

## Strengthening strategies between universities and companies for the incorporation of university students into the labor market

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### Abstract

The transfer of knowledge has become a key element in the relationship between universities and companies to promote educational innovation and socioeconomic development of the country. The main objective of this research is to establish a connection between university-business becomes an indispensable process of being driven under directly involved in an industry, improve educational plans and programs based on the demand for labor, help in solving academic problems for the productive sector, have trained human resources and respond to the environment to contribute to the development of society for incorporation into the labor market. In this context it seeks to help the university to create the conditions to meet the needs demanded by society and the productive sector in particular; while companies may seek to reliable sources of knowledge as determinants for economic growth of a society factors.

### Relationship, university-company, innovation, know-how

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## Introduction

This research proposes a program for the transfer of knowledge as a strategic alliance between universities and companies for innovation to generate knowledge and contribute to the construction of a more competitive production system. Establishing a connection between university and business becomes a necessary process of being promoted by virtue of participating directly in an industry, improving educational plans and programs according to the demand for work, having trained human resources and responding to the environment to contribute To the development of society.

It is sought that the university can create conditions that respond to the needs of society and the productive sector in particular; So that companies can use reliable sources of knowledge resulting in economic growth in society. Therefore, the main objective is: To develop a proposal for a connection between university and company to promote educational innovation and competitiveness in companies through relationships and cooperation agreements between university and company.

Being buzzed in an environment of constant change, companies and universities are ineludible to deepen the creation of differential value by means of concrete and measurable actions, so they have continued to interweave more effectively with social reality And economic development of the country.

Faced with the pressure of companies to renew, optimize and continually improve their knowledge and technologies to ensure their long-term survival and prosperity (Ali, 1994), universities emerge as an alternative for the development of competitive capacities of these organizations, which Must provide human capital.

Understood in terms of the competencies and necessary skills of an individual. This situation makes it inexcusable to delve into the bi-directional relationships of collaboration that can be developed between companies and universities that contribute to boosting educational innovation and competitiveness in companies.

The value of knowledge as a factor of development in society has made the relations between these two actors acquire a special importance and become a key piece for the promotion of formative innovation; Whose development dynamics is determined by the capacity of the different actors to interact and consolidate learning networks that strengthen the scientific-technological capacity of the country and increase the competitiveness of organizations in constant development giving answers to their current and future problems.

This is why the present research proposes a knowledge transfer program as a strategic alliance between universities and companies that allows generating knowledge and contributing to the construction of a more competitive production system.

## Methodology

This research work leads to investigate the transfer of knowledge as a strategic alliance between universities and companies. The study will approach a basically qualitative vision, the purpose is to get to the root of an educational problem, not to explain it but to understand it through the information provided by the subjects of study, transforming that reality for the improvement of the results in education.

Pérez (2008) mentions that qualitative research is revered as an active, systematic and rigorous way of searching.

Inquiry and inquisition of information; emphasizes that the core of curiosity in qualitative research lies in the construction of detailed descriptions of situations, events, people, interactions and observable behaviors, incorporating the participants' own voice, their experiences, attitudes, beliefs, thoughts and reflections as Are expressed by themselves.

The heuristic methodological instrument for the knowledge and transformation of socio-educational contexts and practices is called action research; this type of research, according to (Halsey: 1972), refers to a smaller-scale interference in real-world functioning and to a close examination of the effects of such intervention. It should be noted that the information collected and recorded form transversal axes in order to generate reflective spaces and appreciation of achievements and constraints that arise in the development of research, to reform, optimize and deepen decisions on the actions to be pursued.

Therefore, one of the main reasons for carrying out this type of methodology is the improvement and understanding of the educational practice and the approach to reality: linking know-being and know-how. The intention is to understand and to interpret social practices (systematic, critical and public inquiry) to change them (informed, committed and intentional action) and to improve them (valuable purpose).

### **Parallelism between University-Business**

The university-business correlation has its origins in relational marketing. Relational marketing emerges as a refutation to the need for differentiation and added value; It is based on the recognition that building and maintaining relationships is fruitful for any organization (Plamer, 2002).

Barroso and Martín (1999) refer that relational marketing establishes a way of targeting the target market, which seeks to establish a long-term loyalty correlation and from which a positive impact on economic performance is expected of the participants.

Based on these definitions, it can be inferred that university-company correlation is a correlation between knowledge and economics, as an impulse ingredient for the bilateral and sustained transfer of technologies, experiences and physical resources to support the strengthening of development in society. The correlation responds to an alliance that strengthens the competitive capacities of the company and the university, so that new opportunities for development are generated for both players, without harming and altering their own missions. The purpose is the coexistence of their relations, not the fusion between them (García 2000).

### **University-company correlation in the current context**

The university-business correlation is a relatively little studied subject; as mentioned above, an approximation to the definition of university-business correlation can be expressed as that interaction between universities and companies that is based on the trust and commitment of the members that integrate it, allows the expansion and propagation of competences and skills with the purpose of creating differentiated and aggregated value in the long term; this correlation is a movement that involves the transfer and commercialization of the know-how to raise the competitiveness of the actors involved, so it should not be considered as an isolated process, but as a system that allows a dynamic correlation between them for compliance of objectives.

Although this university-company correlation is a key factor for national and local development in the country, activating relationships is a rather weak activity in this context, since today companies and universities have had to face certain barriers derived between the knowledge society, the needs of the current market, the role of industry, government and universities themselves. From an academic perspective, universities as generators of research and development (R & D) do not provide the appropriate knowledge exchange to foster the innovative development of companies; while companies in need of such knowledge lack an appropriate approach to cooperate with higher education institutions in order to benefit from the knowledge they produce and thus increase their competitiveness on the basis of innovation.

This disconnection means that new professionals are not hired by companies and the few hired do not offer better opportunities for development. The labor market requires human capital with new skills developed to meet the demand for innovation generated by society; So that from a social point of view it is not enough for universities to try to incorporate professionals into the labor market, but rather to provide training in the needs of the labor market and to apply the knowledge, skills and abilities received during their university stay, contributing to provide them with opportunities to obtain higher remuneration, with possibilities to transform their environment and their country.

Foster development networks, can be an advantageous element to favor the professionalization of management and prevent the loss of the "know-how" acquired. In this sense, it is not a question of the University leaving aside the community commitment that has characterized it, but incorporates within its scheme a more direct correlation with the economic activities of the country.

At this point, it is worth underlining that there is no single model of successful university-society connection. Companies are increasingly pressured to survive and grow in a global market. Hence the imperative need to find the competitive advantage that will enable them to achieve these goals, as Drucker pointed out in his time; "The competitive advantage of any organization is its human capital, because it is where knowledge resides."

For this reason, intellectual capital is a fundamental aspect for the survival of organizations, which serves to safeguard their competitive strength since it integrates structural aspects of capital (integrated by the organization, relationships and intangible assets), and human training (Conforming competence, attitudes and intellectual agility). A system of connection becomes remarkable and imperious, for it must be recognized that it is not the University that determines what important knowledge is, rather it is about social concepts that are continually reformulated in response to social and technological changes.

### **Advantages of university-business correlation**

They are diverse and recognized the advantages that, for both agents, implies this correlation (Fernández et al., 2000, García, 2000) make reference to some of them:

University Company	University Company
It provides for the creation of joint research teams. It benefits the flow of personnel from the company to the university.	It provides for the creation of joint research teams. It benefits the flow of personnel from the company to the university.
It benefits the flow of university personnel to companies. Access the course to students and highly qualified staff.	It benefits the flow of university personnel to companies. Access the course to students and highly qualified staff.
Forge additional income. Conceptu a technical support and researcher.	Forge additional income. Conceptu a technical support and researcher.
Provides the purchase of real estate Compresses R & D expenses.	Provides the purchase of real estate Compresses R & D expenses.

Form the universities in their economic and social environment. It perfects the adaptation of human capital to business needs.	Form the universities in their economic and social environment. It perfects the adaptation of human capital to business needs.
Provides a profile of human capital demanded by companies. Improve your public image.	Provides a profile of human capital demanded by companies. Improve your public image.
It increases the scientific production, both of articles published, as well as of presentations in congresses.	It increases the scientific production, both of articles published, as well as of presentations in congresses.
Extends the number of patents and licenses of products and / or processes.	Extends the number of patents and licenses of products and / or processes.
Provides support for conducting doctoral theses.	Provides support for conducting doctoral theses.
Enables graduate employment opportunities	Enables graduate employment opportunities

**Table 1** Advantages of university-business correlation. Own elaboration from Fernández et al., (2010) and García, (2000)

Advantages explained above are based on the degree of collaboration established between the two main agents involved in the correlation. This requires a specific and concrete approach to visualize the impact of establishing bilateral relations over their environment and thus organize their resources and capacities to adequately address the challenges for generating value between them.

## Vinculation barriers

Cazado (2000), mentions that among the main obstacles that are presented for an effective connection are: 1. - The little interest to generate connection by the business sector as well as by the educational sector. 2. - The difficulty to establish a communication between both due to the cultural difference of the same. 3.-The discrepancy between the purposes that encourage the parties, since what is valuable for the education sector, may not be for the business sector.

It is therefore imperative to emphasize that cooperation between universities and companies has been limited since their actions are antagonistic, as can be seen below:

Company	University
They do not take sufficient risks to technological innovation because they are usually cautious. Insufficient connection with the socio-economic needs of the country.	They do not take sufficient risks to technological innovation because they are usually cautious. Insufficient connection with the socio-economic needs of the country.
Request for protectionist measures. Excessive incorporation of the activities, with a marked atomization of means and projects.	Request for protectionist measures. Excessive incorporation of the activities, with a marked atomization of means and projects.
Tendencies to the reflexive systematizations that transfigure the companies in the businesses. Little development in	Tendencies to the reflexive systematizations that transfigure the companies in the businesses. Little development in

activities in advanced studies.	activities in advanced studies.
Favoritism for the short-term procedures and high security, which uses preference of external technology. Prioritization is considered in extensive training, on intensive training.	Favoritism for the short-term procedures and high security, which uses preference of external technology. Prioritization is considered in extensive training, on intensive training.
Energetic individualism and independence that hinders teamwork. Identity crisis due to factors such as massification, devaluation of titles, etc.	Energetic individualism and independence that hinders teamwork. Identity crisis due to factors such as massification, devaluation of titles, etc.

**Table 2** Antagonistic role of the company and the university in the bonding. Own elaboration from Espinoza, (1999); Cazado, (2000)

It is necessary, therefore, to discern those origins that allow to originate, to strengthen and to contribute to the solutions to problems, offering the results of the investigation in the solution of this one. The university, through the generation of knowledge and its dissemination, will have a greater impact in the search for social welfare (Espinoza, 1999).

## Types of linking

In Mexico, culture in the formation of a connection network between company and university is at a basic level, which is based on two aspects (Casalet y Casas, 1998):

a. Recruitment fairs. For the sake of recruitment, some companies are notified at fairs to get qualified personnel who can meet the needs of your organization. These fairs can be given through events with some public universities or with government, for their diffusion.

b. Social service and / or professional practices. This is done, basically as support to revise academic aspects, being used in a reliable but limited way. In this way, students know and perform some basic function within the company.

Types of linking	%
Professional practices	76%
Technical stays	54%
Social Service	78%
Visits to companies	83%
Professional residences	40%
Entrepreneur program	41%

**Table 3** Types of linking. Source: Casas y Casalet (1998)

This demonstrates the lack of interest in establishing bilateral agreements for the development of the country. Thus, establishing a connection network is not an easy task and must be approached from a holistic and integral approach, between university, government, company and society, which will bring great benefits for the parties that comprise it, this means that this connection can achieve a wider dissemination of know-how through access and contribution of science and knowledge that can be translated into basic innovations and technical support that allows it to generate products with high technological content. In the same vein, Muiño (1996) expresses that the connection network is a tactic that will allow the technological updating of micro, small and medium-sized enterprises to be increased in order to increase their competitive capacity and performance index of this sector.

Which promotes cultural and political growth in society.

### **Triple helix model. Correlation between university and business**

The Triple Helix (TH) model is one of the models that explains the study of the connection between university, industry and government. This model was first presented by H. Etzkowitz and L. Leydesdorff in 1993. The model of the Triple Helix proposed by Etzkowitz and Leydesdorff (2002), is based on a triad that considers the connection as an evolutionary result of the process of Innovation, which is built between tensions-balances, agreements-disagreements that build a correlation between the university and the company with the participation of government.

Within this framework, in order to form a university-business-government connection network, there must first be demand for knowledge from universities, secondly, for these links to be maintained, there must be active participation of the government, prior knowledge of the companies and the transfer or flow of this knowledge within the network that has been formed between these agents.

The connection model considers that when establishing relations between university-company must be taken into account:

- a. Institutional actors (university-business).
- b. The connection system you set in them.
- c. The role each actor will play through the influence of each of the components that make up the network.
- d. The type of connection to establish the link.

- e. The effect of exchanges between networks.

Connection model is proposed from a perspective on the needs of cooperation, with the aim of broadening the tactics that help to strengthen and generate the diversification of new knowledge, through the transfer of knowledge by the actors involved in the network. Interconnection relations between them must be balanced and homogeneous, expressing the complementarity required to respond adequately to the demands of the environment.

In this sense, the university must test the specialized knowledge on the basis of the current needs of the industry and provide a highly suitable, qualified, prepared and skilled human capital supply; Companies must offer the capacity to conceive environments for continuous improvement and economic growth in society, thereby raising the country's competitiveness. It is important to mention that each of the members of the connection network must assume a role for the other party, this means that the connection network must plan equivalent forms of action.

### **Connection forms between university and company**

The connection between university and business can be diverse and changing; this will depend largely on the institutional framework. The inertia of the different connection loops for the transfer of know-how presents different peculiarities that depend on composite factors, among which stand out: the specificity of each productive sector, the localization zones, the disciplines involved, the stability of the Contracts and organizational flexibility.

Some links between university and business that could be used are: first level (basic) link, second level (middle) link and third level (advanced) link, each taking into account the alignment of the correlation, the Formality, space-time, the type of knowledge transferred (know-how), the number of actors involved and the institutionality.

### **2.3 Design and technical structure in the bonding process.**

To achieve a favorable outcome in the linking process, the actors involved in the network must consider the key components for the link between them.

- Clarity of Objectives.
- Determine skills and competencies required.
- Realistic Perspectives.
- Realignment of the university assignment.
- Commitment and Responsibility among network actors.
- Establishment of activities to be carried out.
- Clarification of resources and services offered.

### **Methodological tool**

#### **Delimitation of the unit of analysis and design of the sample**

Population under study. To determine and to know the correlation that exists between universities and companies.



The study population is taken to the university campus of the Valley of Toluca, State of Mexico, as well as companies of the private sector also located in the Valley of Toluca, State of Mexico.

Determination of the sample. An intentional non-probabilistic sample was taken; this type of sampling is characterized by a deliberate effort to obtain representative samples in which the researcher selects directly and intentionally the individuals that are easily accessible. The representative sample of the studied population of the university field of the Valley of Toluca, State of Mexico was the Faculty of Accounting and Administration of the Autonomous University of the State of Mexico. On the other hand, the representative sample of the study population of companies from the private sector of the Valley of Toluca, State of Mexico were Pepsico, Comerdis, Kener and RCI.

### **Validation and Application of instruments**

Due to the specific needs of the object of study and according to the objectives of the research, two indispensable tools were designed for the collection of the information of the object studied: the questionnaire and the interview that operate through the formulation of questions by the researcher and the issuance of responses by the people participating in this research. With the intention of obtaining relevant information about the origin and development of our research object, a questionnaire was applied to 51 students elaborated under the modality of open questions that study the last semester of its degree, which was considered enough to appreciate how They perceived the university-enterprise correlation as a strategy for the incorporation of the graduates into the labor field and thus obtain significant data for the research work.

In correlation with the interviews, these were applied to four executives from public and private higher education institutions and to four private sector companies, whose purpose was to investigate the opinion and feelings of each of them in the way they perceived the Correlation between company and university for the incorporation of the graduates to the labor field, as well as to analyze their perspective on the educational model and the development of labor competences of its graduates for the incorporation to the labor field.

It is possible to mention that in action research the instruments are not validated by a statistical program, but it is sought to rescue the pertinent information to be able to have elements to transform the problematic lived in the schools interpreting the data according to the opinions of the experts or respondents.

### **Results of the linking program**

The program proposed in the research was applied as pilot in a private university located in the State of Mexico, as well as of a company located also in this zone; by reliability policies the names of the participants are not provided. It is worth mentioning the lack of availability to make the connection between university and business, due largely to fear, uncertainty, rejection, among other factors, a situation that makes evident the need to strengthen the task of fostering relationships between university-business and The benefits this generates together.

It was accepted to carry out the pilot test of the connection model through a basic connection; That is, through the flow of human resources by the university to the company, the transfer of personnel was established in correlation to vacancies in the company, to cover them.

The connection correlation would be initially established informally, that is to say without signing a binding agreement, with the purpose of evaluating and knowing the behavior of the linking model, in order to give way to a series of pertinent modifications between both actors and establish Later on, a formal link (through signing of agreements and contracts by the authorities of both parties: university and company). The recruitment of students was done in a formal and fixed time, covered by a monthly salary stipulated among network actors to not affect the work situation of students. The system connection was unidirectional.

This first basic connection approach is considered as a central nucleus of bilateral relations between actors, which must be configured as one of the basic pillars for the transfer of know-how. It is therefore of the utmost importance to know the perspective of the students in the labor field because the school is the place where the different educational programs or projects are implemented, it must also be the ideal space to build competencies, skills and areas of knowledge Indispensable for the private sector; Because to the extent that their needs are met, other stronger links can be established in the relations between the actors.

It is clear, then, that from a university approach it is recognized that the primary objective of the connection is to move towards the improvement of educational programs and to think of it as an agent through which it is possible to make changes aimed at contributing to The demands of the labor sector, to foster the development of relevant, meaningful, useful learning related to the current and future life of the students, achieving greater coverage, permanence, promotion and real learning.

The opinions expressed by students and the person responsible for human resources of the company serve to evaluate the functions and purpose of the model, to be applied in different areas and to use a certain type of tools that correspond to its purposes or intentionalities and serve as reference framework, Which will allow it to assess whether it is acting with relevance, efficiency and effectiveness in the management of the model.

With the above, the objective is to promote the exchange of experiences and activities among the participating members of universities and companies in order to promote the transfer of research results, as well as to promote and foster relations between the members of the Network for the exchange of knowledge and its application to innovation processes.

## Conclusions

Universities undoubtedly play a fundamental role in the creation of knowledge and in the development of the country. However, the role of the university has been changing significantly, acquiring new functions in coherence with the changes that have occurred in the economic structure and in the modern society, which has made it one of the main agents of the processes of change, both social and economic.

Challenges associated with the new productive models that are articulated around knowledge, technology and innovation put the university before the challenge of rethinking and remodeling its characteristics to remain a fundamental pillar of economic development in the country. University is called to collaborate proactively with the productive sector and respond to certain demands of the sector in this matter, in exchange for financial resources or the stay of qualified human resources in companies.

Therefore, the connection with this sector in activities related to the transfer of technology and knowledge must be considered as its new mission.

In this context, consolidating innovation systems and achieving greater synergy between the agents involved becomes a subject of renewed attention, which is reflected in recent educational plans. From a systemic perspective of innovation, it is recognized that the university sector is not alone responsible for establishing the channels that will bring the knowledge to the companies, but also they play a fundamental role in defining their scientific and technological needs together with Universities, by specifying their requirements and developing the internal capacity required to absorb knowledge.

Thus, the research approach used "Research-Action" allowed to link the study of the problems faced by universities and companies in a given context with social actions, so as to simultaneously achieve knowledge and social changes. It is for this reason that establishing a connection between university-business becomes an essential process of being promoted by virtue of participating directly in an industry, improving educational plans and programs according to the demand for work, helping in the solution of academic problems for the productive sector, human resources trained and respond to the environment to contribute to the development of society.

It is considered as a possibility of improvement to suggest that companies can grant 50% of the total grade at the end of each semester to students who practice their professional practice and the other 50% is assigned by teachers so that each semester students can rotate in the different departments of the company.

Additionally, teachers can carry out a research project in the company where the students can put their knowledge and the experience of the teachers into practice.

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