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Establishing best practices in innovation on the basis of elements of cooperation between the government, educational institutions, and a private sector.

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Abstract

The aim of this study is to demonstrate the practical application of three necessary elements necessary to build, then conduct and finalize the project successfully within the framework of cooperation between an academic institution, administration, and a private sector company. The first element is the involvement of external funding. External funding, which does not burden the budgets of companies, schools, and local governments does not guarantee, but can significantly contribute to the potential success of a business or intellectual superiority, namely the development of patent, design mark, etc. The next element illustrated in the examples is the involvement of tight control of consortia participants during the project, which can vastly affect the final outcome of the project. The last element, also highlighted in the examples, is the need for full engagement of the participants consortium project, their experience and clearly defined aim, reducing the risk of failure. The research material consists of publications and open source materials, describes various forms of cooperation within the ranges of the triangle formed by the university, government administrative unit and private business company. In equal measures, both positive and negative examples of cooperation are described in the following paper. The results confirm that well-prepared project, carried out with full commitment and complete factual assessment, supported by an accurate control throughout the process as well as clearly defined cooperation between companies and universities, should be a significant constituent of the scientific research. In this paper's conclusion, an analysis was conducted according to which the inclusion of 30% of best practices from previous projects in a new project will significantly increase its chances of market success.

Keywords: cooperation, innovation, education, technology, external funding, EU funding.

Introduction

In 1983, one of the first academic publications elucidating the cooperation between the educational, governmental, and private business entities has appeared in the Science, Technology, and Human Values quarterly (Deringer and Molnar, 1983). The article was describing the program initiated a year earlier by the National Science Foundation in cooperation with private tech companies, which donated computer equipment to pre-approved universities and colleges. The program was intended to support "projects that are developing creative, innovative prototypes of computer-based instructional materials or model programs that have strong potential for generating ideas for making significant improvements in the nation's science and engineering education efforts" (Deringer and Molnar, 1983).

As with any pioneering initiative the authors of the publication identified a number of issues, which arose throughout the program's existence. From the university standpoint, there was a question of ensuring the impartiality of universities' activity and preventing the excessive influence of private companies over the universities they cooperate with. On the other hand, private industry was weary of maintaining any relationship, even if via university, with their competition. However, the positive aspects of such cooperation have also been identified. The most important one, it was pointed out, is the direct access to top technical advice for university and its students within the private company, which may substantially benefit the science and engineering education.

Even though the FSA program was a pioneer, groundbreaking initiative, the questions and observations put forward by (Deringer and Molnar, 1983) still hold true 30 years later in today's science and research. Since then, the technology universities have grown to understand the importance of including both theoretical and practical aspects of research to its educational curriculum and this type of cooperation has become more and more widespread around the world.

This paper will describe the programs developed by various technology universities in Poland, which in cooperation with private companies and government, have contributed to the growing pool of experiences in developing best practices of such activity. Searching for improved ways of education's effectiveness is in the end, the ultimate mission of educational institutions and the establishment of best practices in cooperation between the universities, government, and private companies is an apt way to fulfil this mission.

Research Material

This paper will explicate in detail the successes and failures of government-university-private sector triangle of cooperation through the examples taken from the Polish market. The first two sections of this chapter will elucidate 2 projects with have had a positive conclusion and have demonstrated an effective distribution of funds to create a tangible profit to the parties involved. The last section will, however; focus on the negative – the barriers of development of polish innovation, wastage of funds and regulatory flaws of the current system of innovation funding, providing a number of examples, which have failed at certain stages.

Does the involvement of external funding without burdening the budget of companies, colleges, and local governments will guarantee a business or intellectual success?

In order to help better understand the question posed in this section, two examples shall be elucidated, first of which gives a definite negative answer to the question posed. The second case stands as a more positive example, while both will help provide a comprehensive answer to the question.

Embezzlement at Wroclaw University of Technology

In October 2013, the prosecutor's office in Wroclaw charged a professor of Wroclaw University of Technology with embezzling state-funded innovation subsidies valued at PLN 1.8 million (www.prokuratura.legnica.pl, 2013). The prosecution act charged the professor as well as several members of professors' research team, his friends, and relatives of engaging in embezzlement scheme of obtaining grants for research, which never took place.

Altogether, the government funds were embezzled through five research projects supervised by the professor for which the funds were provided by the Polish Ministry of Science and Higher Education. The persons accused of embezzlement, the professor, and four members of his research team have signed contracts for partial research in computer and information technology (IT) science with PhD candidates, students, and incidental people who were clearly incompetent to conduct any research within the field of IT, like a high school teacher or an owner of a printing company. The research was made up and never conducted, yet the Ministry's funds were nevertheless transferred to the professor. The suspects are currently under custody and are awaiting trial.

This example, although an extreme one, exemplifies the worst and weakest side of the current R&D funding system employed by the Polish government. The suspects in this case had to make very little effort to wrongfully take advantage of the lack of the ministry's or university's, at which he conducted research, supervision and control of the funds it provided for the research. In accordance with the ministerial regulations, the only document, which the ministry requires to release the funds is a signed form, confirms that the research was conducted. Once the form is submitted, the ministry transfers the funds and does not verify nor conduct any due diligence in the further stages of the subsidized research project. This situation calls for a question of how many research projects conducted at Polish universities of little or no commercial or scientific purpose have been funded by the Polish or EU treasury. Strikingly, should one desire to answer such question, the current lack of due diligence in allocation of funds in research projects deems a retrospective audit a laborious and tedious effort with very low chances of realization.

BRASTER - Portable breast cancer tester company

The first example provided in this section has shown that researchers acting in bad faith can easily take advantage of the system, however the other side of the spectrum also has to be included, specifically a case, where the university, companies, and government work together towards a commercial and scientific success with the help of external funding. BRASTER company can serve as a great example of successful allocation of external funds. BRASTER was established in 2008 by five Polish scientists as a company destined for conducting industry research co-financed by the European grants within the framework of Operational Program Innovative Economy (POIG 1.4-4.1), and subsequently launching the manufacturing of the research results (BRASTER 2013 Annual Report, year published?). The research subject matter included the development of innovative, non-invasive, liquid crystal contact breast cancer tester used to detect specific thermographic cancer markers, which indicate pathological and especially cancerous processes in breast glands (braster.eu, year published?).

In December 2008, the company signed a contract with the Polish Agency of Entrepreneurship Development (PARP), the governmental innovation fund provider, to receive funding for the project titled "BREASTLIFE – an innovative tester of liquid crystal thermography, detecting breast cancer, PKWiU 33.40.23 (liquid crystal devices)" from EU funds within the framework of activity 1.4. Support for goal-oriented projects of priority axis 1 research and development (R&D) of innovative technologies, 4.1. Implementation of priority axis R&D works results, four invested in the innovative project of the Operational Program Innovative Economy 2007-2013. The funds amounted to PLN 211,774,309, 70% of which supported phase 1 (research) and 30% to phase 2 (implementation-investment).

In 2010, the company registered a patent for the liquid crystal tester, which allowed it to sell the product all over the EU. In 2011, the product was included in the European Data Base of Medical Equipment (EUDAMED). The company received further funding in 2012, this time from Poland's National Center of Research and Development at PLN 1.5 million to conduct research in cooperation with Wroclaw University of Technology, the same one which saw its IT professor arrested for fund embezzlement a year later.

What is notable about BRASTER is its 2013 IPO on the alternative stock exchange market of Warsaw's bourse (Stock Exchange) – NewConnect. The IPO not only provided additional funding to the company, but what is most important, the check and balance system of private investor scrutiny who have bought BRASTER's shares. The company going public made all of it's board's decisions open and held accountable before its investors, thus in effect ensuring an accurate and efficient allocation of external funds provided by the EU and the Polish government. This thesis can be exemplified by the volume of purchases of BRASTER's stocks, which sprung up following the buyable share emissions. In the end, a demand for company's stock is the sign of trust in the board's actions and company's value on the market.

As of late 2014, the company has sought to patent its tester in Australia and the US. It expects to go into commercial sales internationally in Q2 2016. Although the commercial fate of BRASTER is yet to be determined, the company achieved intellectual and managerial success through a successful and efficient use of funds and making the company debut on the stock exchange.

The combination of the two seems to be an optimal solution for innovative projects. The EU or the government can provide the funds required in the initial phase of the project, so at the stage where the project carries high risk of failure and being of little interest to investors. Past the initial stage, the IPO would allow the market itself to verify the commercial usefulness of the company's business. Warsaw Stock Exchange's alternative NewConnect exchange was funded with the very purpose of supporting innovative companies in need of investors. The results, however, have been mixed so far and further investigation into the reasons behind would require a separate, more elaborate publication.

Does the supervision of involvement of project staff influences the end result of research?

In this section, the case studies of Orange Polska projects will be analyzed. Orange Polska, a Polish telecommunications giant previously known as Telekomunikacja Polska (TP SA), has increased the employee engagement in the innovation and production process by launching cooperation programs with academic institutions. The additional advantage to this undertaking is the acquisition of students with high potential as well as boosting the positive corporate image within the framework of Corporate Social Responsibility.

The case study confronts four editions of the innovative contest with four examples of innovative projects in cooperation with academic centers:

- Program “Your Perspective” for technical and economic faculties, students from the main universities in Poland;
- Project "Land of the Rising Innovation", prepared with the help of the lecturers from the Jagiellonian University in Cracow and processed from the IT side in the years 2009-2011 by the CL S.A. company, which has so far provided Orange Polska with IT workshops systems;
- Project “Become an engineer of the future”, based on workshops, training programs and industrial projects in which cooperate condescending teams consisted of employees from the Silesian University of Technology and Orange Polska;
- The patronage of Orange Polska brand ambassador at the Silesian University of Technology.

“Your perspective” program is a number of initiatives taken by Orange Polska in the years 2008 – 2014 in cooperation with 16 main universities in Poland (www.twojaperspektywa.pl), which has so far resulted in:

- 139 trainee positions;
- 172 workshops at universities in Poland;
- 176 ambassadors (specially selected group of students, which role is to inform their colleagues about program, workshops and job opportunities);
- 500 participants in 11 Students Orange Club meetings;
- 3000 participants in workshops at universities;
- 6410 participants in Your Perspective contest.

One of the effects of “Your Perspective” has been the creation of new initiatives within the program such as “Innovations Farm” (Marszałek, 2008), which have enabled the students and university employees to gain knowledge and experience thanks to the workshops about the latest trends on IT and telecommunications market.

"Land of the Rising Innovation" is the name of the project that has been realized from April 2009 to January 2011 for Orange Polska (www.twojaperspektywa.pl). The workshop program was based on the innovative education method, which is the integrated system of several forms of teaching: e-learning, virtual classes and workshop lessons. The Creative Problem Solving (CPS) has been discussed as a heuristic method (experience-based techniques with a set of tips, but not algorithm (Weber, 1996) of complex problem solving approach, which increases the chances for effective and innovative problem solving as well as for implementation of innovations (Roffe, 1999). Workshops prepared by the lecturers from the Jagiellonian University in Cracow were held with the use of the blended-learning method as two one-day stationary workshops and three 6-hour e-learning sequences(Matusiak, 2008). The project was financed by the Operational Program "Human Resources Development", which receives 85% of its funding from the European Union. The total budget provided for the project is 973,000 zlotys. Thanks to these funds 408 people from among 30,000 employees of Orange Polska have been trained.

Project “Become an engineer of the future” has been conducted since October 2012 with planned conclusion at the end of 2015 within the Operational Program sponsored by the European Union and under the name “Human Capital. Higher education and science, strengthening and improving qualifications of the academic staff as well as increasing the number of graduates corresponding to the requirements of knowledge economy" (Niecka, Orzechowski, Słabosz, & Szymura, 2005, p. #). All the workshops consisted of five 6-hour lectures where the subject matter has been prepared together with the industrial and academic mentor. Until the end of 2015, 224 full-time IT students from the Faculty of Automatic Control, Electronics, and Computer Science of the Silesian University of Technology are to take part in the workshops. The workshop initiatives followed directly from the industry and included implementation of IT instruments in industrial production, automatic control, motorization, IT, telecommunications and others.

The table below shows the course of the initiatives taken by Orange Polska.

Table 1: Project "Engineer of the future."

	2012	2013	2014
Number of students/Realized material	8/2	4/1	4/1
Student's positive opinion of the company	0 z 8	4 z 4	N/A
Developed technical innovations	0	4	N/A

Within the practical tasks on the subject "Selection of teletransmission systems alarms exemplified by the network of Orange Business Service (OBS)" students have been acquainted with the practical knowledge about:

- Configuration of the VPN network for the OBS customers;
- Assignment of the IP address for the OBS router interface;
- Router configuration for the OBS customers considering constant monitoring of the service;
- Distribution of the Equant and SEAiS database for the OBS customers;
- OBS Service Management Center (presentation of the access node and multiplexer mock-up).

The second subject "Permanent analysis of the condition of the telecommunication services xDSL, Business Everywhere" consisted of workshops about:

- Creating connection in the VPN (FR) technology for the OBS customer;
- Creating connection in the VPN (ADSL) technology for the OBS customer;
- Router configuration from the PE (Provider Edge);
- Router configuration from the CE (Customer Edge).

The third subject, "Configuration of the access devices for the IP VPN OBS service", resulted in the development of the solution called an automatic configuration generator which enables an automatic programming the OBS telecommunication devices.

The fourth subject will be devoted to improvements of automatic configuration generator and an attempt to include the IP VPN OBS service to the production process of the distribution network.

Despite its limited reach the program perfectly illustrates the change of the corporate image. Thanks to the project, it could be immediately noticed how direct contact and joint work influence the change of opinion about the company and its services.

On the first day of class, students were given a test about the telecommunication services they know, however, they could not point to any. They were also asked whether they could recommend any of Orange Polska services, but still the answers were assertively negative. On the last day of class, the students got the same test and the answers were completely different. They named from several to more services and have absolutely recommended the services offered by Orange Polska.

Industrial mentor program is the smallest and the most modest initiative compared to the ones presented above, which is meant for selected students of technical and economic majors from the main Polish universities. Within the project the industrial mentor, who is chosen from the employees of Orange Polska, gives content-related support to the brand ambassador in the university. The industrial mentor is offering a two-day workshop consisted of such subject as coaching, mentoring and training, whereas the student gains the knowledge about the recruitment process, job consulting and self presentation. Then, mentor and student create together a program for university open days with lectures, equipment presentations, as well as contests for the academic community.

Does the full involvement of project staff, their experience and clearly defined project goal help lower the risk of failure?

Spectral Optometric Tomograph

The following case is a very good example of how clearly specified goals and experienced management of the project facilitate its successful completion through research result's market entry.

The Torun Copernicus University, developed in 2001 the next generation of spectral-domain optical coherence tomograph (OCT), a device used for imaging eye tissue, proven to be a hundred times faster than then-current tomographs. 3 years later in 2004, Optopol an ophthalmology company from Zawiercie, Optopol has shown interest in the new technology and acquired an exclusive right to the patent, any potential updates and new solutions to the current design (Gazeta Wyborcza, 2005). Subsequently, the consortium of Copernicus University/Optopol has also received EU funding of PLN 914,617.41 to build the tomograph for commercial use. The funds came from the European Regional Development Fund, Program Improvement of the Competitiveness of Enterprises, Activity 2.2. Improvement of competitiveness of Products and Technology (www.wp.pl).

Optopol has invested approximately PLN 1 mln in the development of the new device and has spent significant resources on developing final result. The company has taken on the commercial side of the project to deliver a market-ready product. The company received first orders from the new OCT device, SOCT Copernicus+, less than a year after its debut at Medical Expo Show in Lodz in September 2004.

However, the great breakthrough came with the acquisition of Optopol by the Japanese high-tech giant, Canon Group in 2010. Optopol's achievements in the OCT field was one of the main reasons for its acquisition (canon.com, year published), as the Group was looking for new markets to expand. The other reasons also included a strong complementary product mix of the companies, where the combination of the two companies' specialty fields "makes possible a greatly enhanced product portfolio spanning a wide range of ophthalmic diagnostic system". Finally, the Canon Group's board was counting on developing further groundbreaking technologies in ophthalmic diagnostics through joint research projects. The tender offer price of purchasing ca. 90% of company's shares were 248 mln PLN, while the company and university consortium retained it's Poland-based headquarters and all the rights to the intellectual property it has developed.

With the acquisition of the company by a major global multinational player, comes the success of the project. All the chains of the innovative product market entry process have worked because of a well organized action plan. Firstly, a product was successfully developed by a university research team, then introduced to the market, and commercialized by a company with expertise both in business and technology. Lastly, the company was bought by a third party, which will not only significantly increase the client outreach for Optopol's products but further invest towards its market success.

Polish Graphene commercialization

The case study of Polish graphene project demonstrates how the full involvement of governmental institutions, strong political will and clear designation of responsibilities in the project reap success in the commercialization of a product.

Graphene was discovered in 2004 by Andrey Geim and Konstantin Novosyol of Manchester University. The two scientists received a Nobel Prize for their discovery in 2010 for a good reason. Graphene is expected to revolutionize modern industry, from computers and mobile phones to cars, power plants, and chemicals. It is a much better electricity and heat conductor than silicon. It is a hundred times more resilient to mechanic shocks than steel, while exhibiting flexibility and being a thousand times thinner than paper. Graphene is also believed to cure certain types of brain cancer.

Since the groundbreaking discovery, a number of multinational corporations and their research teams have conducted research on the application of Graphene in modern technology. However, the Polish research team from the Institute of Electronic Materials Technology (ITME) has developed a mass production method of Gaphene, which is much cheaper than any other so far known methods. Since the discovery of new production technique, the Polish government has shown interest in utilizing the new method and commercializing it. The institution designated to conduct the commercialization was the Agency of Industrial Development, which in early November 2011 has founded a new company Nano Carbon, with an intent of commercial sales of Graphene. On the 20th of December 2013, the production of Graphene began, while in early 2014, the company started online sales of Graphene, in the form of foil, pa and water solutions (nano-carbon.pl).

The project received financing from two sources. First, 49% of Nano Carbon's shares were purchased in April 2013 by an investment fund, TFI KGHM, for PLN 14 mln. The transaction was sought as a means of re-capitalization of the company, with the new cash designated for research and the introduction of Graphene products to the market (www.arp.gov). The deal minimized the risk of failure and secured further research funding.

The second source of funding came from the EU, which financed the creation of Graphene research center at the ITME, which has signed an exclusive contract with Nano Carbon. The funds came from the European Regional Development Fund, Regional Operational Program for Masovian Voivodeship, activity 1.1. Strengthening the R&D sector at the same of PLN 36,125,000, with the whole project being worth PLN 42,500,000.

Further research is required, but the ITME and Nano Carbon's activity is only part of a bigger picture. The European Union designated the research on Graphene as a flagship program, and plans to spend around 1 billion EUR on developing the technology over the next 10 years. ITME is the only Polish institution which takes part in the program.

The pace at which Polish Graphene has reached the market entry was very swift – 3 years after the establishment of the company. Such rapid progression was possible mainly thanks to an intensified involvement of the government and the EU institutions, given the gravity of the discovery. It has to be mentioned, however, that the only innovation on the Polish scientists part was the development of mass production method. Graphene's discovery is certainly not, as a number of other players around the world are also working on Graphene development. With no time spared, Nano Carbon and ITME are well ahead their competition and therefore have a higher chance of market success.

The failure of Polish blue laser project

The previous case study stands at a stark contrast with another flagship project of Poland's government and science world, a blue laser project, which has failed to achieve the commercialization stage. In this case study, the culprit was the sluggishness and poor work of the administrative bodies in the distribution of responsibilities in introducing the product into commercial sale.

The Polish governmental program, "The development of blue optoelectronics", was launched in 1998 and two years later was expanded to a four year project of a consortium of the Ministry of Economy, High Pressure Research Center of the Polish Academy of Science (CBW PAN) and the Institute of Electronic Materials Technology, as well as a private company, Lumel. A new company purposed to commercialize the scientific research ToPGaN was also established. The funding program budget amounted to 96.2 million PLN. The funding was provided as follows:

1st stage 2000-2001 – PLN 36.1 million, with PLN 12.4 million provided by the Scientific Research Committee (KBN)

2nd stage 2002-2004 – PLN 60.1 million with PLN 16.4 million provided by KBN

Financing of research and development activity amounted to PLN 38.5, with PLN 28.9 million provided by the state budget. Funding for commercialization process amounted to PLN 57.7 million (elektronikab2b. pl, year published?).

The program showed some results early on as by the end of 2001 the CBW PAN has presented the first blue laser based on gallium nitride.

The initial success stirred high hopes. Blue laser was seen by wide circles of society as a chance to advance Polish economic progress and elevate it to a status of knowledge-based economy. Some went as far as to predict that Poland will take over 2% of the global laser market. High hopes for Polish blue laser soon diminished as a number of flaws were exposed in the consortium contract (technowinki.onet.pl). These flaws included, e.g. lack of 50 MW laser, critically important for commercial production. Instead, the qualifying condition of the first stage of the program was a delivery by the CBW PAN of 40 lasers of 5 mW with working time of 1 minute. In addition, the delivery deadline was delayed until 2002. Secondly, a financial audit performed in 2002 showed that the Polish Academy of Science, being that majority stakeholder in the company ToPGaN, has no control over the implementation of their research results. In 2003, the interdisciplinary committee dedicated to program supervision has concluded, that the technology developed by CBW PAN has not reached the stage allowing for mass production. The committee also found that instead of assembling 40 lasers as provided by the contract, the center assembled merely 5, which worked in a pulsating rather than constant stream, which deemed them commercially useless. At the end of 2005, the Ministry of Science and Digitalization concluded in its opinion report that the program was completed only partially and did not achieve its goals (www.naukawpolsce.pap.pl, year published?). By that time, international competitors offered commercial sales of 60mW blue lasers, whereas weaker lasers have already been introduced on a massive scale through e.g. Blu-ray technology. By that time, it was too late.- There was no chance for commercialization of Polish blue laser technology, let alone any kind of global market entry. Although further research on blue laser is still conducted by Polish institutions, it cannot be treated as an innovation project anymore. Therefore, does not qualify to be further analyzed in this article. The technology is by now 10 years old and does not contribute to the knowledge superiority of Polish economy.

Final results and conclusions

In the research material section, a contrast-based positive and negative case studies of utilizing EU funds have been presented. The common ground of all these projects was the preliminary deep preparation of every aspect of the project. These projects were conducted in academic institutions, which employ the best experts in their research fields; the beneficiaries were private companies motivated by profit and achieving the competitive edge. Financing, arbitrage and due diligence were provided by neutral administrative bodies. Tools facilitating and simplifying the communication and administrative work were employed throughout the project's progression.

The question arising is whether the level of innovation was excessive? Should certain innovative findings be excluded within the framework of publicly funded projects? Can the project's success be measured only by quantitative and definitive values? A project which lacks clearly defined goals, full involvement of beneficiaries, executors and sponsors should not be financed from the public funds. In order to avoid wastage and mismanagement of public funds provided for research, a chart of best practices should be developed, which would allow measuring the investment risk and providing standards for further research projects.

Such chart should be filled in as follows: List of projects conducted in columns, with good and bad practices listed in the verses, which contributed to the successes and failures of any given project.

The chart cells include a success to failure ratio defined on a scale of '1' to '10'. The values in the cells would be defined subjectively or quantitatively. Here is an exemplary matrix with good practices listed in the three aforementioned cases.

Table 2: The chart of good practices with quantitative values.

1	**2**	**3**	**4**	**5**	**6**	**7**
Supervision of project stages	1/9	4/6	1/9	3/7	8/2	8/2
Participants and third party opinions of the project	1/8	9/1	9/1	8/2	9/1	9/1
The innovativeness of the project and the applied technology	5/5	8/2	2/8	9/1	9/1	7/3
Research team experience.	9/1	9/1	5/5	9/1	7/3	9/1
The extent of project financing	2/9	5/5	5/5	5/5	9/1	9/1
The end value of the project, patents, financial profit, image improvement	1/9	9/1	8/2	9/1	9/1	1/9
Total	~10/90	~33/90	~15/90	~32/90	~42/90	~33/90

Note: 1 = The verses contain the good and bad practices which contributed to the success and/or failure of the project, 2 = IT Projects at Wroclaw Technical University, 3 = BRASTER – portable breast cancer tester, 4 = Training courses for employees and students, 5 = Spectral Optometric Tomograph, 6 = Polish Graphene commercialization, 7 = Polish blue laser

On the basis of the table above, one can define that if a minimum of 1/3 of good practices employed in previous projects shall not be implemented, then the risk of failure becomes real. The credibility of this analytical tool should be verified by further assessments. Growth of interest in co-financing within the framework of business-academia-local government consortia is well understood and supported by the EU.

This process began in 2000 through the Lisbon Strategy. It foresaw the expenditure of 3% of EU's GDP on Research and Development, from which 2/3 were supposed to come from the private sector. Execution of this strategy was purposed to bring many tangible advantages, reduction of unemployment (Johansson, 2007), an increase of EU's economic attractiveness as well as investment in new technologies. Now we have approached the stage of funds distribution for the period 2014-2020. The scrutiny and assessment of projects have been undertaken by many researchers (Baumman, 2000; Foray, 2009; Foray, 2012). There is a multitude of project assessment methods: matrix, risk outcome, risk assessment, based on traditional logic or alternative logic. However, these methods fail when faced with the innovation element (Fagerberg, 2005) of the undertaken projects, or do not cover those areas, which have not been explored before by the market, private sector, academic circles or the local governments (Atkinson & Ezell, 2012a; Doern, 2006).

The most important conclusions drawn from the project experiences:

- It is very important to support the research centers and private companies in their attempts to launch cooperation, (MULLER, 1980; POTVIN, 2013; WOLFE, 2005)
- Any forms of internships or workshops will disrupt the profit-generating production process in a company lacking the support of a research center,
- The added value of the company is the opportunity to avoid, reduce or outsource the recruitment process to the research center,
- Companies reduce forms and means of cooperation with research centers at the time of an economic slowdown,
- Cooperation with research centers facilitates company's innovativeness, (LOPREITE, 2009),
- The effects of cooperation with research centers provide for an increase of innovative ideas, however their quality or implementation costs discriminate such solutions,
- The company's image improves thanks to cooperation with research centers, (SCHUBERT 2010)
- Education as a non-profit activity requires additional funding and any form of a well prepared, well conducted and appropriately summarized financial support will benefit the consortium.(Schider, 2015).

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