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**University-industry partnership.
A key to Sustainable
Development in Algeria:
“Return to an experience”**

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University-industry partnership. A key to Sustainable Development in Algeria: “Return to an experience”

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Abstract

Nowadays, the economics and social changes that the world is undergoing lead the organizations to adapt their strategies, to cope with the reality of this unstable environment. Due to this, the companies have realized that the achievement of objectives no longer depends on the acquisition of new technologies solely, but by the combination between research and companies which has become a real need to promote economic and social development. This paper presents an experience of conducting a research in an Algerian company that tries to implement a competency-based pay system in her strategy. This experience allowed us, to mobilize investigative techniques in order to apprehend and to answer the questions raised in our research. In the paper we will discuss how the survey was conducted in the company, what research techniques were used, the importance of applying the results of the study, and the need to establish a partnership between the universities and the economic institutions to achieve the sustainable development.

Keywords

Company, Research, Sustainable development, Innovation, Industry partnership.

Introduction

The essence of the strong relationship between the university and development cannot be denied. This is why many specialists and decision makers in the field of education and economics tackle with interest the importance of the role that the university can play in the achievement of social progress and economic development, especially in light of the rapid pace of changes in the individual's environment ; including technological development, speedy services and openness to foreign markets that help them adapt to their environment and contribute to the settlement of their problems and their societies.

Thus, the role played by the university is growing with the complexity of the social movement and developments taking place in it. This role is no longer limited to the provision of knowledge and scientific information to students, as active members of the society, but exceeded and expanded to include many aspects where the university has become a large and influential contributor. Therefore, the university had to come out of its isolation, to open its doors to industrial companies and to participate in the community's life and activities and not to remain confined in the classrooms and research laboratories as the research and development carried out by universities and higher education institutions play an essential role in the research and development system of any country that seeks to advance and progress. This requires close cooperation between the universities and the various companies in order to identify the capacities of scientific and technical universities on the one hand, and to identify the needs of the various institutions of society in general, and productive institutions in particular, on the other hand. It also requires coordination among them to achieve common goals and objectives that benefit all parties.

The Algerian university, like all other universities in the world, plays an important role in the achievement of sustainable development. However, some obstacles prevented its ability to keep abreast of contemporary developments in promoting the creative energy of students and the development of scientific research despite the fact that decision makers being aware that human resources and scientific research contribute to the improvement of the economic situation of Algeria, especially as the country is experiencing an economic crisis due to the collapse of oil prices and the Algerian oil exports falling dramatically : from 60.3 billion dollars in 2014 to 27.1 billion dollars in 2016. The decline in the first six months of 2017 continued, amounting to 18.7 billion dollars (In this regard, it is noteworthy that Algeria largely relies in its budget on the hydrocarbon taxes). It also lost more than half of its foreign exchange earnings which fell from \$ 60 billion in

2014 to \$ 27.5 billion at the end of 2016 (The World Bank, 2016).

The crisis in Algeria has repercussions at various levels, including the labor market. In general, unemployment rose in April 2017 to 12.3 % compared to 10.5 % in September 2016. However, unemployment among graduates reached 17.6 % in 2017 and had a profound and significant impact on the economic policy of the Algerian Government (Office National des Stistiques-ONS, 2017).

In light of this crisis, scientific research plays a pivotal role in favor of industrial and economic development as the world knows several changes, including the low prices of hydrocarbons, the liberalization of trade, the laws of the World Trade Organization, globalization and technology resulting in the emergence of a highly competitive environment where only the competitive shall survive. This can only be achieved through scientific research and universities' adaptation with these variables in order to reach a solution to the crisis. Therefore, the question is: What is the reality of the Algerian University-Industry partnership? What are the reasons requiring this partnership? What is its importance?

1. The Algerian University: History and Reforms

The system of higher education in Algeria dates back to the colonial era when the Higher School of Medicine and Pharmacy was established in 1859, then the schools of law, sciences and literature in 1879. The assemblage of these schools in 1909 gave birth to the University of Algiers managed following its predecessor in France. Later, major schools (agriculture- polytechnic) and annexes to the University of Algiers came into existence in 1950 in Oran and Constantine (in particular with the plan of Constantine in 1958). The Algerian university system for Algerians only started after independence in 1962. The mass fabric developed enormously thanks to the democratic education and demographic explosion, as well as to the training, by state and many public institutions, of a large number of cadres and qualified people (between the sixties and the mid-eighties). Today, there are over twenty cities with universities or higher schools accommodating more than 300,000 students. On the eve of independence, Algerian students amounted only to 500 students studying in Algeria or abroad. (Ramaoun, 1998).

Since its independence, Algeria's higher education sector has undergone many reforms in line with the development of the world and the challenges it faces both locally and globally in terms of developing higher education institutions and making them open to their social and economic environ-

ment and to enable them to contribute to the development of the country and the advancement of the national economy (Zorguane, 2012):

- The first period (from independence until 1970): the Algerian university used to be dependent on the colonial system, both in its forms of education and contents, in a state of alienation from Algerian society.
- The second period (1970s): this period witnessed the first reform known as the 1971 reform which was established to cut off the link to all the inherited methods of training and programs and to amend them so as to meet the reality of the country and the needs of development of manpower. This reform was initiated in order to connect the university to the labor market and to create the largest possible number of cadres at the lowest costs.
- In the eighties, the Algerian University witnessed a huge quantitative development in the number of students (100,000 students during the academic year 87-88) marking the beginning of the crisis, which is today a challenge to the Algerian University, in addition to the emergence of the phenomenon of unemployed graduates. During this period, the relationship between the university and the industry was characterized by sluggishness, driving the Ministry to adopt the university map project for the planning of higher education for the prospects of the year 2000 based on the needs of the national economy.
- The 1990s witnessed a huge explosion of knowledge on the one hand and political unrest in Algeria on the other hand. This was reflected on the various aspects of economic and social changes geared towards the market, hence the emergence of several studies to evaluate the system of training, to review the policies of training and to amend the programs as well as efforts to prepare university teachers, in addition to the emergence of several studies to evaluate the system of university training (Zorguane, 2012).

Despite the fact that higher education in Algeria has made progress and reforms aimed at remedying the situation and achieving integration between the programs and the training-based and developmental trends, these reforms have often been diagnosed by many diligent scholars in this field as having failed since they did not meet the needs of the Algerian society because they were inconsistent with the reality and the problems of the Algerian university. In addition, these reforms lacked adaptation and application, especially with regard to the quality of training because they devoted, all along these years, the principle of quantity on the quality. Furthermore, there was an increase in the number of graduates and unemployed, which also resulted in a lack of supervisory staff both in terms of quantity and quality, a weak capacity of absorption and funding, as well as

other indicators of deeper phenomena, which in essence constitute a number of important problems facing the Algerian University (Rakad, 2014).

In order to face these problems, the Ministry of Higher Education and Scientific Research launched during the academic year 2004/2005 a new system of higher education known as the LMD (License, Master, and Doctorate). This system aims at keeping up with international universities in the context of a global project that calls for competition in knowledge acquisition. This reform also addresses the imbalance suffered by the classical system, both at the level of facilities and organization of institutions and at the pedagogical level.

This system aims to¹:

- Improve the quality of university training;
- Harmonize the system of high training with the rest of the systems of training in the world;
- Propose various training tracks and adapt them to the economic needs
- Facilitate student mobility and guidance;
- Promote students self-conducted action;
- Install procedures to accompany students in their work;
- Value the gains and facilitate their transfer;
- Develop training across the various stages of life, in addition to the initial training;
- Open the university and training to foreign's.

All these reforms carried out by the Algerian government in the institutions of higher education, the university in particular, indicate the importance of the university and scientific research in being the largest supplier of qualified human capital. However, the university cannot meet the needs of scientific institutions if not closely related to these institutions. This requires a scientific policy that makes the university aware of the needs of the production and services sector.

2. The Role of the University in Achieving Sustainable Development

The first definition of sustainable development was given in 1987. It is defined as “economic development and standard of living that does not

¹ <http://www.univ-mascara.dz/fsecg/index.php/ar/2017-03-05-20-30-05/2017-03-05-20-44-03> Consulted the 02nd/11/2017 à 11h00

impair the ability of the environment in the future to provide the necessary food and life for the population and seeks to meet the needs of the current generation without depleting the needs of future generations” (Brundtland Report, 1987, p. 40).

Sustainable development seeks to reconcile the three economic, social and environmental dimensions by building productive capacities and available techniques by supporting scientific research, adopting different approaches to the achievement of human beings basic needs and to raising their standards of living and well-being. Hence, scientific research represents the most important pillars of progress and the elements of its success and ability to achieve sustainable development and its response to transformations in society and external influences.

On the other hand, connecting scientific research with institutions and organizations is considered as a strategy that aims to improve the teaching process and to linking the universities to the progress and development processes in society. It especially aims the consolidation of the links between universities and various industrial sectors, considering

scientific and university research as one of the pillars of the course of development and the progress of the national economy. This explains the huge budget allocated by the developed countries to this sector where scientific research and the university are essential pillars in the progress and prosperity of nations. As mentioned earlier, Algeria is experiencing an economic crisis due to the severe collapse of the oil prices in the international market. Since 2014, Algeria has become under the weight of this crisis, and in order to get out of it the government has to adopt policies that help in finding alternative solutions to the national economy likely to boost it through the research and studies carried out in various fields. Here, the important role to be played by the university and its different cadres, laboratories and its branches in finding solutions to get out of this crisis is reflected by creating cooperation between the university and various sectors of industry in order to promote the economy of Algeria and realize the recovery of the other economic sectors. However, the Algerian government has to promote its economy away from the hydrocarbons sector, considering that universities and scientific research centers are a reference for governments to find solutions to intractable problems, especially with increasing interest in creativity and innovation. Moreover, in 1993 UNESCO established the university-industry partnership program UNISPAR in order to promote the universities in developing countries and to encourage them to increase their participation in the industrialization process in their countries. These programs aim to strengthen partnerships and linkages between universities and industry, including small and medium enterprises, to pro-

mote innovation and engineering science education, consolidate cooperation between the North and the South, mainstream gender equality, promote maintenance of all areas related to technology development, in addition to the development of human resources, including the training of engineers in the areas of transfer of research results and maintenance of equipment and other related fields².

The studies and reports published by the World Bank have proved the importance of university-industry cooperation and integration. This was confirmed by many universities in the world. Each developed country has its own experience in partnership between its academic and industrial institutions. Although England used to be pioneer in industrial revolution, and therefore the model in how to link its universities to industrial institutions, however Germany is characterized by the transfer of the academic institution to the productive institution where the top floor in the building of the productive establishment is the laboratory of the university professor. On the other hand, America had its own experience in Land Grant Colleges, University States and University Civic (Mahmoud, 2008).

In Algeria, the relationship between higher education institutions and industrial establishments remains at the limits of wishes, which may entail awareness of its importance, necessity and enthusiasm for its establishment. While the results of field studies indicate the formality of this relationship, where it stands at the limits of participation in the organization and implementation of some training programs, and in the provision of some advice or explanation and research of the causes of some of the transient problems. As for those issues related to the essence of the development process, especially those that require participation in research and development issues, there is almost no participation around them' (Bouziane, 2010).

Following is my experience as an academic researcher within an Algerian company specialized in the production of fruit juice where I tackle the importance of cooperation between the two parties by describing the research stages to, finally, conclude the importance of conducting field research and the need to establish a university-industry partnership in order to achieve sustainable development.

3. University-Industry Partnership: Concrete case

I was enrolled as a first year PhD student, sociology of organizations,

² <http://www.unesco.org/new/en/natural-sciences/science-technology/university-industry-partnerships/> Consulted the 01st /12/2017.

and to obtain a doctorate, every student is asked to choose a particular research theme of his interest and that motivates him and study it. Since my interests are focused on issues related to human resources management, I opted for a theme that is an extension of the one I had addressed for my Master's degree.

Since I am a full-time researcher at a research center, finding a company where I could conduct my field research hasn't been difficult, since the institution I opted for had already dealt with my research center. The network of relationships is important in this type of situation. However, after the signing of the agreement between the research center and the institution I opted for - from the private sector - another challenge before my research began since private institutions are known for their privacy policy and, therefore, difficult access.

In social sciences data is mainly collected through the long interactions between the researcher and the environment he studies (Olivier de Sardan, 1995). This interaction enables the researcher to understand the phenomenon he is studying by collecting the most information to understand, explain and analyze it in light of the theoretical approach he adopted.

I adopted the qualitative approach that uses in order to obtain the data on the phenomena under study, all the means and tools that help to collect and classify them and to extract the results from them, i.e. the means and tools according to the nature of the research because what fits for some research doesn't fit for others.

Therefore, my study seeks to describe the wage policy change management in the company (Y) and how the competency-based wage system was adopted whereas it was based on the position. My study also seeks to identify the most important actors involved in this process on one hand, and to interpret the staff attitudes towards this system and analyze their strategies on the other hand.

I consider that the nature of the theme refers to the assessment of reality, because studying the positions and describing the procedures don't need quantification. This allowed us to rely on a set of techniques which I deemed suitable to serve the purpose of the research and which can lead us to the desired results. Therefore, I opted for direct observation, interviews and questionnaire.

In addition to these techniques, I have also used in my research data collection through the internal documents of the company. These included the company's handbooks, manuals on the rules of procedure, collective agreements and the organizational structure of the company.

The field research started following the identification of the objectives of the study, the sociological approach, and the sample of the study which

consisted of all the socio- occupational categories in the company. After the interview manual was set up and the questions of the questionnaire formulated, I used to go to the organization two days a week - sometimes three days - to conduct interviews and record them in order to then transcribe them faithfully, correctly and plainly to subsequently analyze them and use some verbatims of the interviewees to strengthen and clarify the analysis.

My presence in the research field allowed me to discuss and talk with the employees of the company in an informal setting, away from the interview manual and questionnaire questions (off the record). Indeed, the interviewees feel very comfortable in the absence of the phonograph, so they tell me what they do, like and dislike about their company as well as about their future prospects. This type of discussions helps the sociologist understand and analyze the phenomenon under study as well as understand human behavior within the organization. In addition to this, wandering within the company in different departments, offices and factory - as well as the organization's courtyard - enabled me to have an idea about it and about the private sector which has long been considered difficult to study in Algeria by several students and researchers. The opportunity offered to me in this company drove me to use every observation and information in order to achieve the objectives of the study and to disclose the advantages of the private institution in Algeria.

There are many things researchers face during their research, especially those on how to obtain a large amount of information. As "every sociological investigation is itself special and unique, and that the methodology itself is a more or less predictable response to a series of obstacles I am likely to encounter in the field of research" (Paugam, 2008, p. 78), I have been first faced with an obstacle, as the workers of the company think that I am a journalist and therefore they are cautious when answering and it was very difficult to get them understand that their answers serve only scientific research and have nothing to do with politics or their relations with their superiors. Thus I had to turn off my phonograph to reassure them and, hence, rely on my memory and write down the information on my notepad as soon as I finished talking with them. However, I didn't encounter this problem during the interviews with the executives because some of them were interested in the interview questions which were directly related to their interests as they were concerned with the application of this new wage system under study. Therefore, their answers were practical and rich of information. However, the questions of other socio-occupational categories were related to their positions on this new wage policy, hence, the difference between these two categories in answering questions.

This experience I went through in the juice production facility was very

rich and useful at the scientific, professional and personal level as it has shown the need for university-industry partnership in order to reach reliable results that serve the two parties. As a matter of fact, the combination that can be generated from between the social sciences and the companies contributes to innovation and to promoting economic development. Relying on scientific research data and results and avoiding random decision-making and measures give the latter credibility, efficiency and stability which can have positive impact on the social development and progress.

The need to present the results of the study to the persons in charge of the organizations is very important. The sociologist can reveal elements that were concealed from the heads of the companies. Indeed, they have different views, each through his own perspective. Therefore, the combination of these two perspectives allows to give a complete picture of the problems faced by the company and to find solutions if the two parties worked in an integrated manner to achieve this goal: the sociologist providing his analysis and diagnosis of the problem, and the company taking this into account to provide mechanisms and appropriate possibilities to solve this problem based on this diagnosis.

The presentation of the results of this study was an important stage to prove the importance of field and academic research carried out by researchers and academics in this field, and to use them instead of placing them in library shelves and using them as references to theoretical research.

In the framework of a seminar organized by the research center where I work, professors, researchers and heads of institutions were invited to discuss organizational change by presenting various field experiments to researchers and academics. I was among those who presented the results of their study in the presence of the managers of the company that adopted a new competency-based wage system of where I conducted my field study. When given the floor, I tried to adapt my presentation to the seminar main lines and to combine between the academic and the practical because the invitees came from different disciplines. The mere fact that the researcher presents the results of his study to the heads of the institution where he conducted his research is considered a moral motivation for him to continue the research because he feels that his studies weren't in vain, especially that the research theme included the positions and attitudes of the workers towards this new wage system. Such themes make many organizations guard against the social sciences, making dialogue between the workers and the researchers difficult because they affect their perceptions and attitudes.

The organization of such seminars, where the academics can present the results of their research before decision-makers, brings the university and the industry closer and opens up areas for cooperation that serve economic

and social development on one hand, and encourages academics and researchers to demonstrate their qualifications and give live examples to their students about what is going on in the institution on the other hand.

Conclusion

Establishing university or research centers - industry collaboration, by opening channels of cooperation, coordination and communication between different universities and development sectors, creates a dynamic of know-how exchange and experience sharing that serves the interests of both parties as the companies use university competencies to ensure its continuity by creating the spirit of innovation and initiative-taking that give the company competitive capabilities that distinguish it from other institutions, while the university benefits from this field experience to adapt its educational programs to the requirements of companies, increase the employability of its graduates and link its objectives to development plans. Therefore, it is important for universities to have a vision for the future by creating new training courses via the integration of students into enterprise development curricula. The university, for instance, can be part of a regional plan for the development of vocational training (Fellag, 2005), and this university-industry interaction helps support and fund projects by institutions that recognize the importance of scientific research for development and innovation.

The private sector today in Algeria is the focus of economic and social development because of its advantages and potential to play a leading role in various economic and social fields. Through my field research in the 'Y' juice company, I realized the importance for this sector to open up to researchers as a pillar of development and as it plays an important role in providing employment and training and in enhancing competitiveness at the local level.

Methodologically, my research allowed me to use various techniques to collect the data required by the research from the preparatory, the field and the final stage (analysis and writing). These techniques showed us the importance of field study in answering and interpreting research questions and concluding facts in an objective manner, especially when used methodically and systematically.

Personally, this experience has allowed me to build and expand my network of contacts, to know new people belonging to various fields - different from my own. It also allowed me to exchange views that will foster constructive debate on various social issues.

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