

The impact of higher education quality indicators on human development**أثر مؤشرات جودة التعليم العالي على التنمية البشرية****BENOUNISSA LEILA ¹, BENABOU Djilali ²**

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Received: 12/11/2022**Accepted:** 31/12/2022**Published:** 31/12/2022**Abstract:**

The article focuses on knowing the impact of quality indicators in the higher education sector on human capital by comparing a group of countries using data panel models for a sample of ten countries during the period from 2000 to 2014, we concluded through the results that the index of the number of scientific articles, the index of the rate of framing and the index of the percentage of students enrolled have a positive impact on the human development index. Unlike the index of the number of students studying abroad that has had a negative impact, we concluded that the most appropriate model for studying is the model of fixed impact that does not take time into account in influencing human development but takes variables because the quality in higher education institutions is not affected by time but is affected by the change of variables that vary from country to country.

Keywords: Quality of Higher Education, Human Development, Human Capital, Knowledge Economy,

Jel Classification Codes: A23 C33

ملخص:

يركز المقال على معرفة أثر مؤشرات الجودة في قطاع التعليم العالي على رأس المال البشري من خلال مقارنة مجموعة من الدول باستخدام نماذج البيانات المقطعية لعينة من عشر دول خلال الفترة من 2000 إلى 2014، وخلصنا من خلال النتائج إلى أن مؤشر عدد المقالات العلمية ومؤشر معدل التأطير ومؤشر نسبة الطلبة المسجلين لها أثر إيجابي على مؤشر التنمية البشرية. وعلى عكس مؤشر عدد الطلاب الدارسين في الخارج الذي كان له أثر سلبي، وخلصنا إلى أن النموذج الأنسب للدراسة هو نموذج الأثر الثابت الذي لا يأخذ الوقت في الاعتبار في التأثير على التنمية البشرية ولكنه يأخذ المتغيرات لأن الجودة في مؤسسات التعليم العالي لا تتأثر بالزمن بل تتأثر بتغير المتغيرات التي تختلف من بلد إلى آخر.

كلمات مفتاحية: جودة التعليم العالي، التنمية البشرية، رأس المال البشري، اقتصاد المعرفة.

تصنيفات JEL: A23 C33

INTRODUCTION:

We are interested in this study the human capital and how higher education is considered as an investment especially that institutions of higher education are the most important institutions for acquiring and diffusing knowledge and innovation. The quality of such institutions became one of the most important factors that differentiate countries in terms of knowledge economy. We dealt with various schools and economic theories and their views on the topic to get to higher education which is one of the most important human investments. In fact, the latter knew a quantum leap after being put in a competitive environment and paying more attention to quality than to quantitative indicators.

We will try through this paper to give an answer to the following problem: “How far human capital affects the quality of higher education?”

To respond to the question, we conducted a comparative study to determine differences of effect between the selected countries.

1. Human capital:

Definition of human capital dates back to the early sixties of the twentieth century thanks to economists Schultz 1961 and Becker, 1964.

Human capital is defined as knowledge, skills, potential and other capabilities inherent in individuals that are relevant for and linked to the economic activity. Human capital does not only focus on knowledge, skills, capabilities, qualities and characteristics that individuals have but the concept also refers to the extent to which individuals may use all what they have in a productive way relevant for economic activity

Laroche Lurette & Ruggert 1999 defined it as the overall innate preparations, knowledge and competencies that individuals acquired and developed throughout their lives.

It is also known as “an intangible asset within the organization’s energies. Such asset supports and enhances productivity and the process of creativity and innovation as well as the process of a better employment of workers”.

The Arab Human Development Report 2003 considered that “human capital is the relatively hard core to the capital of knowledge”.

Becker, 1993 defined Human capital as “the total assets brought by an individual to the organization, such as education and training in the previous posts, age, professional experience and other experiences, and are as whole and interdependently called human capital. Such elements are supposed to bring changes and positive effects and achieve the professional advancement”.

2. Theories of investment in human capital:

Economists such as Schultz T.N., Mincer J. and Becker, G. S. dealt with the issue of investment in human capital by considering education as a kind of type investments.

• Schultz's theory:

investment theory in human capital materialized after the researches carried out by the economist Schultz, because he gave a more realistic interpretation to explain the increase in income. He explained and interpreted the least physical components in the formation of capital which is actually a human capital considered as a less physical component despite the fact of being a human wealth. It was also noted that the increase in the national income far

exceeds the increasing land and labor working hours and physical capital, therefore, investment in human capital may be the main explanation for such difference. For that reason, Schultz explained his concept of human capital in three key points:

- Economic growth, which is not explained by the increase in material inputs, is mainly due to the increase in the accumulated stock of human capital.
- Differences in revenues can be explained according to differences in the amount of human capital invested in individuals.
- Justice in income can be achieved by adding the rate of human capital to the rate of traditional capital.

Schultz focused in his researches on the education process as a necessary investment in human capital, and asserted that spending on education is an investment and consumption expenditures because education brings an additional economic value.

In his analysis of costs and returns related to the process of education Schultz dealt with the lost revenues because if they had not been related to the educational process they would have been relevant to the labor market and provide an economic value service.

- **Mincer's theory:**

His theory aims to measure the rate of returns on human capital. Since then, economists began to explain and apply the theory such as Schultz 1996 and Becker 1993 with the objective of trying to understand the role of individual decisions in explaining the disparity in wages. The model adopted the following assumptions:

- The length of the training period or education is the primary source of disparity in the income of workers and training raises the worker's productivity.
- Individuals expect when they decide to take a training to earn a higher income in the future to compensate the cost of training.
- Training cost is limited to the alternative cost, i.e. the income that the individual would have earned if he did not attend training institutions.

Mincer considers age as a key factor in the training process. In fact, the lower the age of the individual is, the less are training costs. Also, the probability of death is one of the reasons for a lack of cost data and in the event of death, the training costs become greater than the revenue.

Mincer reached conclusions from his model which areas follows:

- The higher the educational levels of the individual are the more likely it is to get more training in the field of work (human capital development is positively affected by the staff's level of education and the job satisfaction).
- Whenever labor turnover and the unemployment rates increased the higher the costs of investment in training are.
- Whenever investment in training increased, especially specialized training, the greater the chances of survival of the individual in the organization and the prospects for employment stability are.

- **Becker's model:**

All his researches about the development of human capital were stated in his famous book "Human capital" in 1964. He dealt with all forms of investment in human capital through

education, health, immigration, and focused in particular on training. Becker adopted hypotheses to his model which are as follows:

- The ideal wage for a worker is directly proportional to the level of competencies and grows at a decreasing rate with age.
- Unemployment rates are inversely proportional to the level of the worker's efficiency.
- Young people change their positions more than the old aged and consequently have greater education and training opportunities.
- Division of work is closely linked to the size and capacity of the labor market in itself.
- Investment in human capital brings greater returns than investment in physical capital.

3. Quality of higher education:

The current interest in the knowledge economy has become an urgent necessity that must be provided with all facilities through the construction of infrastructure, by paying attention to education and modern technology in all areas of life, increasing the use of the Internet, computers and the latest technologies.

Higher education institutions are considered centers for the generation of modern knowledge and technology and their employment in society, thus making it necessary to improve all that can be improved from educational curricula, faculty, quality of students, library ... Etc.

Universities have been placed in a competitive environment, making them follow the quality of their educational institutions.

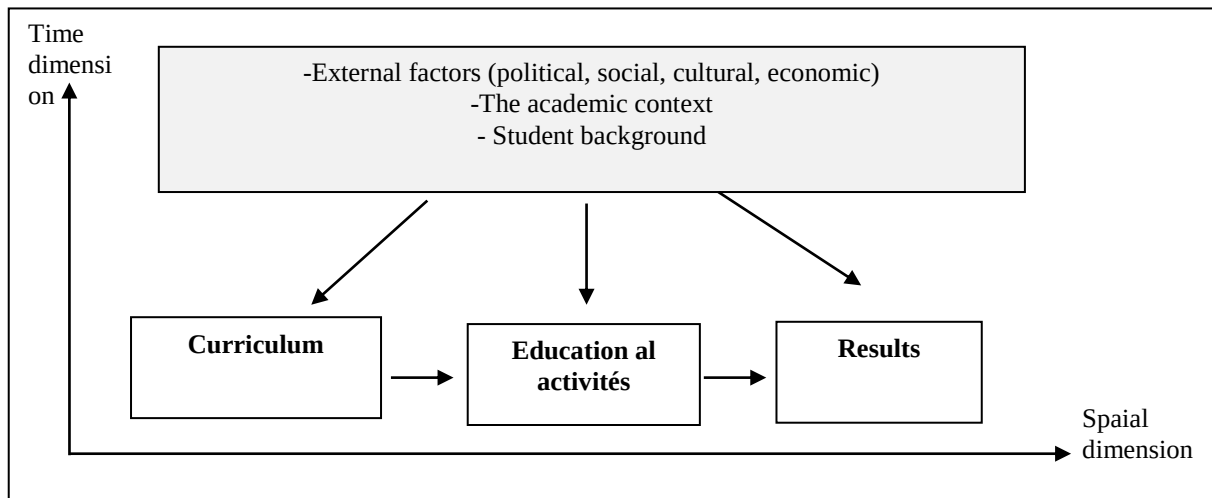
The idea of quality was first used for education in the United States of America by Malcolm Baldrige, and then American colleges worked to apply the principles of quality management, so they developed in the early eighties and increased application in the nineties of the last century.

The 1998 UNESCO Conference (United Nations Educational, Scientific and Cultural Organization) defined the concept of quality in education as multidimensional and should encompass all teaching functions and activities such as curriculum, educational programmes, scientific research, students, buildings, facilities and tools, provision of services to the local community and internal self-education, setting internationally recognized comparative quality standards.

Harvey & Knight, 1996 identified five incomes for thinking about educational quality:

- Quality in the field of education as a distinctive exception that can achieve the highest standards.
- Quality in the field of education means a state of compatibility between administrative and educational processes.
- Quality from the point of view of presentation of the product or service.
- Quality is a value that arises from efficiency and effectiveness.
- Quality is seen as processes of qualitative, morphological, or cognitive change.

Figure 01: University teaching



Source: Ketele, J.MD (2010). University pedagogy: a current in full development (No. 172, pp. 5-13). ENS Publishing.

Most important axes of quality in the educational system:

Institutions differ by their nature (economic, administrative, educational, etc.), so quality varies from one institution to another. For example, higher education institutions do not know the customer, the client or the product, but have inputs and outputs defined by the national center for quality assurance and adoption of the educational and training institutions as the total amount of resources allocated for a particular purpose used to run a system, including human, physical, financial and technical resources, information and time, as for outputs, they are defined as the achievements and final results achieved by the educational system and its outputs are determined according to its mission and objectives. Therefore, it must improve the quality of inputs and follow the learning process to obtain quality outputs that have the ability to compete with the outputs of other educational institutions.

While Ketele (2010) believes that “higher education depends primarily on teaching, so attention must be given to it and the latest methods must be followed to achieve this process. He also considered that all the other activities in the educational institution are only integration with the teaching activity. The teaching function is affected by two main factors: curriculum (programs) and various factors, internal (Ex. insufficient experience of teaching staff members) or external factors (regulations and legislation)”

In this regard (Mukhopadhyay, 2001) defined Total Quality Management in Higher Education as a set of views that include the following: the excellence of the educational process, the added value of the educational process, the suitability of the outputs of the educational process for use, the compatibility of the educational outputs with the planned objectives with the specifications and requirements, the avoidance of defects in the educational process, meeting the growing expectations of customers.

Previous studies have highlighted the need to pay attention to higher education through the application of quality standards to conform to the global climate and development requirements. All studies have paid attention to the indicators on which the knowledge

economy depends, whether technological, human or material indicators and the extent of their impact on human development:

- **A study (John V. Winters, 2011)** that measures the level of local human capital with the total holders of university degrees and the importance of higher education institutions is measured by the proportion of the population, and the researcher concluded that the quality of life is affected by the level of local human capital and the importance of higher education institutions, and this effect continues where there is a high degree linking human capital with institutions of higher education and affects the quality of life.

- **A study (Dongshu Ou, Zhong Zhao, 2016)** aimed to measure the impact of China's higher education policy expansion on the labor market, where researchers concluded that the expansion of education reduces unemployment rates and increases strong demand for high-level labor, found the effects of the trade-off between quality and quantity that relates to the effects of expansion policies on the accumulation of human capital.

- **A study (Bušíková, 2012)** clarified the relationship between higher education and knowledge economy indicators and its objective is to determine the role of universities in the knowledge economy, linking two groups: knowledge economy indicators (research and development expenditures, patents and exports of ICT goods) with indicators that reflect higher education (workforce with higher education, expenditure per student, higher educational attainment and the proportion of universities ranked in the academic ranking of the world). The researcher tried to find out if there was a strong positive correlation between the set of indicators, and pointed out that higher education plays an important role in the formation of human capital in the knowledge economy.

Institutions vary according to their nature (economic, administrative, educational... For example, higher education institutions do not know the customer, the customer or the product, but have inputs (defined by the National Center for Quality Assurance and the accreditation of educational and training institutions as the total volume of resources allocated for a particular purpose, which are used in order to operate a system, including: human resources, material, financial, technical, information and time)

Outputs (defined by the National Center for Quality Assurance and Accreditation of Educational and Training Institutions as the achievements and final results achieved by the educational system and determine its outputs according to its mission and objectives) so they must improve the quality of inputs and follow the educational process to obtain quality outputs that have the ability to compete with the outputs of other educational institutions.

Higher education has witnessed clear leaps in recent years, as universities have been considered the most important centers for the production of knowledge and scientific research, so they have been placed in a competitive environment, so the goal of each country has become to reach the first places for its universities to be classified among the so-called global elite (world-class universities). Every year, the results of the rankings of universities and higher education institutions across the world are widely anticipated and announced based on their scientific and educational quality, because the rankings obtained by ranked universities largely reflect the level of scientific progress of their countries.

The University Rankings date back to the late nineteenth century, and this ranking was particularly aimed at identifying the universities that graduate the most important personalities. The Englishman (Alick Maclean, 1900) published a study entitled: "Where do we get our best men?" *Where We Get Our Best Men*, which focused on the characteristics of the prominent figures of the time, including the family, place of birth, and university where they studied, published on the back of the book a classification of universities based on the number of their graduates of these prominent figures.

There were many classification indicators after 2003, but the common factor among them is their focus on analyzing the scientific outputs of university institutions.

The emergence of the knowledge economy has been accompanied by the great development of modern science and technology, which has given this economy the characteristics of being based solely on knowledge.

It is characterized by many features, the most important of which are the following:

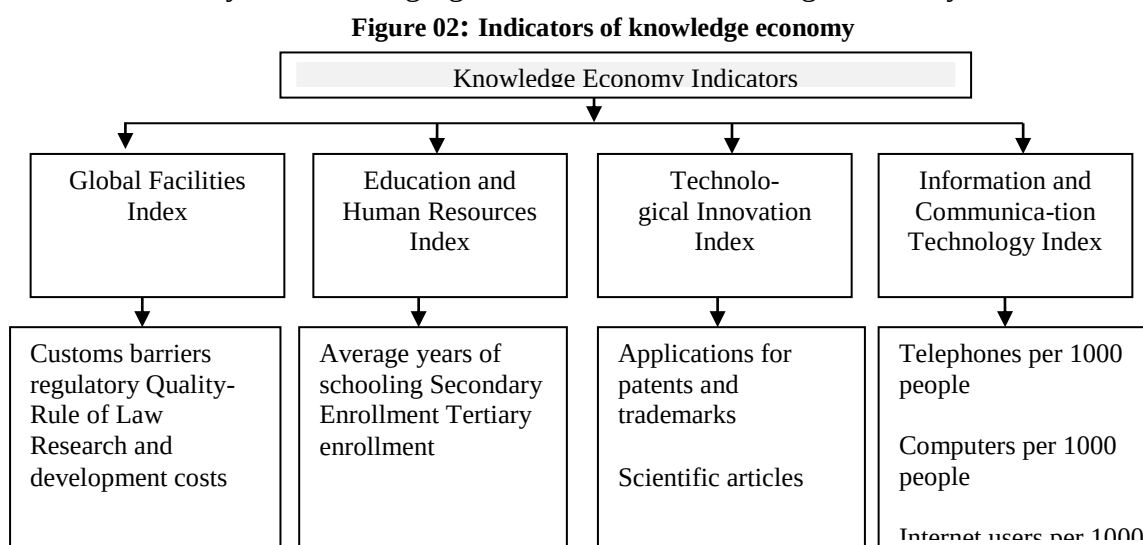
- Work to disseminate knowledge through education, training and information in order to build a human being who has the knowledge, skills and abilities that enable him to work effectively.
- Interest in scientific research, creativity and innovation, which helps in generating useful knowledge in various fields.
- Focus on the need to use knowledge, skills and abilities in the best possible way to support the giving of society and promote its development.

- The reality of knowledge economy in Algeria:

To see the progress of a country in transition to the knowledge economy, the World Bank established the "Knowledge assessment Methodology"; which is about indicators measuring the countries in transition to the knowledge economy and their global rankings. It includes four main pillars, namely: Information and Communication Technology Index, Technological Innovation Index, Education and Human Resources Index, and Global Facilities Index.

Knowledge Economy Index shows whether the environment is conducive for the dissemination of knowledge that can be used effectively in the economic growth. Knowledge Economy Index depends on four indicators considered as pillars of such economy.

This is illustrated by the following figure Indicators of Knowledge Economy



Source: based on the World Bank website

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Before presenting the position of Algeria in the KEI, we have to give some statistics about publication, patents and R&D spending.

Table 01 : R &D performance indicators

Countries	Articles in scientific and technical journals (2009)	Patents granted by the USPTO/thousand people (2005-2009).	Spending on R &D as % of GDP (the most recent year).
Algeria	606	0.01	0.12 (2006)
Egypt	2247	0.07	0.24 (2009)
Morocco	391	0.08	0.64 (2006)
Tunisia	1022	0.1	1.03
Qatar	64	1.29	2.8 (2009)
China	74019	1.05	1.43 (2009)
Finland	4949	138.1	3.72 (2009)

Source: report NABNI, 2013

We note that the number of article published by Algeria in scientific and technical journals is very modest 606 compared to Egypt 2247, Tunisia 1022, Finland 4949 and China 74019. Data on expenditures on R & D (%GDP) are those of 2006 but according to the Algerian Ministry of higher education and scientific research in 2008 the budget allocated to R & D has been increased around 1.2% of the GDP

Table of Illustrates the rank of Algeria among the countries of the MENA, the first and last country globally in the year (2012) added.

Table 2: Rank of Algeria among the countries of the MENA, the first and last country globally

Indicators States	Rank Globally	Knowle-dge Economy Index	Knowle-dge Index	Index (A)	Index (B)	Index (C)	Index (D)
Sweden	01	9.43	9.38	9.58	8.92	9.74	9.49
Emirates	42	6.94	7.09	6.50	5.80	6.60	8.88
Bahrain	43	9.60	9.98	6.69	6.78	4.61	9.54
Oman	47	6.14	5.87	6.96	5.23	5.88	6.49
Saudi Arabia	50	5.96	6.05	5.68	5.65	4.14	8.37
Country	54	5.84	5.50	6.87	3.41	6.42	6.65
Kuwait	64	5.33	5.15	5.86	3.70	5.22	6.53
Turkey	69	5.16	4.81	6.19	4.11	5.83	4.50
Jordan	75	4.95	4.71	5.65	5.55	4.05	4.54
Tunisia	80	4.56	4.80	3.81	4.55	4.97	4.89
Lebanon	81	4.56	4.65	4.28	5.51	4.86	3.58
Iran	94	3.91	4.97	0.73	4.61	5.02	5.28
Algeria	96	3.79	4.28	2.33	5.27	3.54	4.04
Egypt	97	3.78	3.54	4.50	3.37	4.11	3.12

Morocco	102	3.61	3.25	4.66	2.07	3.67	4.02
Yemen	122	1.92	1.58	2.91	1.62	1.96	1.17
Sudan	138	1.48	1.82	0.48	0.84	1.44	3.16
Myanmar	145	0.96	1.22	0.17	1.88	1.30	0.48

Source : data from the World Bank, 2012

The following table shows the rank of Algeria globally in the knowledge economy during the three years 1995, 2000, 2012 according to the World Bank data among 145 countries. We notice the delay of Algeria with two ranks. It ranked 108th in 1995 then declined to occupy the rank 110 in 2000, then advanced with 14 ranks to take the 96th rank within the global ranking in the knowledge economy.

4. The econometric study:

We will try through this study to find out whether there is an impact in time change and an impact in a variable change on educational quality by using the Panel model for measurement as an economic measurement method.

Panel model is one of the most important models recently because it takes into account the impact of time change (t) and the impact of change of views (i). Panel data is defined as observations at a certain time period and which include a number of countries and institutions. In order to conduct the comparative study, we chose:

We have also selected the following countries: Korea, Jordan, Algeria, Malaysia, Turkey, Morocco, Tunisia, France, Spain and Italy. Considering that the State of Korea is at the forefront of creativity and innovation, so we have taken it as a reference country to find out the reality of its higher education, Jordan, Malaysia and Turkey is an Arab and Islamic country in addition to its high quality in higher education, Morocco and Tunisia are almost the same neighbors of Algeria. The economic and social situation, France being a country with a place and an honorable ranking in the field of higher education in addition to the fact that Algeria derives from most of the educational programs, Spain and Italy, is considered as two developed countries and Algeria has partnership agreements with it in the field of cooperation and exchange between Universities.

We chose a study period of 15 years, i.e. the time period selected is between 2000 and 2014 namely because the concept of quality spread out during that period and all countries sought to achieve the principles of quality in higher education institutions and the interest in global classification of countries increased according to the extent of application of quality principles in educational institutions.

Let n be for observations measured in t for time periods, the Panel data model is defined as follows:

$$IDH = C1 + C2ART + C3ENC + C4 ETB + C5PET + \epsilon_i$$

Where **IDH** represents the value of response variable in observation i at the period of time t, we chose it for it represents the work qualified. Through the theoretical studies there is a relationship between human capital and the quality of higher education i.e. between all the other indicators.

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Bloom et al. 2006 consider institutions of higher education as the most important institutions responsible for the production of knowledge requirements that give a push to development. As for Serageld in 2000 he considered that the development of higher education level and the use of new technology provides an environment for increased creative capabilities and thus contributes significantly to development in general. We considered it as an indicator for measuring the extent of rehabilitation of human capital in the labor market. Through the following table.

- **Number of registered students:** (Independent variable) the student is the focus of the educational process in order to reach graduates of high-quality universities, who have the greatest knowledge and contribute to development.
- **Gross registration rate in higher education:** (Independent variable) the number of students enrolled in higher education is expressed as a percentage of the population of the age group that corresponds to this level of education.
- **Number of students registered abroad:** (Independent variable) shows the process of exchange and cooperation between countries and the extent of the state's facilities in the field of higher education and the extent of the state's support and encouragement of the process of opening up higher education to the outside world, and this indicator helps to a large extent to develop higher education and reach the level required to achieve Development goals.

we will identify the variables of the study and the nature of each indicator.

Table 03: The nature of the variables and their source

Variable	Study period	Code	Source	Variable type
Human Development Index	2000- 2014	IDH	UNDP	Dependent variable
Number of scientific articles	2000- 2014	ART	SJR	Independent variable
Supervision rate	2000- 2014	ENC	UNESCO	Independent variable
Number of registered students	2000- 2014	PET	UNESCO	Independent variable
number of students enrolled abroad	2000- 2014	ETB	UNESCO	Independent variable

Source: prepared by researchers

4.1 Correlation study:

The nature and amount of the link which combines the dependent variable and the independent variables are defined as follows:

Table 04: Correlation between variables

	IDH	ART	ENC	ETB	PET
IDH	1				
ART	0.774	1			
ENC	-0.212	-0.562	1		
ETB	0.587	0.910	-0.623	1	
PET	0.945	0.881	-0.425	0.786	1

Source: prepared by researchers

Through the above table that shows the volume and nature of the relationship we can conclude the following:

C. There is as a positive relationship in correlation between each of the human resources indicator, the number of scientific articles, the number of students enrolled abroad and the rate of the students registered. The correlation rate is (0.774 ·0.587 ·0.945) respectively which means as trong positive correlation.

D. There is a negative relationship between the human resources indicator and the supervision rate. The correlation rate is (0.212) which means a weak strong relationship because it is greater than 0.5.

4.2 Model test:

Before testing the model test that we adopted in the study, we must first determine the optimum method between the fixed impact model and the random impact model by using the Hausman test:

Table 05: Testing models

Explanatory variables	Pooled regression model	Fixedimpacts model	Random impacts model
R-squared	0.978469	0.984602	0.978469
Constante	0.550797 (0.0000)*	0.469978 (0.0000)*	0.550797 (0.0000)*
ART	1.610006 (0.0000)*	8.050007 (0.0135)	1.610006 (0.0000)*
ENC	2.470005 (0.0000)*	3.850005 (0.0001)**	2.470005 (0.0000)*
PET	0.003571 (0.0000)*	0.004119 (0.0000)*	0.003571 (0.0000)*
ETB	-1.380006 (0.0000)*	-4.420007 (0.1598)	-1.380006 (0.0000)*

Source: prepared by researchers with the EvIEWS 8 program.

4.3 Hausman Test:

As we mentioned previously, there are three main models of the Panel data. Based on this, the following question is asked: what is the most relevant model for any study? To answer such question, we will conduct the Hausman test through the following assumptions:

Random effect $\longrightarrow$ H_0

Hard impact $\longrightarrow$ H_1

Table 06: Hausman Test

Correlated Random Effects - Hausman Test				
Equation: Untitled				
Test cross-section random effects				
Test Summary		Chi-Sq. Statistic	Chi-Sq. df	Prob.
Cross-section random		26.289824	4	0.0000

Source: prepared by researchers with the EvIEWS 8program.

Through the results of the test above, we note that the statistical value (Chi-Sq. Statistic) equals 26.289 and is larger than the value (Chi-Sq. df) which is equal to 4 and that the probability value (P-Value) equals 0.000 and is less than 0.05, then the null hypothesis H_0 is rejected and the alternative hypothesis H_1 is accepted which confirms the choice of the fixed impact.

The results in table 3 show the impact of the independent variables on the dependent variable. The fixed impact model: after fixing the time element, the following results appeared to us. They can be interpreted as follows:

- Given that the probability of the fixed and independent variables is less than 0.05, this shows that they have a great ability to interpret the human development index; this is confirmed by value F-statistic, the reason why we consider that the model is moral.
- By testing the validity of the model, we note that R-squared or what is known as the factor of identification estimated at 0.98 illustrates the strength of relationship between the actual value and the estimated value, which means that the number of scientific articles, supervision rate, number of the students registered and the number of students enrolled abroad explain 98 % of the Human Development Index and the remaining 02% is due to random errors.

When we observe the Prod (F-Statistic) value estimated at zero, the model is moral at all moral degrees and the F-statistic is greater than (F-Statistic Prod).

After the results obtained and compared with those mentioned earlier and through the model test made by the fixed impact, we note a slight difference between both studies where R-squared in the choice of fixed impact test is better than the R-squared in the choice of random impact with a weak difference estimated at 0.1 which means that variables explain only 10% of the dependent variable. Therefore, the model is as follows:

$$IDH = 0.469 + 8.05 ART + 3.850 ENC - 4.423 ETB + 0.004 PET$$

Such equation is the best model that can define the relationship which combines the study variables. In fact, we note that there is a difference in the quality of relationship or correlation that combines the human development index and the number of scientific articles, supervision rate, number of the students enrolled and the number of students studying abroad. Difference was also noted in the coefficients of all variables compared to those that have been previously recorded when studying the correlation between variables.

There are many studies that confirmed the existence of a positive relationship between the number of schooled students abroad and the index of education which refers to the formation of human capital. Theories of modern growth addressed the positive relationship between education, education abroad and growth in the long term (Lucas, 1988). But there are other studies which dealt with the negative relationship between education and education abroad. Difference was also noted in the coefficients of all variables compared to those that have been previously recorded when studying the correlation between variables. The reason is the fixed effect model as the element of place difference (states) played an important role in transforming the relationship from positive to negative unlike the pooling method, which ignored the effect of time and place.

Conclusion:

Through the present research, we tried to address a comparative econometric study by using the Panel data. In fact, theoretical comparative studies showed that the human development index is affected by the level of education, especially higher education which is considered as the formation of human capital.

With the emergence of the term of quality in higher education and interest in educational quality indicators; the impact differed from one country to another depending on the policy and nature of the environment of each country. Actually, some countries advanced in an indicator while others are far behind in other indicators.

We also noted that Korea, considering its nature as an advanced country, cares about the deployment and exploitation of knowledge to the fullest in order to reach the first places in creativity and innovation, as we noted that Algeria also occupies reasonable ranks compared to the other countries of comparison which are Tunisia, Morocco and Jordan in most indicators.

Through the econometric study by using the Panel data, we concluded that the most appropriate model for the study is the fixed impact model which does not take into account the impact of time on the human development but the variables because quality in higher education institutions is not affected by time but is affected by the change of variables that differ from one country to another.

Bibliography List:

- Begg, D. K., Fischer, S., & Dornbusch, R. (2002). Exercices et problèmes corrigés de macroéconomie (Dunod). Dunod.
- Laroche, M., Mérette, M., & Ruggeri, G. (1999). On the concept and dimensions of human capital in a knowledge-based economy context. في Analyse de Politiques. Canadian : Canadian Public Policy.
- Solow, R. (2001). After" Technical Progress and the Aggregate Production Function". في In New developments in productivity analysis. Chicago : University of Chicago Press.
- Neef, D., Siesfeld, G. A., & Cefola, J. , D., Siesfeld, G. A., & Cefola, J. (1998). The economic impact of knowledge. Routledge.
- Harvey, L., & Knight, P. T. (1996). Transforming Higher Education. في Open University Press. Bristol: 1900 Frost Road, Suite 101.
- Barro, R., & Sala-I-Martin, X. (1996). La croissance économique. France: traduction française.
- Drucker, P. (1998). From capitalism to knowledge society. في The knowledge economy. Routledge.
- Mankiw, G. N., & Taylor, M. P. (2010). Principes de l'économie. France: De Boeck Supérieur.
- Ketele, J. M. D. (2010). La pédagogie universitaire: un courant en plein développement. France: ENS Éditions.
- Clark, . B. R. (1986). The higher education system: Academic organization in cross-national perspective. California : Univ of California Press.
- George, S. (1992). The Baldrige quality system: The do-it-yourself way to transform your business. Wiley.

- Khalifaoui , H. (2001). la science en algerie « paris : la science en afrique à l'oube du 21 siècle. France: paris .
- Peters, . M. A. (2007). Knowledge Economy, Development and the Future of Higher Education (10 م). Sense Pub.
- Hayek, . F. A. (1945). The use of knowledge in society. The American Economic Review, 519-530.
- Machlup, F. (1962). The Production and Distribution of Knowledge in the United States (م 278). Princeton university press.
- Romer, P. M. (1986). Increasing Returns and Long-Run Growth. Journal of Political Economy, 1002-1037.
- Khumalo, B. (2006). Measuring a Society's Knowledge Base. MPRA.
- Lucas, R. E. (1988). On the mechanics of economic development. Journal of Monetary Economics, 22(1), 3-42.
- Soete, L. (1996). Employment and Growth in the Knowledge-Based Economy. Paris: OECD.
- Sabau, . G. L. (2010). Know, live and let live: Towards a redefinition of the knowledge-based economy -- sustainable develo (6 ط). Ecological Economics.
- Mukhopadhyay, N., & Ray, A. K. (2001). Effects of amino acid supplementation on the nutritive quality of fermented linseed meal protein in the diets for rohu, Labeo rohita, fingerlings. Journal of Applied Ichthyology, 17(5), 220-226. <https://doi.org/https://doi.org/10.1046/j.1439-0426.2001.00287.x>
- Ketele, J. M. D. (2010). La pédagogie universitaire: un courant en plein développement . Revue française De pédagogie, ENS Éditions, 172, 5-13.
- Serageldin , I. (2000). University governance and the stakeholder society. 11 th مؤتمر في General Conference: Universities as Gateway to the Future; 20–25 August, International Association of Universities, Durban.
- Worrall , L. J., & Pratt , C. T. (2004). Estimation Issues Associated with Time-Series—Cross-Section Analysis in Criminology. Western Criminology Review, 5(1), 35-49.
- Bornmann, L., & Daniel, H. D. (2009). The state of h index research. EMBO Reports, 10(1), 2-6.
- Beine, M., Docquier, F., & Rapoport, H. (2008). Brain drain and human capital formation in developing countries : Winners and losers. The Economic Journal, 118(528), 631-652.
- Karlsson, C., & Johansson, B. (2004). Towards a Dynamic Theory for the Spatial Knowledge Economy. Excellence for Studies in Science and Innovation, 20-24.
- Schofer, E., & Meyer, J. W. (2005). The worldwide expansion of higher education in the twentieth century. American Sociological Review, 70(6), 898-920.
- Altbach, P., Reisberg, L., & Rumbley, L. (2009). Trends in Global Higher Education: Tracking an Academic Revolution. في مؤتمر في World Conference on Higher Education, Paris.
- NABNI, N. (2013). CINQUANTENAIRE DE L'INDEPENDANCE : ENSEIGNEMENTS ET VISION POUR L'ALGERIE DE 2020 (ص 1-15). Chapitre Economie.
- هواري م. ,. & علي ي. . (2021). خلايا ضمان الجودة ودورها في تحسين جودة التعليم عن بعد - دراسة تطبيقية للفترة 2019-2020 جامعة أدرار-. التكامل الإقتصادي, 9(3), 409-422.