The education systems and training of human capital in the Maghreb countries: situation and outlook

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Abstract
The purpose of this paper is to present and analyze the education systems in the Maghreb countries (Algeria, Morocco, Tunisia), under the light of human capital. The weight of human capital in economic and social development of nations is indeed clearly established. All countries have tried and are still trying to improve the performance of their educational systems and research / innovation, with mixed results as it's shown with the situation of the central Maghreb countries. The hypothesis of this work is implicit: countries that do not improve the quality of training of their human resources, cannot aspire to economic performance. Our methodology of analysis, hypothetico-deductive nature, will lead us to approach analytically, successively 3 points:
1. The concepts and theoretical foundations of human capital and training
2. The new international standard qualifying training-education systems and the cognitive advantage
3. The efficiency of educational systems in the countries of Maghreb
Keywords: *Educational system, training, human capital, performance, countries of the Maghreb*

INTRODUCTION

The specific weight of human capital in economic and social development of nations is clearly established. Indeed, the competitiveness of modern economies as the vitality and creativity of contemporary societies depend more and more on the production, traffic and economic mobilization of human resources. As intensely stressed Professor Bahloul (2015), Algerian economist and undisputed expert of human resources, "the centrality of human resources in the process of creating value founded a new production paradigm, essentially turned towards transforming information into knowledge, and knowledge into skills in the economic and non-economic organizations. these organizations manage to achieve efficiency through the quality of investment in human capital now posed as powerful tool and factor for reproduction and effectiveness ... "

Many studies have clearly shown that "a country that adopts a classical strategy driven by factors and mainly resources, will take 25 years to reach half the growth rate of a country that opts for the approach of the economy of knowledge, and those will reach in ten years, a growth rate twice as high. "(Djeflat, 2015)

This is the case of Finland, Sweden and Denmark, and also Ireland, which was deliberately oriented in the direction of this economy, has seen all its performances improve, in particular the unemployment rate, which has been reduced by almost a third in the space of a decade.

This shows the progress made in the space of a decade, after the application of a policy that mobilizes many ingredients of the economy of knowledge: research and development, intensive use of ICT, supported education reforms and training, and creation of a favorable incentive and institutional framework.

Regarding the Maghreb economies, all together they represent only 0.60 % of global GDP (in 2013) on the decline in reference to the 1980s Maghreb represents 16.20 % of the GDP of France (2739 billion) that has a population of 65 million inhabitants , and 35% of the GDP of South Korea (1198 billion) for a population of 49 million people (almost half of the Maghreb) . A small country like Belgium has a GDP of $ 370 billion for a population of 11,110,000

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inhabitants, while Greece with 11 million inhabitants (10% of the North African population) had a GDP of 241 billion in 2013 despite the crisis. (Mebtoul and Bonafi, 2014)

Thus, the Maghreb is experiencing growing marginalization in the global economy.

This clearly shows the weakness of the accumulation and development of human capital in all Maghreb countries.

All countries have tried, and are trying to improve the performance of their education systems and research / innovation, with mixed results as shown in the situation of the central Maghreb countries (Morocco, Algeria, Tunisia).

The hypothesis of this work is implicit: countries that do not improve the quality of training of their human capital, cannot aspire to economic performance. Our methodology of analysis, hypothetico-deductive nature, will lead us to approach analytically, successively 3 points:

1. The concepts and theoretical foundations of human capital and training
2. The new international standard qualifying training-education systems and the cognitive advantage
3. The efficiency of educational systems in the countries of Maghreb

1. THE CONCEPT OF THE THEORETICAL FOUNDATIONS OF HUMAN CAPITAL AND TRAINING

1.1. The concept of human capital

Human capital is generally defined as *"the set of skills, talents, qualifications, and experience accumulated by an individual, which partly determine their ability to work or produce for himself, or for others"* (Généreux,2000)

Joseph Stiglitz (2007) defined it as "the set of skills and experience that have been accumulated, and has the effect of making the employees more productive" .

Paul Samuelson and William D. Nordhaus (2000) consider for their part, that it is *"the technical stock of knowledge and skills characterizing the labor force of a nation, resulting from an investment in education and lifelong learning."*

As defined by the OECD (Organization for Economic Cooperation and Development), human capital would cover *"all the knowledge, qualifications, skills and individual characteristics that facilitate the creation of personal well-being, social and economic. »* (OCDE, 1998)

"Human capital is an intangible that can advance or support productivity, innovation and employability." (OCDE, 2001)

Human capital, since Theodore W. Schultz (1961,a), has been considered the "most distinctive feature of the economic system," and more work has proven the impact of education on productivity growth empirically according to Robert Barro (2001).

Three channels have been suggested through which education affects a country's productivity.

- First, it increases the collective ability of the workforce to carry out existing tasks more quickly.
- Second, secondary and tertiary education especially facilitate the transfer of knowledge about new information, products, and technologies created by others.

This role of human capital in adapting to change and implementing new technologies was first suggested by Schultz in 1964, and also pioneered by Growth Richard R. Nelson; Edmund S. Phelps in 1966

1.2. The concept of training

There is no consensual definition for the concept of training. Many definitions have been proposed, some larger or smaller than the others.

Here are some definitions

Peter Drucker (1984) defined training as a *"Systematic process of altering the behavior and/or attitude of employees in a direction to achieve organizational goals".*

Paul Candau (*1987*) *"Training is any activity that deliberately attempts to improve or supplement a person's knowledge, skills and attitudes in their work".*

Jean-Marie Peretti (*1998*) *"Training is considered as a set of actions, means, methods, and planned supports by which employees are encouraged to improve their knowledge, their attitudes, their skills necessary both to achieve the objectives of training. the organization and those they are personal, to adapt to their environment and accomplish their current and future tasks"*

Guy Boterf (*1995*) in collaboration with Serge Barzuccetti and Francine Vincent, *"training is one of the means of producing the skills needed to master professional situations and their evolution, it can only be fully effective to the extent that it is combined with other means of producing skills».*

In view of various aspects and definitions on training, it suggests that training helps in changing the behaviour, knowledge, skill and attitude of individual which leads to
motivation in a direction to increase organizational goal achievement and development means the advancement in ones experience, skills and attitudes to become or remain successful leaders in organizations.

Training and development are closely related to each other, training a person for bigger and higher job is development. Training helps employees improving the preference on the current job or prepares them for an intended job. Development covers not only those activities which improve job performance but also those which bring about growth of the personality.

Development also includes imparting specific skills and knowledge. Training includes updating knowledge, skill and attitude in tune with the changing requirements of the organization.

Ultimately, training can then be defined as a set of development actions that provide individuals with all the means necessary for the accumulation of their knowledge and the improvement of their skills and performances to meet the requirements of their positions work and internal and external developments

Training is therefore one of the conditions for improving the quality of work and
improving performance.

Therefore, training is the process that provides employees with the knowledge and the skills required operating within the systems and standards set by management

1.3. The theoretical foundations of human capital and training

The human capital theory is the work of many economists, like the economist Gary Becker who is considered the founder, even if it's the American economist Theodore Schultz who speaks for the first time in 1961 in these terms: *"While it is clear that individuals acquire skills and useful knowledge, it is not so obvious that these skills and knowledge are a form of capital [and] that this capital is for a substantial share the product of a deliberate investment. "*(Schultz, 1961,b)

But it's in 1965, that Gary Becker deepens the concept and popularizes it, winning in 1992 the Nobel Prize in economics for his development of the theory of human capital. (Becker, 1964)

Other authors, and they are not a few, contributed to the setting of the theory of human capital, among them Paul Romer (1986) and especially Robert Lucas (1988).

Theoretical analysis that underlies the concept of human capital brings elements that help understanding the mechanisms of growth and development. Theories of human capital are also the subject of applications (and interpretations) in the field of vocational training and more generally the human resources management.

All this research evaluates the impact of education and training on economic growth and development.

Investment in human capital is at the heart of strategies implemented by many countries to promote economic prosperity, employment and social cohesion.

Individuals, organizations and nations are increasingly aware that a high level of knowledge and skills is essential to their safety and success.

The agreement on these principles has generated new political as well as social expectations, regarding the achievement of economic and social purposes, with a increased investment in human capital. It is now assumed that the level of development of a country is closely linked to the level of education, even to the point the point of dependency. Education is an efficiency factor that raises workers productivity and contributes in this way to increase production. Education is thus associated with other traditional factors (capital and labor), to explain the performance and economic underperformance. Various studies have tried to test and quantify the impact of education on economic growth.

- The overall impact of education on growth. Theodore Schultz by its rate of return method also arrived at the same conclusion that education contributes in large part to US growth.
- The indirect effects of education on economic growth revolve around two key points: firstly, they are manifested by positive externalities that education generates, and also the link between education and other types of human resources, namely: health, nutrition, poverty, fertility.

Human capital can therefore be acquired (particularly through education), maintained and developed (by a maintenance through further training and / or attention to the health of the individual under its health capital). Similarly, it must be able to produce a profit (income received during the provision of skills) (Jarousse,1991). *"Education can be defined as the stock of skills, qualifications, and other productivity-enhancing characteristics embedded in labor",* or in other words the efficiency units of labor embedded in raw labor hours. (Kocoglu, 2009).

Education—as a critical component of a country's human capital—increases the efficiency of each individual worker and helps economies to move up the value chain beyond manual tasks, or simple production processes.

The inclusion of human capital in economic analysis has been an important step forward. The accumulation of human capital is a key factor for economic growth: the dissemination of knowledge allows increasing returns, and generates positive externalities.

Therefore, it is a central concept of the economics of development, economics of education and more broadly the economics of knowledge (knowledge capital).

2. The new international standard for qualifying training – education system and the cognitive advantage of nations

2.1. The new international standards for qualifying training –education systems

New international standards for qualifying education and training systems can be easily received, as noted by the Algerian Professor Mohamed Bahloul (2015) referring to many statistics on education systems.

- It takes more than 50% of Bac +2, 30% of bac +4 and 20% of bac +7 to achieve international competitiveness levels in high value industries. Finland, head of international rankings in this and other areas, has long held its educational system around the objective of obtaining a higher education diploma for 60-70% of students, before slowing down in recent years to mitigate the phenomenon of graduate unemployment in the global crisis.
- The objective of "Bac for all" is at the heart of the reform of the education systems in the world, to reach these levels and *"meet the challenges of the 2nd round of globalization, which will be that of the out costs competitiveness*."
- The average duration of initial studies by generation has constantly increased: in the USA, it went from 8.1 years for the generation born in 1900 to 15.8 years for the generation born in 1975. The attendance rate of secondary education was 18% in 1910, it increased to 90% at the end of the last century.

- Investments and actions of educational development are moving increasingly towards higher education that takes up most of the budget: in Hungary for exemple, the rate of access to higher education increased from 10% in 1970 to over 35% in 2000, while in the US, it went from 48% in 1970 to 80% in 1993 before dropping to 70% in 2000. New Zealand is also characterized by a considerable increase from 18% in 1970 to 70% in 2000, and many other countries around the world.
- The expenses (public and private) in the education sector, were generally in absolute values, the double in developed countries compared to developing countries. The origin of the economic performance of the South Korea (now a member of the OECD), ,and many other emerging countries , is also due to this effort of educational investment.
- The performance of education systems depends not only on the part of GDP spent on them, but mainly allocative and productive efficiency of the resources mobilized. In countries that are characterized by a strong educational performance, and thus economic, the spending per student is higher in the upper education and lower in primary education. It can range from simple to double as is the case of the Nordic countries and the USA.
- The case of India is more indicative in this topic. The country that in less than fifty years has successfully mastered the atom, and automotive manufacturing, participated in the conquest of space, and has universities that formed several Nobel Prize winners, has made education compulsory in June 2010. An original strategy (controversial initially) was form the upper segment of society through an education system that favors investment in the formation of the 'noble part' of the population, the ETMR (engineers, technicians, managers and researchers) and excluding the option of massification of education with all its faults and excesses, the most damaging is perhaps the formation of a critical mass " semi-educated. " So says Professor Mohamed Bahloul "Saves time and resources, and quality of outputs of education guarantee the end of the human capital production line has become the main driver of the rise of India."
- In emerging countries and some developed countries like France, high schools and vocational programs receive special treatment and monopolize an important part of budgets. Generally, the unit cost is high in these sectors, but the quality of teaching is superior and the employability is higher.

2.2. Performance criteria of education systems

Many indicators are used by education economists to evaluate the performance of an education system, apart from the expenses and public choice of training courses to focus on, the contribution of the private sector and weight of education expenditure in the domestic budget. (OECD, 2009)

Five European level benchmarks were set in 2010:
- The average dropout rate should not exceed 10%.
- The total number of graduates in mathematics, science and technology should increase by at least 15%, and the imbalance between men and women in these subjects should be reduced.
- 85% of twenty-two years old should have completed the second cycle of secondary education,
- The number of fifteen years old with difficulties in reading, mathematics and science should be halved,
- The average participation of the adult population in education and training throughout life should increase by at least 12.5%

One can also evoke other criteria such as:

1. The cost of educational investment (time spent in high school or university, compared to the time when the nation renounced in terms of wealth creation by these students, and in terms of revenue and) that poses education as an investment in the present time to prepare the future of the nation and generations.
2. The share of resources and quality of actions oriented towards the development of educational and scientific activities (practical work and case studies, internships, mentoring and coaching,

cross training, mastery of ICT tools, etc. ...) and actors (training of trainers, researchers, improving the educational management ...) rather than the development of teaching and skills training (infrastructure, support staff ... etc.).

3. The quality of the outputs of the education system and their contribution to the medium, and long-term development of the competitiveness of the national economic system.

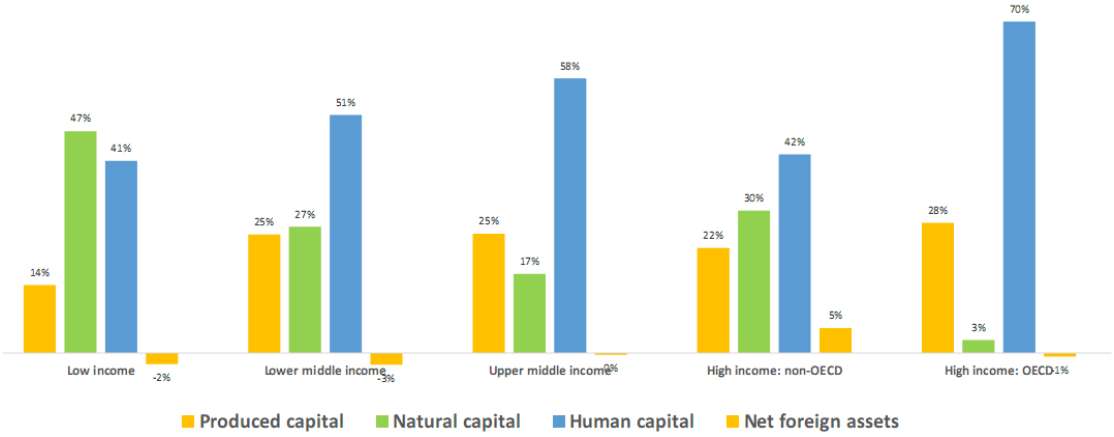
4. The level of development of scientific research and its degree of organic and institutional linkage to the business.

These are, as summarized, the key performance criteria of education systems

2.3. The cognitive advantage of Nations: intangible capital

Mobilizing cognitive benefits of Nations (intellectual capital) holds now bigger importance, compared to what has long been the rule, namely the mobilization of their comparative advantages, mainly the work, owned to the model of cost competitiveness. *"Beside the markets of land, money and labor that structured historical capitalism, the birth and development of a knowledge market and correspondingly skills, will be the new center of a strong institutional reconfigurations and reforms, that await economies and societies in the next twenty years*. "(Bahloul,2015).Today, the level of human capital explains the majority of differences in economic level between countries

Fig.1. The level of human capital in economic level between countries



Source: The Changing Wealth of Nations, World Bank, 2017

As reported in the 2019 edition of the World Development Report, under the title "World Development Report 2019: Work Changes", the skill level is changing rapidly, which presents both opportunities and opportunities and risks. More and more studies show that if they do not develop their human capital, countries can not maintain sustainable economic growth, prepare their workforce for the better-qualified jobs of tomorrow and face competition in the global economy. For countries that do not invest enough in their human capital, the price of inaction is growing.

3. THE EFFICIENCY OF EDUCATIONAL SYSTEMS IN THE MAGHREB COUNTRIES

The Maghreb countries (Algeria, Morocco, Tunisia) have all adopted the same system of organization, as exists in most European countries. Namely, a start of compulsory schooling from age 6, age of entry to primary school, which lasts in theory between five and six years. The second stage of compulsory education is the college (often called secondary education) for a period of three to four years. The end of compulsory education then is 15 or 16 years. Finally,

high school, non-compulsory education lasts three to four years. And finally higher education (university) for those who pass the baccalaureate at the end of the secondary cycle

3.1. The evolution of education systems in the three countries of Maghreb

The evolution of education systems in the three central Maghreb countries is very significant, at least in quantitative terms, as revealed by the indicators in the table below

Table 1. Evolution of the main indicators of the Maghreb education systems between 1999 and 2017

COUNTRIES	ALGERIA				MOROCCO				TUNISIA			
	1999	2007	2011	2017	1999	2007	2011	2017	1999	2007	2011	2017
NERPPE	3	26	72 ,28	-	45	54	55	49,92	14	-	-	44,37*
NERPE	91	95	97,56	97,55	70	89	-	96,80	93	95	99	-
NERSLGP	-	92	95	94,95*	-	78	89	95,40*	-	94	-	-
NERSE	-	58	64	99,65*	-	38	52	63,31	-	71	76	92,27*
NERTE	14	24	31,13*	47,72*	9	11	-	33,76	17	31	37	32,06*

*Indices :
NERPPE: Net enrolment rate (%)in pre-primary education
NERPE: Net enrolment rate (%)in primary education
NERSLGP: Net enrolment rate (%) of *Survival to the last grade of primary (%)*
NERSE: Net enrolment rate (%) in secondary education
NERTE: *Gross graduation ratio. ISCED 6 and 7. First degrees (%) Tertiary education*
** Gross enrolment ratio (%)*
Morocco :*Année 2016
Source: built by us with UNESCO data: (http://stats.uis.unesco.org/unesco/

The absence of homogeneous statistical series should be noted. Concerning some years, there are no figures even in UNESCO tablets. However, we can observe the main features of education systems of the Maghreb revealed statistically (statistics collected mainly from UNESCO) over the last 20 years, as follow:

3.2. Public investment in education in the Maghreb

According to the report commissioned by the OCEMO, as part of the Mediterranean New Chance (MedNC) program (Kocoglu,2014), the expenditure on education represents 5.6% of GDP in Morocco, and Tunisia 6.3%, while the world average is 4.6%. Algeria with a 4.3% of GDP devoted to education, is at a low intermediate level. The results remain broadly the same when the relative weight of spending on education in public spending is considered.

Morocco is however, country that provides the greatest effort for education: a quarter of public spending is allocated to education, 10 points higher than the global average. Tunisia (23%) and Algeria (20%) are also well above the average relative cost ratio globally.

However, this effort did not materialize yet, fully on the results in terms of level of education, especially for Morocco, that still trail behind in terms of education and literacy rate of its population.

3.3. Access to primary, secondary and tertiary education

According to UNESCO data (table above), the evolution was as follows in the primary, secondary and tertiary education levels in the three Maghreb countries

3.3.1. Access to primary and secondary cycle

The gross enrollment rate in primary education is almost 100% and in secondary school, close to, or now exceeds 80%.while he was less than 50% in most countries before 1990,

Note that Morocco has a gross enrollment rate in secondary school far behind. Morocco, despite a major effort since the 1990s, is notably still very behind in this area, with a gross enrollment rate in secondary school below 60%.

Morocco's lagging behind other countries may come from the very low enrollment of girls living in rural areas.

Data on the Net Enrolment Rate (*NERPE*) are very incomplete for these countries, as only the net enrollment rate at primary level is available. The *NERPE* in primary education is around 95% for Algeria and Morocco, and it is close to 100% for Tunisia.

The consequences of this effort in favor of basic education are visible through several indicators:

- First the rate of primary school completion. It is for the 3 countries, or at the global average level of around 90%.
- Then the youth literacy rate (15-24) now exceeds 90%, with the exception of Morocco, which is set back with 80%. The literacy rate of the adult population (15 and over) is higher than 70% and, again, only Morocco is an exception with 56%. In other words, in Morocco 44% of the population of 15 and over is illiterate, making it according to UNESCO, a country where the fight against illiteracy is a major challenge of development and social cohesion.

Also, notable progress regarding the participation of girls in education with a ratio (schoolgirls) / (school boys) close to 95%, still, except for Morocco, which is around 85%.

The evolution of the educational level of the population is measured, among others, through the average number of years of education. The evolution of this indicator for young people (15-24 years), indicates the progress over the last decade, while the comparison by age group shows the long-term evolution of the educational level of the population.

The average number of years of study for youth, 20-24 years, increased by almost a year between 2000 and 2010, in all three countries. The most notable change concerns Tunisia with an increase of 1.8 years, in the average duration of studies.

Even though Morocco, very late in the early 2000s, has filled some of the gap, still lags behind with an average duration of studies of young, lower with over 4 years compared to Tunisia.

3.3.2. Access to tertiary education

The number of students pursuing their studies at a higher level in high school has highly increased since the mid-1990s in the Maghreb countries.

In Tunisia, the number of students has tripled since the mid-1990s, from 100,000 to over 360,000 in 2011. The number of students currently in the 2017/18 academic year is over 320,000, in the public institutions 294,150 and in private institutions 31,177

Access to higher education has expanded in a substantial way, as the gross tertiary enrolment rate is 32% (less than 8% in 1990) and the number of students per 100.000 inhabitants exceeds 3.000 (less than 770 in 1990). (Overview of the Higher Education System, 2017)

In Algeria, the increase was just as important, the number of higher education students increased from 300,000 in 1995, to nearly 1.2 million in 2011. The number of students currently in the 2017/18 academic year is over 1.8 million students

If we relate the numbers of students in higher education to the population, Algeria have between 3000 and 4800 students per 100 000 inhabitants

In Morocco, the number of students in higher education has increased from 284 346 for the university year 2000- 2001, to 801 966 for 2015-2016, being nearly a 300 % increase. *During the*

university year, 2018-2019 there are More than 864,000 students were in training at universities and public schools in Morocco

The rate of higher education enrolment for the 18-23 age range has increased by 20.66 percentage points from 2001 (10.44 %) to 2016 (31.10 %). During this period, the number of graduates has tripled, from 34 450 in 2001 to 102 029 in 2015, being an enrolment rate of around 30 %. Private higher education accounts for 5 % of overall student numbers. There were around 102 000 higher education graduates in 2015..

"While this has not traditionally been a major concern of the academic world, the destination of students is becoming an increasing focus in terms of the kinds and quality of skills acquired." (Overview of the Higher Education System, 2017)

However, despite these advances, the question of the employability of graduates remains the main challenge for higher education systems in the three Maghreb countries. The challenge of quality is the one facing the higher education system today: to ensure the employability of young people leading to the labor market but also to transform the productive profile of the economy.

Higher education systems in Maghreb countries have undergone major transformations over the last twenty years in their structures, staffing and establishment of institutions in the regions and territories. They have also known for several years many problems both cyclical and structural among which we can note the strong centralization of the decision at the ministerial level, a lack of autonomy of institutions, a low rate of senior management at universities, a decline in quality teaching and overcrowding especially in the first cycles.(Ghouati, 2015)

Let's remember that the three countries have adopted the reform of its higher education system by implementing the Bologna Process (the LMD system, Bachelor's, Master's, Doctorate). The first, Morocco since 2003/2004 university year, Algeria in 2004-2005, Tunisia in 2006/2007

3.4. The level of education of the population

The share of the population aged 15 and over, whose level of education does not exceed primary school has dropped sharply over the last two decades in the countries of Maghreb. In Tunisia, for example, three quarters of individuals aged 15 and older had primary education as their highest level of study in 1990, this proportion was 50% in 2010. In other words, whereas in 1990, only a Tunisian adult aged 15 and over in four, had a secondary level of education or higher education, in 2010 they are as numerous as those whose education level is lower than the secondary.owever, although close to the global average (60% of the global population aged 15 and over have a level of education equal to or higher than secondary), they are below that average. In fact, 10-12% of adults aged 15 and over have a higher education level, against 14% for the world average. For comparison, the equivalent rate is 20% in France

Morocco, has a relatively slow evolution compared to other countries: young adults with a higher education level in 2010 represent 15% of all youth aged 20 to 24, which is only 3 points higher than in 1995.

The Maghreb countries, especially Morocco, must, despite their remarkable progress in recent decades, continue their efforts to fully meet their quantitative lacks in education, compared to some countries in Asia and Latin America. Then remains the question of the quality of training, orientation of students, and their employability.

To conclude, notwithstanding certain differences between the three Maghreb countries, a certain convergence of Maghreb school indicators is observed.

However, as highlighted in a report of OCDE on this issue in the Maghreb (OECD, 2009), in practice many children are outside the school system; they either have abandoned before the end, or haven't even entered.

Higher education (post-baccalaureate) experienced major reforms in the 2000s, notably with the gradual implementation of license-master-doctorate system as it are in force in Europe. Finally, the vocational training network, often quite underdeveloped compared to the training offered to the youth in the international level.

3.5. The efficiency of educational systems

As pointed out in the report (G.C.P.R, 2015-2016) *"Education concerns not only the quantity of schooling—the percentage of the population that completed primary, secondary, or higher education—but also, critically, its quality."*
Erik A. Hanushek and Denis D.Kimko (2000), for example, find that it is not merely years of schooling but the quality of schooling (which may be reflected in international examinations) that has a significant relationship with economic growth.
As we have already indicated (2.2 Performance criteria of education systems), to evaluate the effectiveness and quality of an education system, many indicators are used, including the dropout rate, the repetition rate, or the results obtained in the assessment tests of students' knowledge.

3.5.1 Internal efficiency of the education system (The dropout rate in the primary cycle)

The dropout rate in the primary cycle is relatively contained in Maghreb countries. it ranges from 5% in Tunisia and Algeria, and 9% in Morocco, which is below the world average (9%). On the other hand, the repetition rate is relatively high. While middle-income countries on average have a repetition rate of 4% in primary school, it is around 7-8% in Tunisia, and Algeria and more than 10% in Morocco. Repetition rates are even higher in secondary school. They range from 15% to 17% in the three Maghreb countries, which is higher than the average for low-income countries (10%). (Kocoglu,2014)

3.5.2. Assessment (evaluation) of skills and knowledge acquired by students

The evaluation (assessment) of skills and knowledge acquired by students is done through knowledge tests, that may be national, regional or international, as the OECD PISA survey or TIMSS (Trends in International Math and Science Study) of the IEA.
Trends in International Math and Science Study: A survey conducted every year since 1999 by the International Association for the Evaluation of Educational Achievement (IEA), among a sample of students from volunteer countries to assess their level in Mathematics and Science . Pupils are tested in the fourth year of primary school (9/10 years) and in the eighth grade (13/14 years). The scores are established on a scale of 1000 points, with a normalized average of 500 points. The IEA also conducts a PIRLS survey every five years since 2001, on the same model as TIMSS.
The OECD PISA survey covers, in addition to OECD member countries, some partner countries, including Tunisia and Jordan (OECD,2012).
Although international tests are the subject of much criticism, their results provide an acceptable first-level overview of students' level.

3.5.2.1. The ranking in TIMSS

Even if access to education in the Maghreb countries is comparable to global averages, the teaching remains of low quality. Students in the Maghreb countries get results below the world average in international tests, as shown by the trends of the international survey on mathematics, science, and the International program for the achievements of OECD students (OECD ,2007).
The results obtained by the three countries in TIMSS 2007, allow us to compare the performance of their education systems, with those of other countries.
In science, grade 4 students achieved very poor results in Algeria, as well as in Morocco and Tunisia. For Algeria, only 2% of students reach level II, while in OECD countries, 68% for Singapore or 44% for Italy. Only 33% of students reach level IV, while rates of over 90% are reached for OECD countries. (TIMSS 2007)

In mathematics, 4th grade Maghrebian pupils reached levels III and IV, as evidenced by the following percentages: Algeria 14% and 41% (respectively by level III and IV) Morocco (9% and 26%), Tunisia (9% and 28%). (TIMSS 2007)

The poor performance of students reflects the trend of education systems in the Maghreb to favor rote learning, rather than problem solving, and the application of knowledge

3.5.2.2. The ranking in the knowledge economy

The following table allows to assess the situation of the Maghreb countries in the field of knowledge economy

The ranking that can be observed on the table reveals weaknesses common to the Maghreb countries, which have saddled their performance on the four factors of IKE index. The Maghreb countries have an enormous gap in innovation, and that is on all of the indicators composing this factor, especially inappropriate environment for scientific research. They also share the counter-performance in the areas of education and health, higher education and training, and the inefficiency of the labor market. (Akkari, 2013)

The Maghreb countries are also at the bottom of the world rankings, in digital preparation, expressed by the "Digital Readiness" which is composed of indicators: Preparation to ICTs, use of ICTs, technology adoption, regulatory environment, and costs of telecommunications services. This, despite an average increase of nearly 11% achieved in 2013 compared to the score achieved in 2010. The factor in which the weakness of the Maghreb countries is the most worrying, concerns the degree of (un) preparedness for the technology of information and communications (jobs in knowledge-based activities, e-participation, infrastructure and digital content), despite an average increase of nearly 71% in 2013 compared to 2010 score.

We can add to this picture the criteria of the ability to retain skills. The scourge of brain drain has led to consider the skills gains (brain gain) through the elites that come to invest in their country. Keeping them in place, and their return, can be an indicator of the ability to create a favorable environment for "earnings of competence". This capability can also be measured by the ability of an economy to retain its elites in place, Professor Abdelkader Djeflat (2015) explained , which states that "this phenomenon has affected Algeria more than any other Maghreb country". Algeria is among the countries that has suffered most from this phenomenon. The causes are multiple. More seriously still, the flow does not seem to stop, let alone overturn. These are all factors reducing the potential available knowledge for the economy, and are removed from its use.

We can also add, to finish, the evaluation of the education systems of the Maghreb countries by the ranking in the Global human capital and the Global Competitiveness

3.5.3. Ranking in the Global human capital

The Global human capital index, established by the World Economic Forum, captures the capacity of states to fully realize the economic potential of their respective workforce. Based on 51 indicators, the index measures the optimization of the labor force over the long term, notably by assessing levels of skills training and access to employment according to 5 age groups (0-14 years, 15-24 years old, 25-54 years old, 55 - 64 years old, +64 years old)

Several sub-indices are integrated into the analysis:

- The sub-index relating to "abilities" quantifies the level of education according to the generations
- The sub-index relating to "deployment" apprehends the accumulation of skills through work
- The "development" sub-index reflects the efforts undertaken to improve the training of students as well as the population of working age (continuing education)
- The "know-how" sub-index attempts to capture the extent and importance of the use of specialized skills in the workplace

It is calculated on a scale of 0 to 1, the 1 representing the best possible score.
At level 0.5, for example, this means that the future "economic potential" of the population (and the country as a whole) is cut by half. This results, over 50 years, in heavy economic losses, with an annual reduction of 1.4% in GDP growth.
The index ranks each country according to the productivity of the next generation of workers

Table 2. ***Ranking of the Maghreb States by the 2017 human capital index***

Index / Countries	Rank	Global human capital index
Algeria	112	51,51
Morocco	118	49,47
Tunisia	115	50,76

Source: Built by us on the basis of data from Global human capital index 2017, World Economic Forum

In its report entitled "Human Capital Index", published in September 2017, the World Economic Forum ranked Algeria 112th, Morocco 118th and Tunisia 115th out of 130 countries surveyed , achieving a low score of only 51.51% for Algeria, 49.47 for Morocco and 50.76 for Tunisia, far behind the top three in this ranking namely Norway, Finland and Switzerland with scores of 77.12%, 77.07% and 76.48% respectively of their developed human capital.

With such low scores, the Maghreb countries have only developed about half of their human capital

3.5.4. Ranking in the Global Competitiveness Index

The quality of the education system is a key indicator of the future of a nation. It is not a projection over a few days or months, but rather over the long term (more than five years). If we have problems in the different sectors of activity (health, administration, transport, etc.), this would be explained, largely, but not entirely, by the weakness of the education system.

Table 3: The Global Competitiveness Index 2015–2016 Rankings

Indices / Countries	ALGERIA		MOROCCO		TUNISIA	
	V.*	R*	V.	R	V.	R
Global Competitiveness Index						
GCI 2015–2016	4.0	87	4.2	72	3.9	92
GCI 2014–2015 (out of 144)	4.1	79	4.2	72	4.0	87
GCI 2013–2014 (out of 148)	3.8	100	4.1	77	4.1	83
GCI 2012–2013 (out of 144)	3.7	110	4.1	70	n/a	n/a
5th pillar: Higher education and training						
5.01 Secondary education enrollment, gross %*	97.6	46	68.9	104	90.6	70
5.02 Tertiary education enrollment, gross %*	31.5	76	16.2	100	35.2	71
5.03 Quality of the education system	3.3	91	2.8	122	3.3	89
5.04 Quality of math and science education	3.3	105	4.0	74	4.4	53
5.05 Quality of management schools	3.4	117	4.1	72	4.2	69
5.06 Internet access in schools	2.8	128	3.5	110	3.4	112
5.07 Availability of specialized training services	3.2	124	4.0	84	3.5	113
5.08 Extent of staff training	3.3	127	3.4	120	3.6	106

*Value * Rank/140

Source: Built by us on the basis of data from The Global Competitiveness Report 2015–2016, World Economic Forum

As we can see, all the evaluations come together to attest to the mediocrity of the educational systems of the Maghreb countries, which would explain, notwithstanding other factors of course, the poor performances in terms of economic competitiveness.

The lack of sufficiently skilled workers has been an obstacle to growth. (Subrahmanyam,2013).

3.6. Weaknesses and contradictions of Maghreb countries educational systems

Education systems are being challenged and constantly criticized in all Maghreb countries. In overall and according to several studies (Djeflat, 2015), the current state in this area in each country can highlight the main common weaknesses with some minor differences, of the development systems of human capital:

-Very Strong predominance of the school population stress management requirements, at the expense of the formation of economic, technical and scientific elites.

-Very Strong orientation towards social sciences (80%), at the expense of training in engineering sciences and technologies.

-Very Strong dominance of the public sector, that favors the administrative regulation and the development of training capacities, instead of a competition regulation and the development of training activities.

Conventional training-programs not suited to business needs, with a clear dislocation between supply and demand of formative products and services.

- Quality Products of unsatisfactory training, despite the often-considerable investment on the part of public authorities.

- Market of emerging training and skills that are structured with difficulty, and can not make the most of its great potential, and transform the latent resources of mobilized human assets in high value-added sectors.

3.7. Reconsideration on a new basis of education policy in the Maghreb countries

We can consider, as a result of many studies, some observations that are able to guide for efficient reforms of educational systems in the countries of Maghreb (Gauthier and Tagne,2014)

1. Concerning the performance of educational systems:

- A first observation. The increase in expenditure in the education sector does not necessarily lead to an improvement in the overall performance of the system. Indeed, it should be noted that Singapore, one of the countries with the highest scores in international tests, ranks 27th out of 30 OECD countries in terms of per capita expenditure on primary education, relative to GDP per capita. In contrast, between 1970 and 2005, public spending on education in the United States increased 73% in constant dollars, but student performance remained virtually unchanged.

- A second observation. *"All available data converge indicate that the quality of teachers is the primary factor explaining the differences in levels between students."* (Barber and Mourshed,2007).

- A third observation, many studies show that students receiving teaching from high achievers, will progress on average three times faster than those entrusted to underperforming teachers.

All of the studies reviewed indicate that students in their first years of schooling with underperforming teachers, have very little chance of catching up later.

2. Concerning criterion for success of any reform:

Barber and Mourshed (2007) report that, despite their significant differences, successful education systems all focus on improving field education. More specifically, they highlight three essential elements: first, the best school systems encourage the most competent people to become teachers; then they offer them quality training. It therefore seems that the difference between the success and the failure of a reform, depends on these three factors related to the one who is the front-line actor: the teacher

It is therefore necessary to provide teachers with the professional skills needed to provide quality education, and this requires professional development, in other words, continuous teacher training.

3. Concerning improvement strategies

The results of many studies show that all systems can progress. The emphasis is on a common core of fundamentals, whatever the level of performance of the countries: Initial teacher training; student assessment, the use of performance indicators to measure progress, both at the student and institutional levels, and allocate resources accordingly; adaptation of curricula to the needs of a country; teacher motivation through a rewarding remuneration system; the development of teaching skills of teachers and management skills of school heads, and finally the clarity and sustainability of educational policy (Mourshed et al., 2010) .

This is some synthetic indications of analysis and evaluation of our national education systems, supported by principles of equity, and reform that should be translated into programmatic approach. Each country chooses the path of development of its education system according to its means, its priorities, and its own institutional path.

CONCLUSION

To conclude this contribution, we can say that if human capital is now at the heart of the economic performance, a serious problem of accumulation and valorization of this capital in all Maghreb countries arises, given the economic situation and the weight that represents these countries on the international economic scene.

If the education system determines the maturity of a country, and its integration into the global knowledge economy, then major reforms are necessary, and must strive for quality improvements by revising the programs and teaching methods, ICT training and other actions, which we have briefly mentioned. Without omitting that the acquisition of knowledge related to the development of social capital and sociability in the company, and in the spaces of work, is undoubtedly one of the major challenges facing the reform of institutions of Maghreb economies. Indeed, as further notes Professor Mohamed Bahloul (2015)"*The success of the emerging countries that have won the 1st round of globalization (as well as the Fordist capitalism that has contributed to the emergence of the US as an economic power of the twentieth century) is the result of the mobilization of a highly skilled workforce."*

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