016). The authors used the workshop method to achieve this aim. Workshops are becoming a popular research tool in qualitative research where researchers can gather a group of participants who under the instructions of a facilitator can discuss a specific subject. The authors participated as facilitators in a series of workshops at the University of Warsaw attended by the academic staff who were dissertations supervisors.

The study also presents suggestions and recommendations for thesis supervisors in the field of increasing the applicability of research results published in theses. The article contains the results of a survey conducted among participants of a training and consulting project carried out at the University of Warsaw. The project aimed to increase the applicability of diploma theses developed by its students.

Keywords: applicability of diploma theses, cooperation between science and business, cooperation with the socio-economic environment (OSG), commercialization of research.

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Introduction

The diploma thesis is the crowning achievement of several years of education at the university. In principle, it should be the culmination of the intellectual development of a student. In the parametric assessment of Polish universities, increasing the importance of university cooperation with the socio-economic environment challenges them with introducing elements combining academic education with business practice into the education process. The most evident way to comply with this postulate is to include issues familiarizing students with the practical aspects of the knowledge transferred at the university to the content of the curricula and taught subjects. However, there are also different complementary ways to fulfil the postulate of combining practical and theoretical knowledge in the course of academic education. One of them is promoting diploma theses that meet academic standards, as well as taking into account the postulates related to the application of scientific research results in the context of the needs of the socio-economic environment of the university.

The article aims to present the experiences and observations gathered during the implementation of a training and consulting project, which was carried out at the University of Warsaw by one of the authors. The purpose of the project was to increase the intensity of applied diploma theses. Moreover, the article contains the results of a survey carried out among project participants, who were academic teachers employed at the University of Warsaw. The survey investigated the opinions of academic teachers regarding the level of connections with industry. The study also presents suggestions and recommendations for thesis supervisors to increase the applicability of research results published in diploma theses. The suggestions and recommendations resulted from the qualitative research conducted among the project participants.

6.1. Application of research results as a challenge for the university

The idea of combining knowledge with the real world is associated with the Enlightenment Revolution that started at the end of the 17th century. The Age of Enlightenment overthrew stagnant religion and traditional authority and ended the period when religion was considered the main source of knowledge about the world. In the nineteenth century, the industrial revolution strengthened the interaction between business and science to intensify the cooperation between scientists and businesses. This alliance provided good practices regarding the application of scientific results for the benefit of economic growth and internationalisation of business (mainly by the great European powers), and continues to be strengthened with time.

The issue of cooperation between universities and business has been present for many years in the scholarly literature in the fields of innovation management, knowledge-based economy and knowledge management (Lundvall, 1992, p. 10; Dyer, Kale, & Singh, 2004, p. 115; Davey, Baaken, Galan Muros, & Meerman, 2011, p. 140). The relationship between academia and business is often referred to as "technology transfer" (Mansfield, 1991; Friedman & Silberman, 2003, pp. 17–30). Enterprises and universities are the main elements of the national innovation system (Lundvall, 1992, p. 10; Nelson, 1993, p. 56; Fazlagić, 2003). One of the differences between the organizational culture of universities and businesses is the attitude of both environments to uncertainty (Slaughter & Rhoades, 2004; Raper, 2017). Scientists, by their very nature, are accustomed to the ambiguity of the research findings and the lack of definitive conclusions and are aware that almost every theory may be undermined over time as a result of subsequent research. Meanwhile, business representatives have a much lower tolerance for ambiguity—they expect solutions and decisions based on binary data (Willis, 2013).

Despite many spectacular successes in the use of scientific achievements for the needs of the economy, there is a strong current in academic circles claiming that the separation of science from the economic sphere has many advantages for the scientific community—among others, in the form of freeing science from limits and restrictions (Perkmann et al., 2013). However, in recent years, this trend has been described as archaic and challenged. Another reason for a change in the university's functioning model is financial considerations. It is assumed that a stronger inclusion of universities in the transfer of knowledge to economic practice contributes to better use of the public funds that are allocated to financing higher education. Another argument in favour of increasing the intensity of industry-academia cooperation, which is much less frequently mentioned in the literature, is research discoveries in the field of creativity. In common understanding, imposing any restrictions or limitations on academics by the university would be associated with a decline in scientific productivity. Meanwhile, in the literature in the field of psychology of creativity, a positive relationship between the restraints faced by innovators and the quality of ideas generated in the creative process is noted. Previously, the opposite view dominated the literature. Creative people could be most effectively motivated by means of intrinsic motivation. For example, Csikszentmihalyi (1996) identified a phenomenon, which he called "Flow" describing the peak creative performance. Newest findings prove that it is not only intrinsic, but also extrinsic motivations that play positive roles (e.g. deadlines or rewards) in motivating people (Amabile & Pratt, 2016).

In recent years, more and more attention has been paid to the so-called "third mission of the university", i.e. their involvement in cooperation with the socio-economic environment. Universities have become more entrepreneurial, and many reports have attempted to define and specify methods of measuring the relationship

between science and business. At the beginning of the 1980s, the concept of "academic capitalism" and the related research on the relationship between universities and business appeared. Traditionally, the mission of the university was to teach and educate staff for the economy and the state. On the one hand, this issue is very important for improving the quality of higher education and broadly understood innovation of the economy. On the other hand, it is still treated as a set of expectations and postulates—mainly towards the university. To a lesser extent, deficits or deficiencies in collaboration skills are observed in the industry. The cooperation of scientists with entrepreneurs encounters many cultural, legal, institutional and competence barriers (Benneworth, de Boer, & Jongbloed, 2015). Usually, divergent priorities of research units and commercial enterprises make the functioning of effective n-b relations still a little popular phenomenon. An additional barrier to the development of these relations is the specific context in different countries. Solutions developed in one country will not always be effective in another. Modern universities seem to be at a crossroads as far as their strategic goals are concerned (Bortagaray, 2009). The third strategic priority (aside from teaching and performing research) is usually called 'Third Mission' (TM) and is portrayed as "a contribution to society" (Compagnucci & Spigarelli, 2020). University's Third-Mission (TM) refers to those activities of Higher Education Institutions which go beyond their two traditional roles i.e. teaching and conducting (usually theoretical) research activities (Schuetze, 2010). Education (the 'first' mission) serves the purpose of developing human capital. 'The second' mission entails producing new knowledge. The Third Mission refers to a variety of goals which aim to deliver added value to the society in the form of applied research, solving societal and economic problems, improving the quality of life. The expression TM is rather nebulous (Compagnucci & Spigarelli, 2020) but by searching for some distinguishing factors of the TM as compared to the first two missions, one can come to the conclusion that the time frame of the outcomes may be one of those factors. The TM activities are usually aimed to solve a specific problem, which is observable and acute to some extent, which can be operationalised into a roadmap with an expected outcome in the short-run. University teaching activities usually develop general cognitive skills, general knowledge and develop human capital which will demonstrate its full value in the long term perspective. Many research activities also concentrate on solving scientific problems which may not be directly related to the current needs. Research activities involve experimentation and risk of failure. The TM may be therefore distinguished by a shortened time frame of activities. Another characteristic of the TM activities could be the source of inspiration. In the case of theoretical research, the process of scientific inquiry is often initiated by the state of the art as described in the scientific literature. The TM approach emphasises the importance of searching for the research questions in the external environment of universities, outside of the realm of science. The difference may be well explained

by studying the process of developing research questions during the process of B.A. and M.A. thesis development. Students may be encouraged by the supervisor to study literature in the field (which is the traditional approach) and identify the gap in knowledge, or to search for inspirations in the external environment, e.g. by contacting business practitioners asking and searching for inspirations). It is not to say that scientific rigour should be abandoned. The scientific method should still be used but the result of a BA/MA thesis driven by the TM is not just filling the gap in knowledge but also solving a pre-identified problem, finding a solution etc.

Here appears a conclusion that there is a visible need to create conceptual frameworks, measures and guidelines that will be adapted to the cultural and institutional contexts in each specific country, as:

- Cooperation with the socio-economic environment reflects the expertise of academic teachers—in a network society, the most innovative information may be situated outside the academia.
- Academic teachers, who will not create innovative knowledge as a result of participating in research projects serving the needs of the socio-economic environment still can gain benefits for the science and the welfare of the academia (e.g. by improving their analytical skills, through attending research workshops, by enhancing competences in the use of research equipment and infrastructure, through identifying inspirational topics of potential research and formulating new research hypotheses).
- Academic teachers do not have enough opportunities to confront their assumptions with the real laws of social and economic functions. This is the result of the (common in Poland) phenomenon of inbreeding, as well as the hiring of people who have graduated from university in the same year, yet who have not undertaken internship connected with any branch of industry before being assigned an assistant position. Numerous Polish academic teachers have never worked outside of the academic environment. Thus, they are not familiar with modern business practices and functioning. Moreover, the organizational structures of universities and businesses are not compatible, which hinders communication and the understanding of the cultural codes that characterize organizations within the socio-economic environment. Under such circumstances, it is imperative to upgrade the social skills that are not expanded in the organizational culture of the university.
- Group cooperation with the socio-economic environment gives academic teachers the possibility to improve their communication skills, which tend to rot as the academic teacher becomes immersed in the ivory tower of academia
- Cooperation with the socio-economic environment increases the sense of ownership and responsibility for their independent research, while creating

the opportunity to obtain feedback about the results. This is an important factor that helps to counter burnout and to increase motivation. The hermetic environments at universities do not provide many stimuli of this form.

- For candidates potentially being hired in Academia, cooperation with the socio-economic environment may be treated as one of the possible quality indicators. The field of medical and health-related sciences is especially predisposed to taking into account the opinion of socio-economic environment representatives in their researches.
- From the perspective of the development of knowledge and the quality of academic research, one of the unfavourable individual research strategies, which many scholars use, is an excessive attachment to a narrow area of specialization, which often tends to be detached from socio-economic environmental phenomenon and processes. For academic teachers, who tend to define their research mission too hermetically and exclusively, cooperation with the socio-economic environment may be a source of valuable inspiration, as well as a stimulus encouraging further consideration. Cooperation with the socio-economic environment may be treated as an additional source of (informal) reviews—feedback information in the process of scientific development.
- Cooperation with the socio-economic environment shapes the leadership skills that are crucial in managing scholarly teams. In the Polish system, academic achievements are often the main criteria to obtain promotion to executive positions, notwithstanding lack of leadership skills, not to mention lack of experience with industry. Participating with the socio-economic environment would also be an instrumental purpose, while raising leadership skills would be the ultimate purpose. Even if the reform of the Polish education system would not result in an instant, common increase in the cooperation intensity of socio-economic environmental scholars, there still should be an emphasis on candidates for measurement positions in the university structures to be the first to show their achievements in cooperating with the socio-economic environment. Currently, competencies in business/industry cooperation are not exposed in competition for executive positions in academia (heads of Departments, deans, etc.)
- Cooperation with OSG will increase the tolerance of failure in the social norms. Today, a failure in research is barely acceptable. One cannot defend a thesis in which the results are counter to the hypothesis—yet this is an aspect of reality. Due to the possibility of working on solutions for the needs of the socio-economic environment, academic teachers will have more opportunities to experience failure—which is more difficult to define (due to a higher tolerance for the verifiability of the results) in situation of basic research.

The mission of high education institutions concerning the character of the cooperation, especially in the range of leading researches and developmental work for business entities, is of paramount importance to the enhancement of science-industry relations. There are different forms of operation within such cooperation, such as creating a special purpose company or industrial/business-representative participation in developing education programmes and didactic processes. Cooperation with the socio-economic environment may also take different shapes such as the university of the third age or various types of professional training courses, addressed to either community or commissioned by external entities.

The realisation of the so-called "third mission," based on the cooperation of the university and the socio-economic environment, may occur particularly in the following fields:

- transferring technology and knowledge to the economy by, among others, granting licenses or commercializing researches in an environment permitted by law reforms;
- cooperating with employers in creating education programmes and developing the didactic process;
- sharing research infrastructure with the external entities to a given university (for instance, interested entrepreneurs or other universities);
- implementing Life-Long Learning by launching postgraduate programmes, professional training courses, and universities of the third age;
- engaging the university (represented by scholars and students), as well as representatives of the socio-economic environment into the process of creating and promoting diploma theses.

6.2. Research approach

The main part of this article is devoted to the last issue listed above. It contains conclusions from workshops, as well as from the survey conducted among academic teachers from the University of Warsaw in 2018. The research problem which the authors tried to solve was how implement the TM approach in one of several possible areas of university's operations, namely, preparing a dissertation. This area is unique because it combines elements of the 'first' and 'second' missions, i.e. it both involves elements of teaching and conducting research, which makes it especially interesting field of study. There is scarcity of literature sources discussing this element of university's life. Most papers covering the issue of the TM concentrate on the issues related to making the research results more applicable and broadening both the inputs to academic knowledge and its use in an economic and societal context through technology transfer (see e.g.: Gaisch, Noemeyer, & Aichinger,

2019; Compagnucci & Spigarelli, 2020; Ke Rong, Lin, Yu, Zhang, & Radziwon, 2021). We aimed to go one step further beyond defining different modes of the TM (see e.g.: Ke Rong et al., 2021) which limit the descriptive insights merely to the case studies of universities. In the case of our research we endeavoured to open 'the black box' of a university realising its TM and took a more detailed view on how the TM is implemented. Paradoxically, the added value of this research decreases if only the first and second mission perspectives are used. Our study reveals how the TM can be implemented in one very important fragment of university.

The results of the empirical research presented in this article were gathered among the participants of workshops for tutors organized at the University of Warsaw in November 2018 as a part of the project "Application Diploma Theses—Successful Professional Start." (Project "Application Diploma Theses—Successful Professional Start" realized as a part of Operational Program Knowledge Education Development). In total, 20 academic teachers participated in the workshops. They were mainly academic teachers hired at the following faculties of the University of Warsaw: Artes Liberales, Journalism, Information and Book Studies, Political Science and International Studies, Philosophy and Sociology, Polish Philology and Psychology, who are interested in competencies development required to supervise application diploma theses. Training workshops for tutors were created for academic teachers from the University of Warsaw, the intent being to improve the competencies that are vital in modern didactics and academic work. The workshops aimed to prepare participants to lead application diploma theses written by students from the University of Warsaw. The participants of the workshop were engaged in a moderated discussion, which was written down in the form of keywords and schemes (Picture 6.1). Moreover, participants filled the survey form, which contained open and multiple-choice questions. A discussion of the results of the survey can be found in the further part of the article.

Picture 6.1. An example of notes originating from one of the workshop sessions
Source: Authors' materials.

6.3. Research conclusions from the workshops

During the 16-hour workshops, participants of the research were involved in a moderated discussion on the challenges and issues related to the introduction of topics and matters corresponding to the needs and interests of socio-economic environment representatives to the subject of diploma theses. Academic teachers who supervise application diploma theses were defined as tutors. Conclusions from the workshop discussion were grouped according to the category of issues and displayed below:

1) *What should be the scope of duties of an academic teacher responsible for creating conditions for the preparation of diploma theses? What should you remember when assigning responsibilities?*

- The aim rooted in completing the task should be kept in mind (e.g., master thesis defence).
- Mutual expectations and the range of cooperation, such as details of the application diploma thesis, should be precisely defined. It is worth creating an assessment questionnaire that is known by a student in advance so he/she can meet the expectations of the application diploma thesis.
- The main focus should be "the work", not "the person" to emphasise the research-application purpose.
- Interactions between participants of the process should be enabled as it is essential to engage students in the dean's groups for horizontal communication and mutual exchange of experiences between them while writing their thesis.
- The engagement of previous participant experiences in application diploma theses should be treated as the university's long-term task. Therefore, experiences collected by younger age groups should be accumulated and promulgated. This postulate also considers the usage of previous diploma theses results as a base material for discovery and enhancement of innovative technologies, as well as social development.
- Not the academic rigour, but methodological frames should be looked after. Described knowledge should be segregated (universal knowledge, area knowledge and specific knowledge for certain research).
- The tutor's own experiences should be enlisted—workshop participants emphasized the importance of their personal professional experiences in cooperation with the socio-economic environment. Experiences may consist of both gathering knowledge and developing personal contacts, hence, enabling the student to gain an easier start of cooperation with an entity from the socio-economic environment.
- The publication acquis of the tutor should be used when writing a thesis. This postulate is universal and timeless, thus, should not be omitted in the case of application diploma theses.

- Collaborative publications involving students and tutors could be the outcome of the creation of an application diploma thesis. This kind of solution can be attractive for all participants in the process. The tutor will have the opportunity to enrich his acquis with a new publication, while the student will gain a distinguishing attribute at the beginning of his professional career. If the diploma thesis concerns a certain entity, the publication can contribute to the promotion and realization of CSR purposes.

Students in the group supervised by the tutor can be used as focus group participants for mutual evaluation and review of the partial effects written in the group of diploma theses. If several groups of students are supervised by one tutor, it is worth considering the possibility of mixing the group composition to increase their creativity.

The next issue discussed during workshops concerned the characteristics of a good tutor. The term "tutor" is related to the promoter of the diploma thesis—the academic teacher who supports the student in his/her research over the application diploma thesis. Ideas of the participants are displayed below.

2) What characterizes a good tutor?

A good tutor:

- has profound expertise related to the topic of the thesis,
- manages the research in such a way that the student independently performs tasks, which do not require the tutor's creative input,
- capitalizes on the synergies between topics of the research in creation in one seminar group,
- motivates students to systematic work,
- provides numerous interactions (frequent, regular, short feedback),
- is interested in the student's situation at the university,
- is interested in the motives of students,
- tries to employ the information gathered by older age groups and to pass this knowledge to the younger ones,
- defines the vision of the research, which should be innovative and original (emphasizing the significant role of personal research, regarding literature studies as a phase—not as an ultimate purpose),
- cooperates with other tutors by, for instance, participating as a guest in various seminars,
- has a broad group of potential reviewers (does not only participate in a "co-op," in which a couple of people notoriously swap roles of promoters and reviewers),
- uses researches from previous years as teaching material.

3) *What actions should the tutor undertake to build relations with students and stimulate their creativity?*

The tutor should:

- be present on the internet and provide more than just a laconic set of information,
- provide adequate availability by systematic email replies,
- use online course aps (Moodle) by uploading numerous auxiliary materials,
- send students materials related to their research topic, information about conferences, etc. on their own initiative,
- sharing personal contacts with students to give them access to research samples,
- learn about students' experiences (e.g., the topic of their bachelor's diploma thesis, secondary school background and achievements),
- be interested in students' plans after graduating from university,
- share knowledge about the alumni of the seminar with its present participants,
- competently manage teamwork,
- be a partner in a discussion,
- integrate and synthesize the previous experience of the student (recognize and bring out the potential that the student does not recognize in his/her experiences),
- provide contacts in the socio-economic environment,
- help acquire empirical data,
- serve as a creative process manager,
- serve as an advisor for university bureaucracy.

4) *What are the characteristics and attributes of the application diploma thesis?*

Application diploma thesis:

- is not just a compilation of existing theories,
- has a distinctive title,
- has distinctive research questions,
- is partly or fully based on the current socio-economic situation,
- contains the component of empirical research,
- attempts to solve a real issue,
- was created in collaboration with entities or/and people from the socio-economic environment,
- has attributes interesting for a potential employer,
- uses literature sources such as professional reports,
- at an early stage, its subject gained support/interest/approval,

- relates to existing researches concerning economic practice—it expands knowledge,
- uses foreign sources concerning economic practice wherever justified,
- can be used as a topic for the presentation at a professional conference.

5) What kind of motives should guide the idea of application diploma theses?

- utility—actions for the benefit of the society,
- reaching certain goals—its research gives satisfaction,
- the opportunity for increasing academic teacher's earnings,
- enhancing reputation in the environment,
- the willingness to help others,
- the sense of meaning,
- satisfying one's curiosity,
- active civic attitude.

The last issue discussed during the workshops was the organizational conditioning of universities connected to implementing the application diploma thesis programmes. Participants were asked to create a list of barriers.

6) What barriers to creating application diploma theses can you recognize?

1. Internal rivalry inside university organizational units.
2. Undefined range of duties of the university workers.
3. University motivational systems (including training availability)—unfavourable organization of thesis applicability.
4. Generation gap—the effect of the years 1989–2000, in other words the outflow of experienced staff or a stoppage in scientific development.
5. The lack of understanding towards the "third mission" of the university.
6. The lack of ability to fulfil numerous roles.
7. The lack of social skills among potential tutors.
8. The lack of intermediaries connecting the university with the business world.
9. The lack of community service tradition.
10. Ethical dilemmas: sacrificing ambitious academic goals for the sake of being less ambitious but having practical results.
11. Application diploma theses may have a smaller impact on publishing activity.
12. Problematic aspect of intellectual property protection of entrepreneurs.
13. Alleged bias to pursue commercial interests of the company involved in the thesis development.
14. Possible manipulation with research results by the client.
15. Thought patterns influencing the interpretation of research results (e.g., political connotations).
16. Access to public data.

6.4. Results of the survey research

The outcome of our study is new knowledge in the field of the TM implementation. By engaging a number of academics into a qualitative study we were able to demonstrate what opportunities and barriers to the TM implementation can be. Participants of the project were asked to fill in a questionnaire. Fifteen questionnaires were completed. Due to the small number of responses ($n = 15$), inference based on statistical analysis is unjustified. Nevertheless, the apportionment of answers to the individual questions is presented below. The measurement tool developed by the authors for the workshops may be used in future applications on a larger research sample:

I. The perception of APD in the academic community of the University of Warsaw

- The emphasis on creating APD violates the autonomy of the academic teacher: 1.30.
- APDs serve to improve the quality of research conducted at our university: 4.50.
- APDs only serve to satisfy the ambitions of politicians and decision-makers, not the university's academic mission: 2.10.
- APDs facilitates the start of the students' professional activity within the labour market: 4.30.
- APDs should become a standard at the University of Warsaw: 3.80.
- University teachers at the University of Warsaw have insufficient knowledge on how to supervise the development of APD: 3.00.
- Academic teachers should co-create APD only voluntarily—others should be able to promote non-application work without any negative consequences for their professional situation: 4.20.
- The emphasis on the creation of APD at the University of Warsaw will lower the scientific quality of diploma theses prepared at our university: 1.20.
- The time required to supervise the development of APD is usually higher than for non-application research: 4.00.
- The popularisation of APD among the works created at the University of Warsaw will improve its competitive position in the market of educational services in Poland: 4.00.

II. Competencies of the APD supervisor

Due to the small research sample and quasi-qualitative character of measurement, the results are displayed in the descriptive form. The dominant type of answer is presented in each box, where:

1. I presume I lack this competency.

2. I reckon I do not lack this competency.
3. I presume that the majority of academic teachers from the University of Warsaw lack this competency.
4. I reckon that the majority of academic teachers from the University of Warsaw do not lack this competency.

Competencies, skills, abilities and attributes of the APD promoter	(a) Self-assessment	(b) The assessment of academic teachers from my faculty at the University of Warsaw (generalized)
Having a net of contacts in the socio-economic environment, which allow students to contact with the economic practices	(1)	(3)
Attentiveness to the practitioners' needs	(2)	(4)
The ability to simplify verbal and written communication according to the practitioners' expectations	(2)	(4)
The ability to find deficiencies in knowledge / needs concerning problems with the socio-economic environment	(1)	(3)
Openness to contacts with practice (no defensive attitudes towards practitioners)	(2)	(3)
Experience in the project realization for the socio-economic environment	(1)	(3)
Work experience (full-time job, own business activity, etc.) aside from formal education	(1)	(3)
Experience in research projects executed abroad	(1)	(3)
Responsiveness (quick, specific responses to emails from a partner from the socio-economic environment)	(1)	(3)
Availability (the ability to adjust to time frames indicated by the project with the socio-economic environment—reconciliation of academic work with the work schedule of the client from the socio-economic environment, readiness to work during inter-semester breaks)	(2)	(3)

In the last question of the questionnaire, the respondents were asked to select from the list, the three most important (in their opinion) attributes of the application diploma thesis. Participants most frequently indicated the following, it:

- solves a problem formulated by a business partner,
- has the potential for commercialization of the research results,
- allows the author to find employment with the company that was covered in his/her thesis.

Furthermore, one of the participants of the research proposed another attribute: "It formulates and proposes solutions that can be interesting for the socio-economic environment". Further studies in the field of TM concerning dissertations may cover a variety of topics and try to answer such questions as: what is the added value to the society of dissertations developed within the framework of the TM?

To what extent the emphasis on the applicability of theses impacts goals related to the first and the second missions (is there a compromise made?).

Conclusions

This article displayed theoretical conditions backed up with research results that are connected with the issue of creating application diploma theses in universities in Poland. The process of creation of the application diploma theses is one of the possible practical realizations of the universities' TM postulate. Introducing regulations supporting the creation of application diploma theses to Polish universities may significantly contribute to the intensification of the cooperation with the socio-economic environment, because it gives potentially large synergy effects for all the partners—including university student-alumni. The presented research results are exploitative in their character and can serve as a basis for continued research on a bigger scale. The model of the questionnaire was created for the needs of the research. It was employed to survey the participants of the project. In the authors' opinion, the questionnaire can become foundation for continued research in this area involving a much bigger group of academic teachers and Polish universities so as to develop systemic solutions that would motivate the university and entrepreneurs to strengthen cooperation. One of the platforms of such cooperation between academic and socio-economic environments may be the emphasis on the practical exploitation of diploma theses.

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