

# Identifying University Customers and Partners via Science Marketing - a report on a real life case of UAEH in Mexico

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## Resumen

En un inicio se explica el papel de la investigación en las universidades como un sistema que carece generalmente del principio de la demanda y la orientación al mercado. Es así que la transferencia de conocimiento y tecnología existente no satisfacen las necesidades de la economía, ni el mundo académico como defensores de las libertades tradicionales en la investigación. Como antecedente conceptual, los autores dan las definiciones de la transferencia de conocimientos y tecnología, así como el objeto de la transferencia para crear un entendimiento común. Adicionalmente describen las barreras existentes desde una perspectiva científica y desde la perspectiva de una empresa. El

sistema científico no es de mercado, pero impulsadas por los conocimientos. Transferencia de la investigación por lo tanto, cubre las necesidades de ambas partes. Un temprano reconocimiento y aceptación de los intereses y necesidades es el punto inicial para la orientación al mercado en Marketing Science-to-Business. El papel de las universidades ha cambiado considerablemente en los últimos años tendiendo a un pensamiento y un comportamiento más emprendedor. De acuerdo con los políticos las universidades europeas deben generar mayores beneficios económicos y sociales y convertirse en un vínculo cada vez más importante en la cadena de innovación. Science-to-Business Marketing ayuda a los investigadores a aprender a conocer y luego adaptarse a las necesidades del mercado y a los beneficios potenciales para los futuros clientes. Así, las universidades cumplen las expectativas de la industria, la transferencia se lleva a cabo de manera eficiente y con éxito. Los autores describen las opciones de transferencias orientadas al mercado y las formas de asociación, teniendo en cuenta varios impactos graves de restricciones en el financiamiento y en la competencia. En el siguiente capítulo, los autores describen la aplicación de la Science-to-Business conocimientos de marketing y medios en una universidad mexicana: Las dos universidades involucradas son la Universidad de Ciencias Aplicadas de Münster (MUAS) y la Universidad Autónoma del Estado de Hidalgo (UAEH). En 2010 la MUAS llevó a cabo dos talleres de dos días cada uno en la UAEH. Uno de los talleres se organizó con representantes en el nivel estratégico (gestión universitaria, la transferencia de tecnología, la oficina de vinculación, administración central) y el otro estuvo dirigido a nivel de facultad (Dep. de Ciencias Sociales y humanidades). En ambos talleres se discutieron aspectos de la gestión del cambio, incluyendo los enfoques estratégicos y operativos en las universidades, que respondieran a los desafíos de la UAEH dentro de la sociedad Mexicana moderna. Dentro de los talleres los académicos propusieron soluciones para conseguir el acercamiento de la universidad a los mercados y aumentar la colaboración con terceros para la investigación. Se analizaron fortalezas y debilidades, se identificaron los negocios potenciales y finalmente se propusieron soluciones y actividades. Como resultado se creó de una estrategia de negocio de la UAEH

## Abstract

At first the role of research at universities is explained as a system which lacks mostly the principle of demand and market orientation. Thus the existing technology and knowledge transfer meet neither the economy needs nor academia as advocates of traditional liberties in research.

As a conceptual background the authors give definitions of knowledge and technology transfer as well as the transfer object to create a common understanding. In addition they describe barriers from a scientific perspective and from a company's perspective.

The role of universities has considerably changed within the last few years into more entrepreneurial thinking and behaviour. According to politicians in Europe universities should create more economical and social benefit and become an increasingly important link in the innovation chain. Science-to-Business Marketing helps researchers to learn to know and later to suit market needs and the potential benefits for future customers. Thus universities meet the market expectations of the industry, transfer proceeds efficiently and successfully. The editors describe the options of market oriented transfers and forms of partnership taking account several severe impacts of restrictions in financing and competition.

The scientific system is not market but knowledge driven. Research transfer therefore covers the needs on both sides. An early recognition and acceptance of interests and needs is the initial point for market orientation in Science-to-Business Marketing.

In the following chapter the authors describe the implementation of Science-to-Business Marketing knowledge and means into a Mexican university: The two involved Universities are Münster University of Applied Sciences (MUAS) and University Autonoma of the State of Hidalgo (UAEH). In 2010 MUAS conducted two workshops of two days each at UAEH. One was performed with representatives on the strategic level (University Management, technology transfer, office of vinculation, central administration) and the other was targeted to the faculty level (Dep. of Social Sciences and Humanities). Both workshops discussed aspects of Change Management including strategic and operational approaches at universities targeting to the challenges of UAEH in a modern Mexican society. Within the workshops academics worked on solutions for getting the university closer to markets and raise the Third Party Stream for research. Strengths and weaknesses were discussed business potentials identified and at last solutions and activities worked out. As a result a business strategy of UAEH has been created.

## Introduction

### The role of research at universities

Literature provides a lot of different definitions concerning the notion of research.

“Basic research is experimental and theoretical work undertaken primarily to acquire new knowledge of the underlying foundation of phenomena and observable facts, without any particular application or use in view.

Applied research is also original investigation undertaken in order to acquire new knowledge. It is, however, directed primarily towards a specific practical aim or objective.

Empirical and experimental research is a systematic work, drawing on existing knowledge gained from research and/ or practical experience that is directed to producing new materials, products or devices, to installing new processes, systems and services, or to improving substantially those already produced or installed. “(OECD 1993, p. 29)

The interrelation between basic research and applied research lies in the fact that basic research provides knowledge for applied research, whereas applied research, among others, often acts as stimulus provider for basic research.

The intensification of competition is one of the main subjects of current and future university development. Meanwhile, the idea of competition among universities has become a consolidated common issue. Discourses in university politics often consider competition to be the central means for improving quality in research and teaching.

The principle of competition, which is perceived increasingly positive in academia, is an expression of a discursive change with a high level of dynamics.

Until the end of 1980, critical voices predominated from the scientific perspective regarding competition and its adaption from industry. Due to its particular conditions, the public mission of Education and Science seems not, or only to a limited extend, to be a suitable environment therefore (Zimmermann 2008).

Those negative positions have noticeably lessened in recent statements concerning university development. Along with competition as one of the key principles of economy, the principle of demand and market orientation is to be considered an important part within this process which is reflected in many places of the university by now. For example, most of the application procedures in public funding from federal and state governments, numerous foundations and especially the

European Commission in the 7<sup>th</sup> framework Research Programme (FRP7), would only be approved under cover of commercial exploitability and specific potential applications with respective benefits.

A university management thinking and acting more entrepreneurially is a new challenge for universities and their members aiming to connect traditional liberties in research with a realignment of respective benefits.

The existing technology transfer does not meet this requirement.

Mostly, these issues are delegated to staff units specifically established on that purpose within the university administration. Administrative staff members of the public inner administration service are often assigned for these tasks, although being neither trained professionally<sup>1</sup> nor from a managerial point of view.

## Conceptual background

The common feature of the wide range of existing definitions concerning knowledge- and technology transfer is that knowledge and technologies are transferred from a supplier to a receiver (Corsten 1987). Furthermore, in many definitions knowledge and technology transfer is not seen as the actual objective, but rather as means of transformation from knowledge and technologies into an economical application (Walter 2003). Knowledge and transfer technologies are, therefore, “never regarded as end in itself but as dedication to a concrete objective.” (Reinhard; Schmalholz 1996, p. 2).

Referring to a macroeconomic and a microeconomic dimension the following has to be stated.

The macroeconomic dimension reflects a classic, economic understanding and refers to the export of technological know-how to countries of the Third World. The microeconomic dimension can be divided into intra- and interorganisational transfer. Intraorganisational transfer occurs within organisations (i.e. also from companies to their foreign production sites), whereas interorganisational transfer activities are conducted across organisational boundaries (Pohlen 1993 und Walter 2003).

Especially the interorganisational knowledge and technology transfer implies the existence of a market since there is an exchange in terms of service and reward (money or monetary benefits).

This market can be considered as market for research services (research market). In academic literature, it is not unusual to find terms like producer or giver for the generators of knowledge and technologies, such as operator and taker for the receivers of knowledge and technologies (i. e. Astor 2003 and Walter 2003). In the context of the market surrounding field, transfer partners interact with each other and take the roles of supplier and demander on the market. On that premise, it seems appropriate to consider the generators of knowledge and technology as “research supplier” and the receivers of knowledge and technology as “research demander”. From the point of view of a potential research demander in interorganisational knowledge and technology transfer, organisations (i.e. companies), non-university research institutions (i.e. Fraunhofer Institutes) and universities could act as research supplier.

A relevant element of knowledge and technology transfer is the transfer object. According to Walter (Walter 2003), it comprises both functional and management technologies.

Results and objects of knowledge and technology transfer may be of a material or immaterial nature, regardless of whether knowledge and technology transfer services are perceived as material

<sup>1</sup> Unlike in some other countries in the EU, an (academic) training as transferee does not exist in Germany. Transfer jobs are often carried out by geographers whose occupational image corresponds at least to a certain extent to the occupational image of a transferee.

goods or services (Walter 2003, Bochert 1997). Close to the character of transfer objects are those forms of knowledge and technology transfer that reflect the way in which research supplier and research demander cooperate. Practical relevant forms of knowledge and technology transfer between universities and external practice partners are particularly contract research, collaborative research, analyses and concepts (i. e. market analyses and management concepts), licensing (patents), working with students (i. e. student projects and final papers) and PhD projects (i. e. in cooperation with companies).

Technology transfer is subject of discussions and scientific debates since long time. So far, in the search of improvement potential, obstacles and Barriers were pointed out, in the expectation that transfer should function properly, once the existing obstacles are eliminated.

Based on the Science Council (Science Council 2007), the following problem areas of transfer can be identified:

Barriers from a scientific perspective:

- Commercialisation is only possible to a limited extent due to missing specialized staff and insufficient infrastructural capacities.
- As a result of the high teaching load and the integration of research and administration, there is often no time for transfer.
- Furthermore, competences of university professors concerning the commercialisation of research services are limited. Due to the self-conception of university professors which only relates to teaching and research, not to commercialisation, there is an additional lack of appropriate motivation (Stifterverband 2007).
- Knowledge and technology transfer is not given the due recognition. On the one hand, required resources are not provided and on the other hand, appropriate incentives are missing.
- Universities are lacking of financial resources in order to develop scientific findings into marketable products and processes.
- With regard to investments in scientific findings, companies show only a limited risk-tolerance.
- Moreover, many companies are not aware of the importance regarding long-term university cooperation serving as transfer channel for competitive information (Fritsch; Henning; Slavtchev; Steigenberger 2007).
- Companies lack of qualified contact persons being able to evaluate scientific findings and authorized to decide about respective investments.
- To some extent, there is a lack of suitable markets for scientific research findings.

Barriers from a company's perspective:

- Companies are often unable to exploit scientific findings and refine them.
- Especially small and medium sized companies who do not conduct research and development on their own, do, therefore, not have the appropriate expertise in order to apply research findings in business context (Kröcher 2005).
- Due to the low direct application relevance of scientific findings, a high operational risk results for companies while investing in the refinement until marketable products.

- Additionally, a high financial outlay is required when developing scientific findings to market maturity (Eversheim 1984).
- Negotiations about rights of exploitation and usage concerning scientific findings complicate the establishment of collaboration.
- Building up collaborations often fails due to missing external presentations of the academic research expertise.
- Within companies, financial resources for research collaboration are only available to a limited extent.
- Collaboration is seen as a drain of internal knowledge to competitors by several companies.
- In some cases, employees generally take a critical position concerning external solutions.

The discussion is a characteristic of the usual lack of a joint understanding (Scientific Council 2007). From a Science perspective, companies support academic research, due to their particular risk aversion, rather late<sup>2</sup> while industry sees the problem in a missing market relevance<sup>3</sup> of the academic research findings due to a lack of entrepreneurial thinking and behaviour at universities.

## Entrepreneurial thinking and behaviour at universities

The role of universities has considerably changed within the last few years, due to the increased focus on its “third mission” – the collaboration with third parties for the purpose of prosperity in science and society. Generally, one can perceive that entrepreneurial thinking and behaviour has increasingly become part of university organisation (Kliewe et. al. 2006). To the same extent that entrepreneurship in business is essential for competition, growth and generation of employment, it is stated as reason for an increasing competitiveness of a region, federal state or country referring to all involved parties (Maes 2003, European Commission 2006, Zahra 1991).

Entrepreneurial thinking and behaviour, to be understood as “attitude and process recreating and developing economic activity” (European Commission 2003, p. 6), has aroused a rising interest among science managers and educational politicians during the last decade. This change is accompanied and driven by economical and technological alterations in the economic field, the acceleration of the technological change (Santoro; Chakrabarti 2002), changes in the competitive environment (Siguaw et. al. 2003) and globalisation (Gummeson 2002).

According to a European maxim, universities should create more economical and social benefit and become an increasingly important link in the innovation chain by the help of a stronger entrepreneurial focus. Further authors who emphasize (besides research and teaching) the third mission as contribution of entrepreneurial innovation processes (Pavitt 2001; Etzkowitz; Leyesdorff 2000; Etzkowitz 1998).

2 Similar findings were published in the Lambert Report 2003 (Lambert 2003) which gained considerable attention in Great Britain (and worldwide). In the expectation that the report, having analyzed the collaboration between science and industry in the UK, would lead to clear implications for the scientific side, a surprisingly almost equal part of implications has been addressed to industry actors.

3 Furthermore, it remains to be emphasized that the presented transfer problems considerably hamper the collaboration for SMC, although external knowledge is especially required there. Reasons such as lacking capacities and limited financial resources notably apply to SMC.



University becomes therefore integral part of a holistic entrepreneurial oriented innovation process for the benefit of society.

University as an entrepreneurial organisation with reference to an actively market driven research commercialisation, is an issue that arouse a lot of interest in international higher-education landscape during the last few years. This applies to both academic the discourse over the general attitude towards an entrepreneurial orientation at universities and the concrete application of economic instruments in university management.

Once the idea of a stronger entrepreneurial orientation is approved by the University's executive board, the limit regarding the possibility of transferring economic and entrepreneurial processes trough scientific organisations is reached very soon. For example, the employment of controlling and balanced score cards or the value chain model at universities would require a rethinking and confrontation with factors that determine or enable the employment of these instruments.

The confrontation with entrepreneurial orientation at universities and the associated acceptance from markets of the university environment, lead to marketing as a part of entrepreneurial orientation.

## Science Marketing

Science Marketing designates the entry of a market oriented entrepreneurial thinking and behaviour in universities and other research institutions. It is characterized by actors from science who are actively looking for demanders (customers) of their services and transferring these services in order to be rewarded in whichever kind.

Especially if research services are already designed to suit market needs and the potential benefits for future consumers, the offer of the university meets the market expectations of the industry, transfer proceeds efficiently and successfully.

The notion of Science –to-Business Marketing, therefore, includes all activities,

Putting knowledge and technology transfer, with market and costumer orientation, on a new conceptional basis and serving the establishment, development and management of relationships between research institutions and commercial enterprises (in the narrow sense<sup>4</sup>) in order to maintain future strong partnerships. The following options of market oriented transfers and forms of partnership are exemplary described in literature:

- Collaborative research
- Contract research
- Personal exchanges/placements
- Consulting
- Training and other services
- Patenting/licensing
- joint ventures/spin-offs and entrepreneurship
- Professional networks and boards
- Joint publications

<sup>4</sup> “Commercial enterprises“ in a broader sense also include NGO and public (legal) organisations. However, there is the restriction that public institutions are only considered as demander (customer) and not as institution for research funding.



It remains to discuss, how the term “science” is to be understood in working context. In this case, science is to be understood in the broader sense, not only referring to natural sciences but also addressing all disciplines like social sciences like business administration and humanities. Thus it is seen as a collective term for scientific institutions (Davey et al. 2006).

Science Marketing does not concern university teaching. Although knowledge is passed on to students who would consequently apply it in industry later on, teaching represents an indirect way of knowledge transfer into industry not claiming a direct reward. Further education, however, belongs to Science Marketing since it directly addresses to industry and usually requires a monetary reward.

From this otherness, options and potentials arise. The advantages of a market oriented university, as Berger from the Technical University of Munich underlines them (Berger 2008), are:

A management level competent and able of acting, an active and development oriented environment, a broader financial basis, a stimulating academic landscape and an integrated entrepreneurial culture.

Nowadays at universities, there is almost common talk of the necessity of branding, sharpening the profile, customers of the university and the necessity of undertaking university marketing. These developments cannot always be brought into harmony with the German university tradition deriving from Humboldt’s paradigm, the freedom of teaching and research and the freedom of science which is legally anchored.

The demand of market and customer oriented universities doubtlessly touches upon the traditional self-conception of teaching and research which used to be able to detach explicitly from market considerations.

Currently, framework conditions for universities and their spectrum of tasks have been changed significantly by politics due to:

- An extending university autonomy accompanied by the expectation of a broader spectrum of tasks,
- An indicator-based allocation of funds whilst cuts in public funding
- Evaluations of universities and their performance parameters

This attitude is being discussed abroad since a long time and partly already found its way. American universities are on top of the development of innovative university marketing. The implementation of management and marketing practices is also well advanced at universities in the UK, Scandinavian countries and the Netherlands. According to the statements of current university directors like Lenzen and Helmstädter (Lenzen 2007, Helmstädter 2007), the rapidly growing relevance of university marketing derives from

- The increasing internationalisation of university landscape
- The increasing competition for
- Research funds (whilst research funding is decreasing at the same time)
- Students (whilst the number of students partly declines)
- Potential sponsors (whilst companies become less willing to engage themselves due to the difficult economical framework).
- An expectation of legitimisation for public investors and
- The increasing cut back of funds from public authorities and, therefore, an increasing need of self-financing among universities.

Main target group of Science Marketing are organisations, in a broader point of view, buying research services. Generally companies (but also NGO, i.e. public institutions, agencies like youth welfare offices, waste disposal/water companies or carrier of public organisations like Red Cross etc.) are customers of research services.

Nearly every publication regarding university marketing is linked to the communication aspect of the marketing process. Thus, they are not dedicated to the strategic marketing level and focus on a rather operative oriented area of marketing. With regard to contents, publications basically amplify the targets of market presence, visibility, publicity, awareness and the achievement of objectives via communication instruments and channels (see Brüser 2006, Voss 2009). Publications tailored to research and science marketing (Dortmund University 2011; Mager et al. 2003; Merten 2009) or recent scientific publications linked to research to business from Obermaier, are not to be seen as exceptions either. The latter even claims to contribute new theoretical elements concerning research and university marketing, but finally only remains at the action level of communication as well (Obermaier 2009).

One particularity in Science Marketing lies in the structure of the university itself. In contrast to commercial enterprises, the scientific system is not market but knowledge driven. Researcher did not choose their path of carrier in order to collaborate with industry, but they are driven by their thirst for scientific findings. It is likely that they have visions of a technological or scientific breakthrough. Their job satisfaction mostly results from their task that they have determined on their own. Passing on knowledge to students is part of that. However, an intrinsic motivation for collaborating with external organisation is not to be taken as granted per se. Therefore, commitment and willingness to collaborate with industry partners are often to be encouraged within the context of Science Marketing. This includes argumentative persuasion until the agreement on objectives or incentives given from the university directors or management.

There are various incentives; They could be of monetary nature or they can stipulate a reduction of the teaching load, the allocation of resources or space and much more (Baaken 2007).

The team of authors Etzkowitz and Leydesdorff also perceives a change in the scientific system which is described in their “Triple-Helix” as novel triple-interaction-relationship between science, industry and policy.

Figura 1. Triple Helix Model (Etzkowitz; Leydesdorff 1995, pp. 31)



According to the authors, this figure represents the key for innovations in a knowledge-based society (Etzkowitz; Leydesdorff 1997; Leydesdorff 2000; Leydesdorff; Etzkowitz 2001; Etzkowitz 2004). The strong anchoring of science in development processes concerning society as a whole, lead Martin and Etzkowitz (Martin; Etzkowitz 2000) to the thesis that knowledge, generated in universities, will become the engine of economy and society within the information society.

## Market oriented knowledge and technology transfer

A transfer from university to application will only take place if the transfer object is able to cover a need and if the receiver perceives an appropriate benefit from adaptation for himself. Hence, the consideration of both interests is the initial point for a successful transfer.

Research transfer therefore covers the needs on both sides.

*Company interests:*

- Cannot be solved with own expertise.
- One would like to be solved by an independent, creative party (so to say without sticking to established lines within the company).
- Requires an innovative methodology that is unusual in the company.
- Often is singular so that competences are not available in the company.
- Can be solved with the expertise of a university.
- University interests:
- Third party funds for scientific work that are not specifically assigned
- Independency of mechanism regarding the allocation and management
- Research benefits
- Possible publication of fundamental findings (method or technology) later on

From the view of the research institution, an understanding for the market has to be developed in the future which recognizes these different interests and needs, processes and addresses them. This market understanding comprises on the one hand services (products and services) of the research institution itself; on the other hand, a customer oriented transfer of services. An early recognition and acceptance of interests and needs such as their consideration during the knowledge generation and development process, is the initial point for market orientation in Science-to-Business Marketing (Plewa et al. 2006).

## The two involved Universities: Münster University of Applied Sciences (MUAS) and University Autonoma of the State of Hidalgo (UAEH)

MUAS is one the largest universities of applied sciences (UASs) in Germany and the most successful in terms of third stream income.

The MUAS approach to TT is solidly based upon collaboration with industry. Its strategic intent is to implement it by developing deep, long-term relationships with industry, rather than contract research on a transactions basis. This relationship marketing imprint was augmented by research on the specific topic of interactions between users and producers of scientific research and its current evolutionary state conforms to the theoretical synthesis above.

The University conducts technology and knowledge transfer in a number of ways, including workshops and international conferences on science-to-business marketing held in several countries.

MUAS cooperates purposefully with German and foreign TT organisations in order to exchange new processes that are transferable. Thus, they welcome regular visitors from Australia, the US, South Africa and European countries, in order to become acquainted with and adopt innovative instruments of successful knowledge transfer. This falls within what they term 'offer-oriented activities', directed towards public good outcomes rather than the specific business demands of their partners.

In the light of the strategic directions set and the business model constructed to achieve the desired outcomes, here we present metrics on research and private sector funding.

No other state-run UAS has such a high share in acquired third-party funds. MUAS is the top recipient of third-party funding among UASs in Germany. It generated the majority of its third-party funding, which, at €12 million in 2010 amounted to around one third of the total budget, from collaborating with the nongovernment sector (Dottore et al. 2010).

In 2007 MUAS was one of five universities to receive an award for its Science Marketing and TT activity in the competition 'Exchange processes between higher education institutions and the economy' run by the Joint Industry Initiative for the Promotion of German Sciences and the Federal Ministry of Education and Research.

In 2003 the University started the Science Marketing approach: The logic was thus: if the university intends to cooperate more with research partners from industry and if it seeks more income for its research performance, it finds itself in a market, hence it should use market-based tools and techniques (van den Kroonenberg, 1989). This approach was continued with the appointment of a successor with previous experience in starting technology-based companies.

This strategic level thinking was followed by the development and implementation of the new business model, as outlined in the following subsections.

The basic philosophy in the MUAS strategic development of the transfer of knowledge and technology is one of partnering. In other words, the MUAS aims for intensive and engaging integration with third parties, that brings long-term benefits to both sides of the relationship (Schulze 2011).

Given the limitations on hard incentives that can be granted in a university, as well as the need to provide specific reward and encouragement to researchers for this activity, several measures were introduced into the incentive structure. This is consistent with the agency considerations presented by Lubatkin et al. (2007) and Gomez-Mejia and Wiseman (2007), as well as reflecting the general proposition put forward by Zahra (2007).

- Interdisciplinary approach
- Knowledge transfer
- Adherence to budget
- Intelligible presentation
- Participation in task selection
- Putting customer value to the foreground
- Incentive systems encouraging interdisciplinary team building
- Organisational culture and structure enabling an interdisciplinary approach

- Integration of the customer into the research process
- Formal interaction programs and courses (incl. the integration of students)
- Informal contacts
- An institution's perception of knowledge transfer being part of their service
- Milestone approach
- Professional cost management and control
- A 'service' attitude towards 'money'
- A flexible price-portfolio
- Communication with the customer throughout the research process
- Identification and presentation of customer benefits
- Customer focus in terms of language
- Human resource management practices in form of incentives and training
- Early consultation with, and integration of, the customer
- Starting with the customer rather than the project Perceived performance

Whoever manages to procure funds, receives an allocation from central funds in addition to the acquired third-party funds (including the acquired funds from the federal state) of 6% for technical faculty and 12% for non-technical faculty.

Extra space of 23m<sup>2</sup> is allocated for every €35,000 in acquired third-party funds (including funds acquired from the federal state) in the context of the so-called room trading model (Raumhandelsmodell).

Other research achievements are evaluated and remunerated in proportion to the acquired third-party funds (publications, patents, lectures, participation in trade fairs, symposia, etc.).

Teaching load can be reduced in exchange for research activities.

Research activities are more strongly anchored in the procedures for appointing academics: revision of job guidelines with a view to place greater emphasis on experience and the research plans for candidates; anchoring the term 'research' in advertisements.

While these elements of the incentive structure contribute to the formal, internal part of the architecture of the organisation, there is scope for informal elements. For example, information about the promotion of research is disseminated more intensely. All newly appointed academics meet once a year where they can establish new contacts across faculties. Moreover, they become better acquainted with research possibilities at the university. The university's members of staff can participate in the seminar 'science marketing' in order to learn successful marketing and commercialisation strategies for their research outcomes.

The model was awarded by the Initiative of foundations for the German Sciences<sup>5</sup> in the contest of best practice working together with industry in 2007<sup>6</sup> and got a number of mentions (DAAD Conference 2011). It is selected as best practice by PROTON Europe<sup>7</sup> and by the EUA (European University Association) in their EUIMA-Project<sup>8</sup>.

5 Stifterverband für die Deutsche Wissenschaft [www.stifterverband.de](http://www.stifterverband.de)

6 Austauschprozesse: [www.austauschprozesse.de](http://www.austauschprozesse.de)

7 [www.protoneurope.org](http://www.protoneurope.org)

8 <http://www.eua.be/eua-projects/current-projects/euima.aspx>

The university “Universidad Autónoma del Estado de Hidalgo” adds valuable knowledge to the partnership as it has far-reaching expertise in working with society and thus understands the needs and risks that are involved.

In 2010 UAEH established a Science Marketing Direction under the Vice President of Research and Post Graduate Studies; also a most successful incubation centre had been established (one of the first member of IASPin Mexico). Currently a new *Parque de Científico, Tecnológico y Cultural* is under construction as a new major activity.

In 2008 the Science Marketing Research Centre (SMRC) was invited to present on “Science-to-Business Marketing and Successful Technology Transfer” at the UAEH in Mexico. The interest had been exceptional high, over 200 members of the university staff attended.

Following this Münster University of Applied Sciences (MUAS) organized their 9th conference<sup>9</sup> on “Science-to-Business Marketing” subtitle 2010 “Partner Management at Universities” at Universidad Autónoma del Estado de Hidalgo (UAEH).

On 23rd and 24th of November 2010, the International Conference “Transfer between Higher Education Institutions and their Economic Environment: Challenges and Opportunities” took place in Monterrey, Nuevo León Mexico. The event was organized by the German Academic Exchange Service (DAAD), Universidad Autónoma de Nuevo León (UANL) and the Mexico Chapter of the University Group for Quality in Latin America XXI (GUCAL XXI-Network). MUAS again took an active role. The aim of the conference was to create a space for discussion and exchange on the current status of knowledge and technology transfer between HEIs and the productive sector in the framework of internationalization, with the intention of reducing the gap between industry expectations on the HEIs and vice versa.

In 2010 MUAS conducted two workshops of two days each at UAEH. One was performed with representatives on the strategic level (University Management, technology transfer, office of vinculation, central administration) and the other was targeted to the faculty level (Dep. of Social Sciences and Humanities). Both workshops discussed aspects of Change Management including strategic and operational approaches at universities targeting to the challenges of UAEH in a modern Mexican society.

### The challenges of UAEH

The interest of UAEH consisted in getting a deeper understanding of the structure and mechanism of S2B marketing and Technology Transfer, based on the experience of MUAs and specially SMRC. As a consequence of the recently created office of S2B Marketing within the Vice Presidency of Research and Post Graduate Studies, it seems highly necessary to involve all parts of the university management on one hand and the researchers on the other in order to define together the changes to be made in the university structure. Those structural changes, as well as mechanism of research incentives are crucial to obtain a real impact on technology transfer, encourage external fund raising in the future and solve the well known barriers, previously described in this paper (Stifterverband 2007).

The University is well established in the Hidalgo state environment. It very well oversees the social challenges of the state and offers a number of different services for authorities and social organizations to solve problems and contribute to the regional development.

<sup>9</sup> ([https://en.fh-muenster.de/science-marketing/konferenzen/mexico\\_2010.php](https://en.fh-muenster.de/science-marketing/konferenzen/mexico_2010.php))

But the University is lacking business projects with industry and commercial partners from the region and above. Science projects in the social science and humanities area had been realized in strategic analysis and diagnostics in several areas (indigenous people, crime prevention, jobs for younger and elder people, youth & drugs, and others). The success of the projects had been obvious; in all areas the situation improved by the time and UAEH has established a strategic partnership to each of the organizations they have worked with. Thus there are some substantial projects with great success service wise and money wise conducted in the past. But a strategy for business development in industrial projects of companies within the region and beyond is lacking.

## Solutions and activities

Thus a workshop was arranged to work on solutions for getting the University closer to markets and raise the Third Party Stream for research.

The workshops were conducted by the team of Science-to-Business Marketing Münster in Pachuca, Mexico. Attendees and participants were representing the main central functions in the field like Technology Transfer Officers, Vinculation, Funding and Sponsor team. But also members of the board and managers of the major research institutes of UAEH have been involved; 35 delegated form the university worked two complete days on the issue.

The workshop had several elements from which only two can be mentioned in this paper.

Firstly a perception of images of the University by the attendees has been rated using a questionnaire. All attendees answered questions like

Figura 2. Question from questionnaire

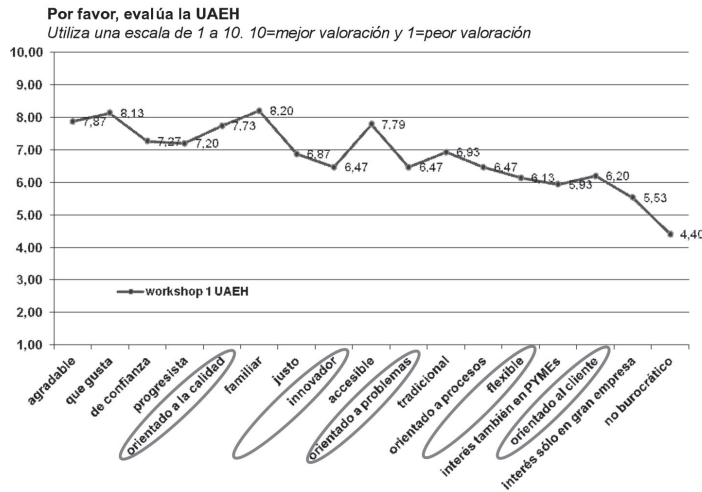
| Q8. | Please evaluate UAEH concerning the following items.<br><i>Use a scale from 1 to 10. 10=best value and 1 =worst.</i> |       |
|-----|--|-------|
|     | UAEH is...   | value |
|     | Innovative   |       |
|     | no red tape  |       |
|     | Flexible   |       |
|     | process oriented   |       |
|     | problem oriented   |       |
|     | Progressive  |       |
|     | Traditional  |       |
|     | quality oriented   |       |
|     | Friendly   |       |
|     | Likeable   |       |
|     | Familiar   |       |
|     | only interested in big comp.   |       |
|     | also interested in SME   |       |
|     | Fair   |       |
|     | customer oriented  |       |
|     | Believable   |       |
|     | Accessible   |       |



According to the results (see Figure X), the first action items addressing the red circles have been developed to improve the image along the weaknesses.

In a strategy the image perception better would be conducted within the market as well. Due to time restrictions of the workshop it needed to be done onsite.

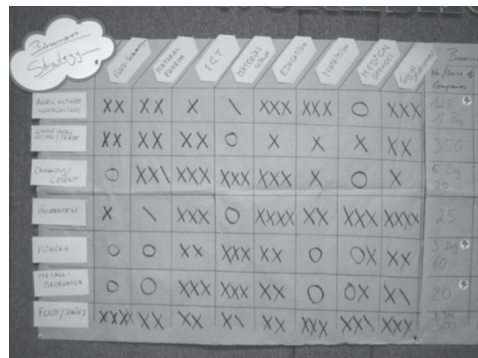
**Figura 3.** Image evaluation of the University by attendees.



Positive images will be used in future and communicated to the market to convince businesses to cooperate.

Secondly a wall paper sheet has been developed to identify potential new markets and derive some recommendations to work on those markets. To identify the future Business Strategy the tool is using a) a list of the university’s competencies and b) a list of the industry sectors of the region / market. By rating the fit between both in combination the main action options arouse. A 0 indicates that the competency is not able to serve the sector at all, one x means that there is a slight chance to work on the market up to 4 x where a clear and best opportunity indicates the fit between the competencies and the sector.

**Figura 4.** Photo documentation



To prioritise the activities next steps had to be outlined. The success of an market approach is not only depending on a best delivery/market needs fit. Also the level of needs (like: how desperately are companies longing for solutions on the felid), accessibility of the market (like: does the University already have some contacts, or e network in the market), some experience and references (like: references and/or successful projects in the field), and also the seize of the potential market (like: how many companies are present in the market and what kind of companies are they). Depending on the results decisions can be made, where to prioritise the actions. The prioritisations were made again by all attendees by sticking dots on the wall paper like a voting.

Figura 5. Creating the Business Strategy of UAEH. FORMATO DE LA TABLA?

| Business-Strategy <sup>a</sup>       | FOOD-Technologies <sup>a</sup> | PHARMA-NATURAC <sup>a</sup> | ICT <sup>a</sup> | MATERIAL-SCIENCE <sup>a</sup> | EDUCATION <sup>a</sup> | NUTRITION <sup>a</sup> | MEDICAL-SERVICES <sup>a</sup> | SOCIAL-DEVELOP-MENTS <sup>a</sup> | Business-Potentials <sup>a</sup>       |                             |                            |                                    | Priority (vote) <sup>a</sup> | Assessment <sup>a</sup> |
|--------------------------------------|--------------------------------|-----------------------------|------------------|-------------------------------|------------------------|------------------------|-------------------------------|-----------------------------------|--|-----------------------------|----------------------------|------------------------------------|------------------------------|-------------------------|
|                                      |                                |                             |                  |                               |                        |                        |                               |                                   | No./Size of companies <sup>a</sup>     | Level of needs <sup>a</sup> | Accessibility <sup>a</sup> | References/Experience <sup>a</sup> |                              |                         |
| AGRICULTURE/AQUACULTURE <sup>a</sup> | XX <sup>a</sup>                | XX <sup>a</sup>             | X <sup>a</sup>   | ✓ <sup>a</sup>                | XXX <sup>a</sup>       | XXX <sup>a</sup>       | O <sup>a</sup>                | XXX <sup>a</sup>                  | 128 <sup>a</sup><br>1 Big <sup>a</sup> | high <sup>a</sup>           | medium <sup>a</sup>        | VERY good <sup>a</sup>             | 23 <sup>a</sup>              | 😊                       |
| WHOLESALE/RETAIL/TRADE <sup>a</sup>  | XX <sup>a</sup>                | XX <sup>a</sup>             | XX <sup>a</sup>  | O <sup>a</sup>                | X <sup>a</sup>         | X <sup>a</sup>         | X <sup>a</sup>                | XX <sup>a</sup>                   | 350 <sup>a</sup>                       | high <sup>a</sup>           | medium <sup>a</sup>        | VERY good <sup>a</sup>             | 7 <sup>a</sup>               | 😊                       |
| CHEMISTRY <sup>a</sup>               | O <sup>a</sup>                 | XX <sup>a</sup>             | XXX <sup>a</sup> | XXX <sup>a</sup>              | XXX <sup>a</sup>       | X <sup>a</sup>         | O <sup>a</sup>                | X <sup>a</sup>                    | 6 Big<br>20 <sup>a</sup>               | medium <sup>a</sup>         | medium <sup>a</sup>        | regular <sup>a</sup>               | 13 <sup>a</sup>              | 😊                       |
| GOVERNMENT <sup>a</sup>              | X <sup>a</sup>                 | ✓ <sup>a</sup>              | XXX <sup>a</sup> | O <sup>a</sup>                | XXXX <sup>a</sup>      | XX <sup>a</sup>        | XXX <sup>a</sup>              | XXXX <sup>a</sup>                 | 25 <sup>a</sup>                        | high <sup>a</sup>           | medium <sup>a</sup>        | good <sup>a</sup>                  | 17 <sup>a</sup>              | 😊                       |
| MINING <sup>a</sup>                  | O <sup>a</sup>                 | O <sup>a</sup>              | XX <sup>a</sup>  | XXX <sup>a</sup>              | XX <sup>a</sup>        | O <sup>a</sup>         | OX <sup>a</sup>               | ✓ <sup>a</sup><br>XX <sup>a</sup> | 3 Big<br>60 <sup>a</sup>               | high <sup>a</sup>           | high <sup>a</sup>          | VERY good <sup>a</sup>             | 3 <sup>a</sup>               | 😊                       |
| METALL-MECHANICA <sup>a</sup>        | O <sup>a</sup>                 | O <sup>a</sup>              | XXX <sup>a</sup> | XXX <sup>a</sup>              | XX <sup>a</sup>        | O <sup>a</sup>         | OX <sup>a</sup>               | X <sup>a</sup>                    | 1<br>20 <sup>a</sup>                   | high <sup>a</sup>           | medium <sup>a</sup>        | good <sup>a</sup>                  | 2 <sup>a</sup>               | 😊                       |
| FOOD/DAIRY <sup>a</sup>              | XXXX <sup>a</sup>              | XX <sup>a</sup>             | XX <sup>a</sup>  | X <sup>a</sup>                | XX <sup>a</sup>        | XXX <sup>a</sup>       | XX <sup>a</sup>               | XXX <sup>a</sup>                  | 1 Big<br>300 <sup>a</sup>              | high <sup>a</sup>           | medium <sup>a</sup>        | VERY good <sup>a</sup>             | 20 <sup>a</sup>              | 😊                       |

In a last step of this exercise the first potential client company was defined and looking to management of the business unit, who in the University is given the leading role to drive and develop the business field. Thus there were target markets and target companies as well as responsible managers for the actions. Some of the strategies can be followed in parallel because there is no overlap between industry sectors to go for and competencies to use for business. Thus the business fields are independent and do not need to build on each other.

## Conclusions

The workshops allowed visualizing the strength and opportunities to be worked on in the future in UAEH. On the strategic level the S2B Marketing office within the vice presidency of research and postgraduate studies was strengthened with some more staff members on an administrative level and several follow-up workshops were held in all 6 university faculties. The aim of these comparatively shorter workshops was to establish a dialogue between researchers and the S2B Marketing office in order to define research topics and projects currently developed in the faculties. Some of those projects possibly address some of the needs of the industry and could be linked with the productive sector in the future and be commercialized. Also several projects were detected which's results and products show a highly potential to be patented, licensed or protected in the future.

On the other hand the vice presidency of research achieved to connect several projects between some governmental departments and different research groups within the university in 2010 and 2011. As for examples, a group of researchers in the biology and chemistry department are currently involved in a project on climate change in Hidalgo required and financed by the state department of Ecology (Secretaría de Ecología de Hidalgo, SEH). The secretary of social development (Secretaría de Desarrollo Social, SEDESOL) financed a study on the use and recovery of several public places in 11 municipalities in the state, which was attended by a group of researchers of the department of Sociology. In all those projects it was particularly important to create a win-win situation for all participants, including an overhead-amount for the university, a monetary incentive for the researchers and their laboratories and a market oriented attitude to the project provider, delivering results in the established terms and times.

The above mentioned project of establishing a *Parque Científico, Tecnológico y Cultural* is still going forward, but the financial and logistic dimensions of such a project require still a lot of negotiation between the involved partners, as shown in the triple-helix-model, mentioned earlier in this paper.

Although these few steps were made, there is still a lot of work to be done, considering the change of the attitude both of researchers and the university management as the main barriers to be solved.

UAEH is confident about the new ways research is oriented and sure that the actions and changes that have to be done inside the university will show its results in the short future.

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