



CONCEPT FOR PERFECTING THE MARKETING OF NEW TECHNOLOGIES AT GDAŃSK UNIVERSITY OF TECHNOLOGY

Jerzy Koszałka, Ph.D.

Gdańsk University of Technology, Faculty of Management and Economics

Damian Kuźniewski, M.Sc.

Centre for Knowledge and Entrepreneurship of Gdańsk University of Technology

Introduction

Many contemporary universities, also in Poland, focus mainly on their didactic and research-scientific activities and don't pay much attention to the needs of economic practice and the market. There is a small group of people of science who understand and in practice implement the economic mission of universities and research and scientific units, as key providers of new ideas in economy based on knowledge which is gaining more and more importance. Many scientists focus merely on the statutory activities of the institutions employing them, which now generally are limited to educating and scientific research. This to some extent results from statutory requirements ordering education and scientific research, promoted by the binding criteria of parametric assessment of scientific and research units. To some extent this is also the effect of convenience and lack of will to go beyond the well-known areas and modes of activity, typical of a substantial proportion of the scientific and didactic staff. Little interest in economic practice in many university circles may also in many cases be the effect of lack of sufficient knowledge about its needs and the inability to recognize them. This could suggest that people of science are not open to changes in their environment and that they are focused too much on their own areas of activity.

One of the reasons for this state of affairs is limited knowledge of the people of science and managers of science about the role and possibilities of contemporary marketing. In common understanding, marketing is associated with promotion and advertising. People who deal with economic practice, including scientists, regard marketing as an equivalent of advertising and promotion and they regard promotion as an art of manipulating recipients, which is not what fits into the scope of activities of an honest engineer, economic expert or scientist. This way many of them avoid the duty of proper understanding of the essence of marketing and the need to try to find out how marketing could be used to take advantage of the results of their scientific and research works. This issue is the leading plot of this article.

Basing on the experiences of the Gdańsk University of Technology, in order to contribute to the improvement of the transfer of new technologies to economic practice in Poland, the following issues are discussed in the article:

- essence, benefits and the environment of contemporary marketing,
- new technologies, their role and the rules for transferring them from scientific and research centres to the economy,
- the experiences in the transfer of technology from the Gdańsk University of Technology to the economy,
- proposals for facilitating the marketing of new technologies from the Gdańsk University of Technology to the economy,
- conditions of facilitating the marketing of new technologies from university to economic practice in Poland.

All these deliberations end with a summary and a formulation of final conclusions.

Essence, benefits and the environment of contemporary marketing

There are many definitions of marketing, which is constantly subject to dynamic development. It is also a field for the creation of new ideas and approaches. For the purpose of this article it seems appropriate to adopt the definition of marketing formulated by renowned experts like G. Armstrong and P. Kotler. According to them the term marketing denominates a “...process in which companies produce a value for the client and build strong relations with clients in order to gain particular values in exchange”¹.

Trying to understand contemporary marketing it is necessary to identify its characteristics, which are discussed below².

- Marketing is based on voluntary acts of exchange on the market, in which the seller (supplier) offers to the buyer a product, gaining payment and other consideration significant for the seller³. Products now exchanged on the market are perceived from a very broad perspective. They can assume the form of a material product, a service (actions taken in order to satisfy the buyer’s needs), person, place, organization or a combination of the above elements.
- An incentive for the initiation of the process of exchange on the market are needs and desires of all participants of the market play, understood as a state of perceived lack stimulating the entity, which feels the need, to take action. Among individual needs of the participants of market exchange, classified by Maslow⁴, we can distinguish between basic needs like physiological needs (eg. breathing, hunger, thirst) and security (life, health, social security) and higher level needs like social needs (identity, friendship, love), personal (renown, status, respect) as well as cognitive needs and self-realiza-

1 G. Armstrong, P. Kotler, *Marketing. Wprowadzenie, Oficyna Wolters Kluwer business, Warszawa 2012, p. 36.*

2 Prepared on the basis of G. Armstrong, P. Kotler, *Marketing. Wprowadzenie, Oficyna a Wolters Kluwer business, Warszawa 2012, p. 36; Doyle, Marketing wartości, FELBERG SJA, Warszawa 2003, p. 8-17.*

3 This involves repeating purchases, expressing one’s good opinion about a provider and promoting the provider without any outside pressure among friends or business partners, reacting to new propositions of the provider etc.

4 P. Baines, Ch. Fill, K. Page, *Marketing. Oxford University Press, Oxford 2008, p. 113-114.*

tion. Whereas needs are limited and constant, the desires formed by culture and individual personality of a particular entity assume various shapes and are subject to frequent changes.

- On the contemporary market, marketing, more and more often is not about the exchange of products and payment, but becomes a field for the exchange of benefits in form of values expected by the parties of transactions. Product is treated as a carrier of value transferred to the buyer. The reception of the value becomes the basis for the expectation of values important for the buyer⁵ in return. This is the reason for the significance and attachment to diligent recognition of needs and expectations of recipients, as well as to following their reactions to the offered values, in order to be able to introduce appropriate modifications to the offer on time and keep the buyers' interest in what the supplier can offer.
- Efficient client service is possible when its correlated with the needs and desires of clients, which it is supposed to serve. That's why it is so important to carefully choose the target group of clients in the process of market segmentation. Generally speaking, the recipients of the providers on the market may be individual clients – persons and/or families buying products for their personal consumption and organized clients buying products in order to use them in the processes of producing goods and/or providing services (producers), reselling products (agents) or for the purpose of carrying out statutory tasks (eg. local administration, government, administrative organizations). Raising the likelihood that the offer of a market provider will be noticed and chosen by recipients can be achieved by equipping the offer with characteristics distinguishing it from the competitors' offers through the process of positioning.
- Companies in which activities are subordinate to the goals of marketing strategy can achieve competitive advantage and better results on the market. This means that a company taking up the task of serving clients tries to define its mission, which identifies the reason for the company's existence, seen from the point of view of clients. Moreover, companies define their marketing goals expressing the expected state (situation) on the market, they are heading for (eg. achieving a 15% share in the market in 3 years). They also define the manner of operating on the market in the long term, often covering many years, called marketing strategy.
- In order to satisfy the expectations of a chosen group of clients, companies build a set of instruments, which make sure that recipients are provided with the expected values. Among these instruments there are: *product, price, distribution* and *promotion*. Now its often replaced with two-way marketing communication⁶. Marketing instruments described as marketing mix or 4P's, should be integrated, that is, coherent and mutually supportive and at least not conflicting.
- The experiences of many companies focused on marketing show that what helps improve the results of market activities are positive experiences of buyers from cooperation and buying, lasting, friendly

⁵ Seller who sells to a customer a food product, offers him the energy to work and act, health and the pleasure of eating, expecting in return payment, repeated shopping, expressing good opinion about the provider in his environment or interest in a new proposition.

⁶ In case of services it is necessary to expand the classic marketing mix (product, price, distribution, promotion) to personnel, physical evidence and process of provision organized adapted to the needs of recipients (7P's).



relations with buyers, which result in satisfaction or, at best, in their praise.

Marketing is not a one-off act or event. It is an unending set of recurrent actions carried out in a particular sequence in two main phases, namely (picture 1):

- producing values expected by the clients and building cooperation with them, as well as
- obtaining from satisfied, loyal clients the values expected by the provider, which guarantee making profits, value in the life cycle of clients and capital in form of a base of loyal customers.

The main beneficiaries of the application of marketing in business are clients (recipients) and entrepreneurs (providers) using it. Thanks to marketing the clients gain:

- rich offer of products, constantly updated by providers who want to distinguish themselves from the others on the market,
- full adaptation of the offer to their often individual expectations,
- protection of own interests, resulting from the nature of marketing and the assumption that providers achieve their goals thanks to their clients' satisfaction.

Provider (producers, service providers) applying marketing in their business activities gain the following:

- optimum choice of groups/group of served clients, complying with the capacity and potential of the company,
- direction of marketing goals and activities corresponding to the internal and external goals and the environment of a company,
- appropriate adaptation of the offer to the expectations of recipients, bringing them satisfaction or even better, delight
- partner relationship with the recipients, facilitating survival, development and expansion of a company.

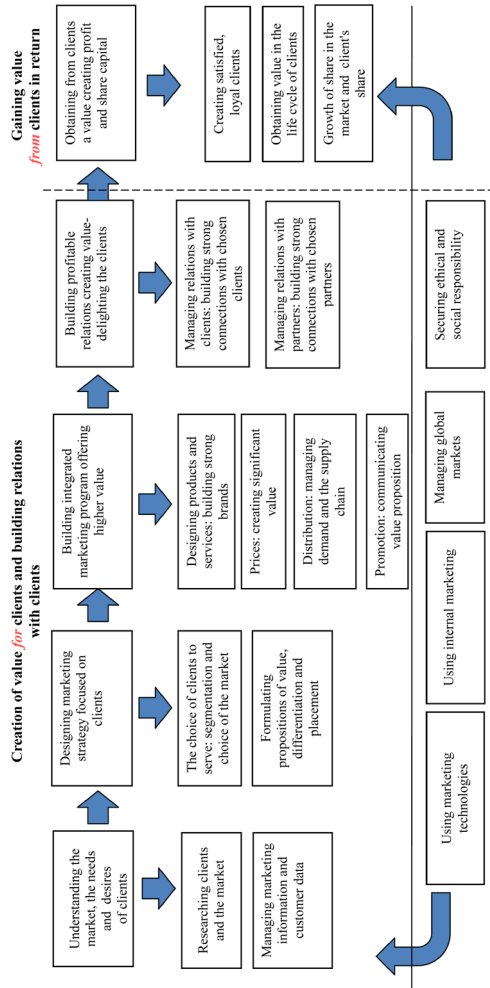
Broad utilization of marketing in the economy also brings other benefits, such as close ties between entities stabilizing the economy, popularity of planning, which facilitates balanced development of companies and the economy, as well as stimulating innovation, raising competitive potential of market entities and the attractiveness of the economy.

Achieving benefits thanks to the utilization of marketing requires satisfying a series of conditions. The following are among them:

- The necessity to conduct marketing research and constantly collect data about the market, which requires managing marketing information and customer data,
- the necessity to constantly improve marketing activities and implement innovative technologies, especially information technologies based on computer support,
- basing the activity of companies focused on marketing on the so-called internal marketing under-

- stood as activities aimed at the personnel, which are supposed to improve serving the recipients⁷,
- basing internal and external activities on ethics, respecting the idea of social responsibility of business.

Picture. 1. Extended model of the marketing process.



Source: Prepared on the basis of: P. Kotler, G. Armstrong, *Principles of Marketing*, Pearson Prentice Hall, New Jersey 2008, p. 29.

⁷ In internal marketing every employee is treated as an internal client who requires similar diligence in cooperation as an external recipient. For this reason there is the necessity to constantly monitor their expectations and work satisfaction, using motivation methods adapted to the expectations, rewarding desirable attitudes and behaviours, access to trainings, internal education and support needed at work, creating conditions for efficient interpersonal and public communication or integration of employees, units and departments (J. Koszałka, *Marketing wewnętrzny [in:] Podstawy marketingu. Problemy na dziś i jutro*, praca zbiorowa edited by J. Perenc, Wydawnictwo Naukowe Uniwersytetu Szczecińskiego, Szczecin 2008, p. 305-328).



New technologies and transferring them from scientific and research units to the economy

As has already been concluded, under conditions of ever greater competition on the market and growing domination of economy based on knowledge, broadly understood benefits offered to recipients determine the competitive edge and success of a market provider. What influences the benefits for recipients are both the value of the products they receive and the benefits achieved thanks to application of appropriate processes and their organization. Taking into consideration the fact that both in products and ways of producing and offering them technical resources play a major and in some cases a decisive role, it is possible to conclude that what determines a company's competitive edge on the market are the used technologies.

Technology⁸ can be defined as a method of preparing and conducting the process of creating or processing certain goods (also information). Technology may mean a particular process (eg. the technology of attaching things, technology of safety), it may also mean knowledge about production with the use of technical resources. Taking into consideration the fact that nowadays products and services, which in their essence are a process, are regarded as a product, technologies as methods of production and/or processing have a key impact on every social or economic activity. Here, it is necessary to distinguish technology from technique⁹, understood as an area of activity, which involves producing phenomena and items not present in nature.

Contemporary technologies are subject to transfer understood as "*...transferring particular technical and organizational knowledge and the associated know-how for the purpose of commercial utilization.*"¹⁰ Know-how (wiedzieć jak)¹¹ means non-patented practical knowledge obtained thanks to experience and research, which is:

- secret, thus, it is not commonly known or available
- essential, that is, important and useful from the point of view of activity it concerns,
- identified, that is, described in a sufficiently comprehensible way, so that it is possible to check whether this knowledge satisfies the criteria of secrecy and importance.

Transfer of technology takes place between:

- the sector of science and research and the sphere of commercial activity,
- within the economic sphere, between companies,
- individual investors and companies.

Thus, the participants of the transfer of knowledge are research-scientific units, companies of various sizes, private individuals and public institutions. Transfer of technology is carried out by means of¹²:

- research and development works, conducted by research and development units, ordered by big companies, agencies and government programs,

8 <http://pl.wikipedia.org/wiki/Technologia>, 23.10.2012 r.

9 <http://pl.wikipedia.org/wiki/Technika>, 22.10.2012 r.

10 K. Matusiak (ed.), *Innowacje i transfer technologii. Słownik pojęć*, PARP, Warszawa 2008, p. 354.

11 *Ibidem*, p. 170-171.

12 *Ibidem*, p. 355.



- direct investments, cooperation and merger of companies,
- trading patents¹³, licences¹⁴ and know-how on the market of technology,
- purchasing machines and technical devices, which inspire the buyers with their design or the way of functioning to copy the devices or create improved solutions,
- the process of formation, thanks to which students and participants of trainings can transfer knowledge to professional life,
- scientific and popular science publications, conferences, seminars, fairs,
- direct contacts and exchange of experiences of scientists and individual inventors with people dealing with practical application of knowledge
- apprenticeships and exchange of employees of research and development units and universities with companies,
- following (copying) foreign solutions.

Research and development works¹⁵ are understood as systematically conducted creative activities serving the purpose of solving problems not coming in an obvious way from the current state of knowledge, which have apparent traits of novelty. They cover:

- basic research, which means theoretical or experimental work started mainly in order to gain new knowledge about the investigated phenomena,
- industrial research (applied), serving the purpose of acquiring new knowledge and skills in order to work out new or improve the existing products, services and processes, including the creation of components of complex systems,
- development works, which involve gaining, combining, shaping and using available knowledge and skills from the area of science, technology and commercial activity for the creation of projects of new products, services and processes, preparing prototypes and pilot projects, as well as testing them (assessment).

The transfer of technology in cooperation and mergers of companies in course of direct investments can be carried out as *joint-ventures*¹⁶ of two or more entities, independent in economic, legal or administrative terms. This makes it possible to reduce the risks of a venture, especially technical, market or financial risks, thanks to joint use of the effects by all participating partners.

13 Patent is the term colloquially used to denote the document received from the Patent Office which confirms the right to use an invention understood as a new solution or idea, which doesn't belong to the current state of technology (it has inventive characteristics) and is suitable for industrial application [K. Matusiak (ed.), *Innowacje ... op. cit.*, p. 235, 377-378].

14 License is an agreement which grants the power to exercise exclusive rights to an invention, a design (new and useful solution of technical character, concerning shape, structure or composition of an item of durable form), industrial pattern (new, or individual in character, form of product or its part, determined in particular by the traits of its lines, outline, shape, colours, structure or materials or by its ornamentation), topography of a circuit board or a work which is subject to copyright, including trademark [K. Matusiak (ed.), *Innowacje ... op. cit.*, p. 191; 384; 385].

15 K. Matusiak (ed.), *Innowacje...*, *op. cit.*, p. 66-67.

16 *Ibidem*, p. 163-164.



Currently, the transfer of technology also covers such forms of activity¹⁷, as:

- academic entrepreneurship, which involves the use of results of research and development works by students and young scientific employees, as well as launching small technology companies within academic incubators of technology and university centres of technology transfer,
- functioning of systems of support for innovative ventures offering consulting, technological mediation, initiating transfer, information about new technologies etc. with financial and organizational support for activities with public funds,
- supporting small and medium companies in the area of innovation, which can implement them faster, cheaper and more efficiently than big companies, which makes it possible to modernize industrial structure faster and facilitates the development of regions,
- initiating cooperation within such network solutions as clusters¹⁸ or branch group of companies.

Under market conditions transfer of technology assumes the following forms¹⁹:

- active, equivalent to commercialization of technology, understood as a combination of actions serving the purpose of transforming knowledge and new technological solutions into products (goods, services, processes) which can be sold on the market and bring income,
- passive, meaning acquisition and protection of knowledge, transfer of information and the development of implementation works.

Transfer of technology may be²⁰:

- commercial in character (trade), covering the sale of goods (material products), trading licenses and sale of broadly understood information,
- non-commercial, when it takes place thanks to knowledge transferred free of charge (studies, apprenticeships), through professional associations, transferring licenses free of charge or transferring knowledge within companies (especially international companies).

Taking into consideration the mechanism of transfer of technology we can distinguish between²¹:

- horizontal transfer of technology, that is, the flow of knowledge and solutions between companies, through the sale of patents, licenses, *know-how*, industrial cooperation²², technical services, material assets, as well as *joint-ventures*,
- vertical transfer, when new solutions are transferred to companies from the public sector of research

17 *Ibidem*, p. 355; 281-285; 334-336; 199-202.

18 Cluster is a spatial concentration of companies, institutions from the sector of science and technology and support institutions connected through a complex network of formal and informal links, which both cooperate and compete with each other, which creates an effective environment for the development of innovative initiatives [K. Matusiak (ed.), *Innowacje ... op. cit.*, p.167-169; *Innowacje - co jest co? Urząd Marszałkowski Województwa Pomorskiego, Gdańsk 2006*, p. 25-26].

19 K. Matusiak (ed.), *Innowacje...*, op. cit., p. 355; 171-172.

20 *Ibidem*, p. 355.

21 *Ibidem*, p. 356.

22 Industrial cooperation can be understood as cooperation of companies, where one of them provides material goods or services ordered by, and according to the requirements of the other company. It is necessary to distinguish cooperation from other forms of collaboration, especially trade cooperation, where the transaction of exchange concerns standard products, which don't force the provider to prepare products specially adapted to the needs of interested clients, it also doesn't limit the freedom of decision-making of any of the partners (supplier can sell standard products to various buyers, the buyer can buy standard products from various suppliers). [Prepared on the basis of: J. Lichtarski (ed.), *Współdziałanie gospodarcze przedsiębiorstw*, PWE, Warszawa 1992, p. 25].

and development (R&D), mainly through research ordered by companies, sale of inventions, licenses and designs, scientific-technological consulting, training and transfer of personnel, setting up spin-off companies²³, , presenting publications also through seminars and scientific conferences,

From the economic point of view, transfer of technology is characterized by a series of specific traits. Among them are the following²⁴:

- monopoly in case of many technologies and innovative solutions and in many segments of the market,
- weak bargaining position of buyers of technology, resulting from insufficient knowledge about the details of solutions subject to cooperation and trade, but above all the difficulty or even impossibility of replacing the provider of a new technology with another provider,
- comparably easy segmentation of the market, both with regard to recipients and suppliers,
- comparably strong geographical concentration of supply and demand for technology associated with the specialization of research and development units and the branch and territorial location of potential recipients – buyers of technology,
- strong correlation between licensing and patent protection of solutions and exports of unique products saturated with technology, because the owners of patents and licensed solutions try to protect them above all on the markets of future expansion and sales,
- strong association of technology with direct foreign investments, which results straight from the will to offer innovative technologies on the markets where sales of the technology can bring the seller biggest benefits,
- strong stimulation of the market of investment goods and the market of highly skilled labour, transfer and implementation of new technologies usually requires creating infrastructural conditions adapted to the new requirements, equipment, software, know-how and personnel competences,
- much deeper and stronger associations of recipients and suppliers of technology than in case of exchange of commercial goods, which is the result of the novelty of solutions which are the subject of cooperation, more frequent problems in the phase of design, production, use and servicing, as well as the fact that the producer and the user have to solve these problems together.

As the above points show, many more factors influence the transfer of technology than a classic trade exchange in business. Because of many unknowns it offers many chances, but also poses many risks for each cooperating party. In order to reduce the risk, it is necessary to have good knowledge of the environment and conditions under which the processes of technology transfer take place. Participants have to be open to emerging experiences and partners have to be ready to constantly improve their knowledge and skills.

²³ Spin out, or a spin off company is a new company established by a participant/participants of research conducted at a university, in a research-scientific unit or a company, using the results of research, information, knowledge and technical resources of the parent organization [K. Matusiak (ed.), *Innowacje ... op. cit.* p. 97].

²⁴ K. Matusiak (ed.), *Innowacje...*, p. 356.



The experiences in marketing and transfer of new technologies from the Gdańsk University of Technology to the economy

Gdańsk University of Technology is a leading technology university in the North of Poland. The history of the university started back in 1904, when in Gdańsk higher engineering school was founded. In 1945 it was the foundation for the establishment of Gdańsk University of Technology²⁵. The university has 9 faculties. Currently, over 25,000 students attend engineering and master's courses. Among universities of technology in Poland, Gdańsk University of Technology placed 6th.. The university employs almost 2,500 people, including 1,200 academic teachers. In the year 2012 Gdańsk University of Technology for the second time received the certificate 'Uczelnia Liderów' (university of leaders) awarded by Fundacja Rozwoju Edukacji i Szkolnictwa Wyższego and PR agency Przemysław Ruta Communication. For three years (2010, 2011, 2012) the university was the second most popular university among future students, according to the ranking of the Ministry of Science and Higher Education. It was at the Gdańsk University of Technology that the first independent parliament of students was established after the war.

Transfers of technology from the Gdańsk University of Technology have been up till now carried out in the following forms:

- Didactic transfer, thanks to which students gain knowledge, skills and social competences, which they later use and develop in their professional work.
- Carrying out research and development works to satisfy the needs of companies, among others, in course of ventures associated with the process of obtaining scientific degrees by scientific-didactic employees of the University.
- Carrying out joint research and development works (R&D) in form of grants, by universities and production-service companies (about 15 new projects a year).
- Carrying out R&D works ordered by companies and government, as well as local administration agencies, of various character, level of difficulty and innovativeness of the developed solutions (at least 300 orders a year).
- Sale of patents and granting licenses to commercial entities by the University, which means trade with non-material and legal values (10-15 contracts a year).
- Direct investments and commercial ventures (spin-off) – preliminary stage. Currently, Gdańsk University of Technology cooperates in this respect with Pomerania Development Agency and is carrying out the process of pre-incubation of 3 projects.
- Scientific and popular science publications, which are one of the basic ways of transferring technology from the University to commercial practice, apart from didactic transfer and carrying out research and development works and research and development projects.
- Apprenticeships of scientific-research employees in production-service companies, in current organizational-legal environment are comparably rare.
- Personal contacts at conferences and informal meetings of scientists, inventors and businessmen

²⁵ Information materials of the Gdańsk University of Technology.

and exchange of experiences. Comparably often they constitute the first step towards closer cooperation of people, companies and institutions.

- Propagating information about new technologies by participation in science, invention, patent and innovation fairs, as well as occasional events and publications.
- Initiating and maintaining a network of cooperation, including main contribution to the establishment and functioning of Pomorski Klaster ICT and Centrum Doskonałości WiComm.

As the above list shows, the spectrum of past forms of transfer of technology from the University to commercial practice is comparably broad. However, it is necessary to remember that the list is dominated by traditional forms of cooperation and in an economy based on knowledge they are regarded as inefficient. There are few projects and ventures of high economic significance, which are based on the initiatives of people of science actively cooperating on solving particular problems of regional and especially national and international economy.

Marketing is used in the transfer of technology from the Gdańsk University of Technology to the economy. Its role can be characterized as follows:

- Operating a database of competences of scientific and research employees and didactic employees of the University (Platforma Informacji o Nauce – PION), which constitutes an element of activities in the area of internal marketing of Gdańsk University of Technology.
- Research on clients and the market focused on the needs of chosen projects, areas and companies, including, among others, such areas and ventures as eg. development of sources of renewable energy – in cooperation with ENERGA, extraction and utilization of shale gas, Cool ID project, which involves working out and implementing new, intelligent labels for packaging of frozen food.
- Fragmentary management of customer data limited, however, to projects carried out by particular research teams (eg. in the ICT cluster).
- Segmentation and the choice of markets and clients, in chosen projects, eg. the projects carried out together with ENERGA.
- Formulating client value propositions, limited mainly to technical values.
- Designing goods and services – building strong brands, which concerns mainly laboratory services and brands of units providing services, eg. Laboratorium Badań Wytrzymałościowych or Centrum Morskich Technik Militarnych.
- Distribution of offers (products), which concern mainly services and do not constitute offers in the commercial meaning (they are not systemic in character).
- Promotion of inventions, patents and solutions by means of such initiatives as fairs, scientific conferences, publications, brochures, access on websites of Gdańsk University of Technology, etc.
- Building strong relations with clients and managing relations – by now carried out on the level of working teams eg. in the ICT cluster, together with chosen partners.



The role of marketing and experiences in the transfer of new technologies from Gdańsk University of Technology to the economy can be assessed in the following way:

- Fragmentary use of marketing for the preparation and implementation of research and development projects, this is still based almost exclusively on the competences of project managers in this area.
- Formulation of projects and research-scientific ventures is aimed mainly at satisfying formal requirements of contests and the defined criteria of assessment, at the same time the needs of future users of research results are not sufficiently considered.
- There is a lack of common understanding of the necessity to recognize the needs and conditions for actions of future users of research results and their clients, the level of awareness that changes in this area are necessary is also low.
- Directors and teams carrying out research and development ventures don't have at their disposal the skills and tools for conducting marketing research on future users of research results and their clients.
- Products offered to the users of research results are based on results and conclusions from research, but don't constitute a comprehensive offer for a complex solution of the clients' problems in their whole complexity.
- There is a lack of unequivocal standards of running price policy, distribution and promotion in the implementation of orders for research and development works.
- In case of every research-development project (grant) individual solutions concerning the design and implementation of distribution and promotion of innovative technologies are prepared; by now there hasn't been an attempt to build an appropriate know-how, making it possible to use earlier experiences of other teams in these areas through the standardization of possible procedures of action.

As the above points show, at the University the application of marketing in the implementation of R&D projects and ventures, as well as provision of services, is fragmentary. Marketing at the University is not yet a factor founding the activity of the organization on the market, clients and providing them with expected values. This comes from the fact that the basic funds for the functioning of the University are obtained outside the market. The satisfaction of the recipients of the University's products- external clients – is still not the most important criterion for the choice and assessment of didactic, scientific-research, and development works. In the functioning of a public university other criteria play the most important role: getting grants, developing the portfolio of scientific achievements of individuals and scientific units or achieving a good mark in the parametric assessment of scientific units carried out by the Ministry of Science and Higher Education.

Proposals and conditions for improving the marketing of new technologies at the Gdańsk University of Technology

Taking the shortcomings and problems of past marketing activities concerning new technologies in the process of transfer from Gdańsk University of Technology to the economy into consideration, it is

possible to formulate a series of proposals that could bring improvement. The most important ones are presented below.

- It seems possible to assume the rule of taking into consideration the needs of market recipients from the very start of works associated with preparation of didactic-training offers, but above all, scientific-research, development and service works. It would be advisable to work out standards for preparation and implementation of ventures which constitute the market offer of the University, taking into consideration the requirements and indications of marketing, which raise the value of products for potential recipients and users.
- It is necessary to launch the process of collecting experience (know-how) from the implementation of research and development works on the level of particular departments and the whole University and creating procedures (standards) of solutions in this respect.
- Standards of implementation of research-development works with the consideration of requirements and possibilities of marketing, so that they could be created in such areas as:
 - client and market analysis,
 - investigating the needs and the environment for the functioning of potential clients,
 - analysis of competition,
 - recognizing legal environment for a project in the area of intellectual property and commercial law,
 - economic and financial analysis and choice of solutions,
 - preparing business offer based on the results of research and development works,
 - shaping prices and the policy of payment for research and development works,
 - distribution and promotion of the results of research and development works,
 - ways of building lasting relations with clients and partners of university/projects.
- Standards of conduct in the implementation of projects carried out for external recipients could be prepared on the basis of experiences of a greater number of universities, this is also where they could be used and constantly improved,
- It is obvious that taking into consideration the individual character of each training, research and development or service project and the variable conditions for their implementation, the prepared standards of conduct should be applied flexibly, considering the characteristics of each project.

As the above points show, there are rather large areas of the University's activity, where it would be possible to improve the transfer of technology to commercial practice by means of broader application of marketing. What could help are the results of the implementation and the achievements of the venture „Skuteczne Otoczenie Innowacyjnego Biznesu” (ed. Efficient Environment of Innovative Business) carried out on the initiative of the Polish Agency for Enterprise Development (PARP) in cooperation with other institutions providing support for innovation. Its main goal was to „...*strengthen the potential and competences of innovation centres and exerting influence on the formation of advantageous institutional*



conditions for the improvement of innovativeness of the Polish economy”²⁶. As a result, recommendations for changes in the Polish system of technology transfer and knowledge commercialization were formulated²⁷. They are supported with a set of 25 methodical works and many examples of good practice in particular domestic and foreign centres of innovation, including academic centre²⁸.

It is possible to formulate conditions that could help improve the marketing of new technologies and their transfer to commercial practice. The most important ones are presented below.

- Raising the status of implementations and adding commercial implementations to the set of criteria for the parametric assessment of scientific-research units (universities),
- Creating motivation and incentives for clients (entrepreneurs, institutions, government and local administration) to cooperate with R&D units and joint implementation of innovative solutions (eg. thanks to tax breaks),
- Real consideration of risks in the assessment of ventures associated with innovations and the creation of a system that could reduce the risk at universities,
- Launching a pilot project on the utilization of didactic, scientific and economic potential of an academic unit, according to the concept of 3rd generation university.

Conclusion

On the basis of the above deliberations it is possible to formulate the following final conclusions:

- The essence of marketing is providing values expected by the recipients who, in case they are satisfied, are ready to allow the provider to achieve his business goals. This rather obvious rule should be applied also in case of relations of universities with final recipients of the results of their works, especially on the market.
- Marketing can facilitate the transfer of technology understood as transferring knowledge and know-how for the purpose of commercial utilization. The participants of these processes base their decisions and actions on market rules. Basing them on the rules of marketing boosts the likelihood that all participants will be satisfied and successful.
- At Gdańsk University of technology the transfer of technology takes place above all in form of didactic transfers, carrying out research and development works for companies, obtaining scientific degrees, building networks of cooperation with scientific and commercial partners, as well as by means of informal contacts between people.
- Marketing in the transfer of technology at Gdańsk University of Technology is used to a limited extent, mainly in form of operating a database of competences of scientific and research employees, fragmentary research on the needs of chosen clients and market, as well as in form of promotion of inventions and patents.

26 K. Matusiak, M. Mażewska, R. Banisch. *Budowa Skutecznego Otoczenia Innowacyjnego w Polsce. Cele i założenia inicjatywy Polskiej Agencji Rozwoju Przedsiębiorczości, PARP Warszawa-Gdańsk-Poznań 2011, p. 7.*

27 K. Matusiak, J. Guliński (ed). *Rekomendacje zmian w polskim systemie transferu technolog i komercjalizacji wiedzy, Warszawa 2010.*

28 www.pi.gov.pl, 22.10.2012 r.

- There are substantial areas of training-didactic, research-development and service activities, where the implementation of rules of marketing would improve the efficiency of the transfer of technology from the university to commercial practice.
- A series proposals for the improvement of marketing of new technologies at Gdańsk University of Technology have been formulated. They cover such areas as market and client analysis, recognition of legal environment, preparing a business offer based on the results of development works or building long-lasting relations with clients.
- A condition for the efficiency of facilitating the marketing of new technologies is raising the status of commercial implementation in the assessment of employees of research and development units and creating incentives to cooperation for companies and universities and real consideration of the risk associated with innovative ventures.

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