

THE ALGERIAN EDUCATION SYSTEM AND THE CONTEXTUAL ECONOMIC FACTORS: A BEREDAY MODEL APPROACH

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Abstract:

This study aims to analyze the Algerian education system in his contextual economic factors .particularly relevant due to the ongoing global economic crisis wich is caused by a confluence of geopolitical, climatic, and health-related changes, our schools and universities confront substantial challenges in bridging the gap between the demands of economic development and the quality of human capital infused into the labor market, our analytical approach is grounded in the Bereday model of comparative education which serves as a pivotal framework for interpreting the accomplishments and shortcomings of the educational scene from an economic perspective. Given that our economy remains extractive “economy based on oil rent” and the contribution of scientific research to its GrossDomestic Product is notably low, our study uncovers significant efforts by decision-makers to align contemporary sectoral strategies and reformative measures in education with innovative engagement in economic institutions

keywords:Bereday model, Algerian education system, contextual economic factors

ملخص:

تسعى هذه الدراسة إلى تحليل مختلف القوى والاقتصادية التي تحيط بالنظام التعليمي الجزائري في سبيل تحقيق التنمية، لاسيما وأننا نعيش أزمة اقتصادية عالمية بسبب جملة التغيرات الجيوسياسية والمناخية وحتى الصحية، مما جعل مدارسنا وجامعاتنا أمام تحديات كبيرة لسد الفجوة القائمة بين متطلبات التنمية الاقتصادية ونوعية رأس المال البشري الذي يضخ في سوق العمل. ومنهجنا في هذا التحليل هو نموذج بيريداي للتربية المقارنة الذي يعد مفتاحا هاما لتفسير إنجازات وإخفاقات المشهد التربوي من الجانب الاقتصادي، حيث لا يزال اقتصادنا اقتصاد ريعي ومساهمة البحث العلمي في ناتجه الداخلي الخام منخفضة جدا. كما أسفرت نتائج هذا التحليل عن وجود محاولات جادة لصناع القرار لتتناغم الاتجاهات الحديثة للاستراتيجيات القطاعية والإجراءات الإصلاحية في التعليم وهذا بتبني التعليم لأسلوب التوغل في انشغالات المؤسسات الاقتصادية بصيغ تعاقدية وتوطينات تكنولوجية تتوخى الجانب الابتكاري وزيادة الأعمال كلمات مفتاحية نموذج بيريداي ، النظام التعليمي الجزائري : سياق القوى الاقتصادية للتعليم في الجزائر

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1. Introduction

Human capital stands as the foremost economic asset within any society, assuming multifaceted roles encompassing consumption, production, and investment. Thus, it constitutes the foundation of a country's economic progress. Therefore, constructing human capital is imperative, particularly in the context of two pivotal elements: the global societal transformation which now embraces an economically oriented developmental approach. (Cougoureux, & Touil, 2013). and the scientific revolution that generates increasing and sophisticated demands from individuals educated at high or medium levels to effectively engage with modern techniques and methodologies (Yacine, & Ghaida 2016). Algeria is not exempt from these shifts in the labor market's requirements. The labor market now anticipates changes in the products of the education system and a trained workforce tailored to the required competencies. This relies on education, which constitutes a nation's wealth, encompassing all valuable skills and capacities acquired by individuals who contribute to their economic value. Education is considered one of the most valuable types of investment (Dahane, 2010).

Algeria's investment in education is evident through the principles of accessibility, compulsion, and the elevation of teacher salaries. Such practices are rooted in its economic perception of education, categorizing it as a consumable commodity at the individual level and an investment commodity at the institutional level (Dahane, 2010).

Furthermore, it follows a productive trajectory that classifies investment based on expenditure type, economic categorization encompassing managerial and provisioning expenses, and functional classification based on the nature of activities and system classification (formal or informal, in-person or remote, or based on educational level) (VAIZEY, 1964). Consequently, the education system is a significant factor in forming human capital, which aligns hand in hand with physical capital in the trajectory of development. The interrelation between the educational system, the economy, is substantial, with the economic structure being one of its fundamental components, generating both structural and functional interplays. The sub-economic system relies on furnishing necessary resources for its funding, while the wage scale in the labor market is determined according to the scientific qualifications conferred by this education .(Dahane, 2010).

However, concerning this matter, it has been revealed that government spending on education in Algeria has not led to economic growth due to the inadequacy of the qualitative aspect of academic achievements. (Dinawi, Zarwat, & Talha , 2021).

Despite the state's ongoing efforts to promote its economy, setbacks persist, as highlighted in a study by Zeroual Nassira, a sociology professor, in her article titled "Social Values as an Impediment to the Algerian Industrial Development Project".

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Following the nationalization of hydrocarbons, the establishment of the public industrial sector, and the restructuring of institutions, which resulted in indebtedness leading to the crisis of the 1990s, Algeria underwent profound shocks due to purely economic factors. However, the situation improved at the start of the new millennium, aided by rising oil prices that facilitated partial growth. Yet, the structural fragility of vital non-hydrocarbon sectors, including agriculture, industry, and tourism - key drivers of a major developmental project - persists. Even until a recent date, its economy remains susceptible to economic fluctuations and fuel prices, resulting in growth deceleration and occasional setbacks (The National Economic, Social, and Environmental Council, 2022). This is corroborated by economic status reports revealing an existing gap between education and the economic aspect. Both public and private institutions inadequately prepare school graduates, continually injecting the market with more unemployed workers who place a burden on public finances, receiving monthly stipends to preserve their dignity. These individuals wait in line for employment opportunities, who are denied due to lacking the required competencies for the profession. This implies that we face reformative educational policies grounded in a social approach, rather than being meticulously scientific. According to data presented by the Ministry of Labor, the demand for available jobs increased by 47% in 2022 compared to 2021, primarily driven by a sharp rise in the number of new applicants seeking unemployment benefits (The National Economic, Social, and Environmental Council, 2022).

These numbers are likely to further escalate, especially when considering that 85% of anticipated professions by 2030 are currently unidentified (Ministry for Higher Education and Scientific Research 2021).

To confront this challenge, education stands as an influential element in shaping human capital, standing alongside physical capital in the trajectory of development. Research studies have consistently demonstrated a long-term equilibrium relationship between education expenditure and economic growth, with an increase in human capital directly boosting production. (Dinawi, Zarwat, & Talha , 2021).

Additionally, the theory of filtering suggests that an individual's educational level and obtained qualifications act as revealing factors that dictate individuals' positioning within the labor market (Dahane, 2010) , given their objective advantages compared to other indicators. Another theory posits that education has the potential to fragment the labor market into primary markets, particularly secondary labor markets. Bourdieu, for instance, suggests that education works to reproduce dominant classes that can acquire knowledge outside of schools, thereby creating a form of inequality in employment opportunities. On the other hand, the researcher specialized in economics of education, Eicher, .(**EICHER, 1960**) argues that an increase in

education expenditures correlates with real national income growth, resulting in direct monetary returns through skill development and knowledge acquisition (Dinawi, Zarwat, & Talha , 2021),enhancing individuals' performance in work and driving economic growth. Additionally, education fosters indirect returns, such as individual innovation in production methods. Even the disparities in the growth rates of the United States' income can be attributed to educational spending . (Mouhouni, 2015) Based on these facts, Algeria is now compelled to assess the economic outcomes of education through researching its productive effects, aligning with the contemporary economic perspective of education embraced by the Bereday model of comparative education. This approach is the foundation of our study, as Bereday analyzed the relationship between education and economic forces, as evident in his study on education deficiencies in Colombia during a period characterized by army and church consensus. For this group, their economic interest lies not in improving the nation's purchasing power, but in maintaining low wages through maintaining low educational standards. In line with this context, we aim to answer the following question: How does the Algerian educational system align with the array of economic forces surrounding it in pursuit of development?

2. Definition of the Bereday Model:

The diversity of educational practices has given rise to various regional disparities in educational thinking, prompting greater efforts to uncover the quality of schools. This has led to the adoption of clear curriculum-based benchmarks for evaluating educational systems. Among these efforts, the comparative education scholar George Bereday played a pivotal role. He was one of the pioneers in educational thought who contributed to the emergence of contemporary, multidisciplinary education, surpassing the historical approach to recounting educational facts. Through his model, Bereday sought to draw from educational experiences and achievements of different countries, aiming to inform the development of modern education. His work extended beyond this scope, delving into areas tainted by educational failures that were often misjudged by their planners. The purpose behind this was to caution against replicating these shortcomings during borrowing processes for reform.

The Bereday model stands out for its perspective on foreign schools, not just from a national context but also from the perspective of other educational systems. It places the studied education system within a space where it interacts with different cultures, employing a contemplative approach to educational aspects within a broader set of social and cultural forces. This approach seeks to surpass the comprehensive analysis of educational systems that is fraught with many shortcomings and defects, which

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have often laid the groundwork for final borrowing operations in various reform paths during the predictive stage of comparative education. This approach shifts towards another more specialized method, which we adopted in this study—regional analysis. This method involves gathering data related to the educational system while applying sociological, economic, philosophical, and other methods. This type of research is essential in the context of comparative studies. Through studying the educational system of a specific region, its achievements and stumbles can be measured. It serves as a means of monitoring, relying on the analysis of existing disparities behind the common reasons for educational problems and issues, based on dealing with various political, cultural, economic, and social forces. This involves cataloging a set of observations in the analysis of each factor, and in case of similarities within a knowledge field, a law can be formulated. Its analysis approach is characterized by being free from any cultural bias, respecting four fundamental steps (Bereday, 1964), which we present as follows:

2.1 Description:

This phase allows for describing the educational system by relying on various printed sources, field visits, intensive readings, and familiarity with current and historical bibliographic materials, including primary sources such as committee reports and reports from various ministries and entities. Secondary sources such as articles, abstracts, and books are also considered, with due attention paid to a reasonable number of inspirational materials. This even encompasses those sources that do not directly concern education, to a certain extent.

2.2 - Interpretation:

In this phase, Bereday adopted multiple aspects in interpreting the educational panorama of countries. He interpreted it from several angles, including:

- **Historical and Cultural Interpretation:**

Bereday interpreted educational information historically, providing a cumulative background of pivotal events within the realm of global education. This background led to outcomes that could alter the educational system. As an illustrative example, Bereday delved into the developments in England, where religious figures triumphed in shaping educational curricula. This influence translated into the compulsory inclusion of religious teachings in all English schools due to the sway these figures had over educators. Culturally, he emphasized prevailing values that characterized public education. For example, in France, curriculum designers, inheriting values from the French Revolution, prioritized analytical thinking in their educational content. They emphasized the cultivation of a culture that blended wisdom and elegance, which permeated

various facets of French life. This was accompanied by an administrative mindset that maintained conservatism. In contrast, English schools were dedicated to instilling internal and moral coherence within society. These schools accentuated the social dominance of the teaching profession. Similarly, Soviet schools established a foundation based on values of obedience, loyalty, and community service to satisfy their growing military needs. In the American educational context, the emphasis is placed on instilling dynamic qualities in the students' personalities.

▪ **Political Interpretation:**

In this context, Bereday delved into the political dimension that could alter the course of events within the educational system. As an example of this type of interpretation, Bereday conducted a comparative study to examine the curricula in France. This study explored the role of centralized government direction in providing funding for schools and enhancing their efficiency. This reinforced the control of central authorities in a manner that extended beyond the influence of local actors on educational matters. Consequently, a conflict emerged between proponents of central control and local control. Furthermore, the U.S. Senate managed to tarnish the reputation of political opponents and gain a certain level of influence during an election campaign, employing tactics of competitive engagement and scientific rivalry vis-à-vis the Soviet Union.

▪ **Social Interpretation:**

In this type of interpretation, Bereday highlighted the interactions existing between schools and society. For instance, he revealed the dominance of the general populace and the people in the United States in shaping educational content. In contrast, the opposite occurred in countries such as France, the Soviet Union, and England. In these countries, the minority, including parents' councils and pressure groups, was involved in curriculum content creation, and these actors were predominantly non-academic. This situation gave rise to a significant ideological disparity between the prevailing intellectual hegemony of the elite minority in European schools and struggle against minority thought monopolization in the American model. This resulted in the emergence of various compromises between the competing tendencies regarding curriculum content. These compromises encompassed perspectives from parent councils, political groups, religious and non-religious communities, as well as considerations for different age groups.

▪ **Interpreting Education from an Economic Perspective:**

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In France, education funding was provided by local administration and the entirety of municipalities. This arrangement exploited the opportunity to almost entirely exclude the public from designing the curricula. Similarly, Russia resorted to intensifying the training of more scholars to counter growing American capitalism. The necessity to keep pace with the increasing shift from unskilled to skilled labor posed significant challenges in the future of American education. This challenge was met with reforms in Soviet education during the late 1950s, when educational units such as home economics were integrated, and industrial workshops were introduced into school classrooms to serve economic revival. Moreover, priority was granted to university education for 30% of workers with at least two years of work experience and those who completed military service.

2.3 - Proximity:

This phase involves the researcher delving into the distinctive features characterizing education in a given country. For instance, the educational policy in the Soviet Union aimed to bridge the ideological gap between mature communists and the rest of the citizens. Conversely, the American educational system emphasizes instilling the principle of positive freedom to work to the utmost and achieve optimal outcomes for all while offering the best to everyone.

2.4 - Comparison:

During this stage, the researcher aims to concurrently address diverse educational information collected from different countries. This involves structuring the unconventional course of curricula from a comparative perspective while invoking and referencing evidence that justifies the various educational landscapes accurately for different educational systems. This approach seeks to impart holistic thinking to functional analysis, surpassing superficial comparative methodologies.

3. Definition of the Algerian Education System:

The Algerian education system is anchored in three main sectors, which are outlined as follows:

Firstly, the National Education Sector oversees the provision of formal education for the population, ranging from primary to secondary stages. It is supervised by various consultative bodies responsible for analyzing and studying all matters related to the education system and its implementation, while adhering to internationally accepted criteria (Baghdad, Ameyoud, Bourouina, Boussena, Chenennou, Guittani, Tiliouine, Tounsi, & Zahi. 2012). These criteria encompass diverse areas, including:

- Access to educational programs for early childhood alertness and special education.
- Schooling, related to compulsory education.

- Admission conditions, involving entities and institutions responsible for addressing social demands in the field of education and ensuring educational modernization.
- Pedagogical framework, pertaining to teacher qualification and certification.
- Effectiveness of the educational path, concerning the system's performance.
- School achievements of students for assessing the extent of control over the knowledge and competencies outlined in the programs.
- Academic support, facilitated through supportive measures executed via social support.
- Gender, aiming to achieve gender equality.
- Expenditures on the education sector, to assess the priority given to the education sector by public authorities and to determine their distribution for each educational level.

Secondly, the Higher Education Sector constitutes a significant part of the Algerian education system. The country has placed significant reliance on this sector since the early years of its establishment, having established the first dedicated ministry for higher education. Algeria's approach aligns with the requirements of its economic and social development model. It devises an array of training programs that serve development needs and enable a larger segment of youth to access this form of education, with the aim of providing the national economy with a greater number of competencies. This commitment is enshrined in the guiding law for higher education, Law No. 99-05, dated April 4, 1999, particularly in Article 3. However, today, this sector faces significant challenges, with one of the primary challenges being the enhancement of workforce qualifications and the improvement of graduate employability.

Given these challenges, this system combines traditional in-person education with distance learning to address the increasing demand. This rationale justifies the extensive organizational and institutional structure that spans a network of 111 universities. It encompasses a structured curriculum based on three levels: bachelor's, master's, and doctoral degrees, aligned with the human resource needs of the surrounding economy. This approach focuses on creating interfaces between the academic world and the professional realm, facilitating field internships through university liaison offices and connecting academia with the professional sector. A monitoring observatory for professional integration of graduates is also established. Some universities have even obtained the legal framework of a "Limited Liability Company" in specific fields. These include:

The University of Science and Technology Houari Boumediene, specializing in technology, the University of Mostaganem, focusing on agriculture, the University of

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Tlemcen, excelling in expertise, scientific and economic consulting, and the University of M'Sila, specializing in training and strategic research. Additionally, 1,564 research laboratories operate according to national and international scientific research programs with economic and social impacts. Among these, 23 laboratories predominantly function in engineering, while others specialize in the natural sciences and chemistry. These laboratories contribute tangible research outcomes to the national market. Furthermore, the research organizational structure includes 30 research centers, including the National Institute of Household Electrical Industries, Complex Benhamadi, Algerian Cement Industry Complex, National Establishment of Electronic Industries, Complex SAIDAL, National Establishment for Industrial Vehicles, SINAL Establishment, Research and Development Center of Sonatrach, Cevital Complex, Hasnaoui Group of Institutions, Chemical Industries Complex, Research and Development Center in Electricity and Gas. These research centers also operate under the legal framework of a "Limited Liability Company." Notable among these are the Renewable Energy Development Center, the Research Center in Energy Carrier Technologies, the Research Center in Physical and Chemical Analysis, and the Research Center in Industrial Technology.

Lastly, among the research centers under the economic sector, there are: the National Institute of Forestry Research, the Algerian National Institute of Agricultural Research, the National Center for Applied Research in Earthquake Resistance Engineering, the National Center for Integrated Construction Studies and Research, the Research Center in Astronomy, Astrophysics, and Mathematical Physics, and the National Center for Research and Development in Maritime Fisheries and Aquaculture.

The Structural Organization of the Higher Education Sector in Algeria supports a network of 20 technological platforms that provide technical assistance and guidance to economic institutions during their technological development. These platforms aid in the development of models, experimental production, simulation and modeling tools, and the manufacturing of technological components. Additionally, they contribute to applied training for students, enhancing their skills and renewing their knowledge. These technological platforms include Laser and Plasma Technology Platform, Robotics Platform, Electronic Modeling Workshop, Microelectronics Technology Reactor Project, Corrosion and Surface Treatment Technology Platform, Mechatronics Platform in Bou Ismail-Tipaza, Genomics Platform, and Proteomics Platform. These platforms also support software development aimed at assisting research and development activities.

The incubators, totaling seven nationwide, serve as reception and support structures for innovative projects directly related to research. They assist project owners in

realizing their ideas, validating their feasibility, and offer support in training, consultation, and financing until the establishment of the innovative institution. These incubators are overseen by a unique national incubator that concentrates on skills and support functions. Its distinct focus aims to produce amplified effects, fostering simulations and highly favorable exchanges among the incubatees and their universities. This approach serves as a single point of contact for other operators within the general research value chain.

The entrepreneurship centers numbered 79 centers established within university institutions. These centers focus on promoting and developing entrepreneurial thinking and culture within the university environment. They provide support, consultation, and guidance to students involved in project execution, organizing training workshops in student training, establishment creation, business plan development, control over various preparation techniques, and exposure to the labor market.

The innovation and technological transfer centers are established within the framework of the National System for Scientific Research, Technological Development, and Innovation adopted in 1998. These centers serve as scientific institutions that bring together professionals and researchers in fields that provide scientific expertise to institutions lacking the means to establish research and development centers. They facilitate the transfer of technology between research structures and the professional sector, promoting innovative institutions and utilizing patents. These centers are distributed among three universities: Batna University, Bejaia University, and Tlemcen University, as well as the National Agency for Research Results Valuation in Sidi Abdallah.

Furthermore, six experimental stations are distributed as follows: a wastewater treatment experimental station with planted filters in Biskra, a research station monitoring desertification in Boughezoul, an experimental farm and botanical garden in Setif, an agricultural experimental station in Constantine, a water experimental station in Mostaganem, a climate change experimental station in Boumerdes, and a fisheries resource experimental station in El Tarf.

Complementing this, a collection of scientific platforms is present, including the Innovation Platform, research.dz Platform, Algerian Scientific Potential Platform, Algerian Renewable Energy Portal, Research Laboratories Directory, Algerian Scientific Platform, Heavy Scientific Equipment Management Platform, Project Management and Monitoring Platform for Development, Preparation, Provisioning, and Exploration Projects, High-Performance Computing or Intensive Computing Platform, and the National Thesis Notification Portal.

This university network is supported by a core institution, the General Directorate for Scientific Research and Technological Development, which serves as the nerve

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center of scientific research in Algeria. It oversees the national policy for scientific research, establishes research entities, manages funding, organization, evaluation, and results valorization, all while adopting a policy of international exchange and collaboration. It's important to note that there are 750 scientific research projects in Algeria, with 198 of them having economic and social dimensions. Industrial technology, materials, agriculture, fisheries, aquaculture, and food security dominate the results of research and development, with biotechnology and urban planning research lagging behind.

Thirdly, the vocational training sector, responsible for instructing students who have not been fortunate enough to undergo compulsory education, plays a pivotal role. This sector operates under the supervision of a collection of pedagogical structures and training centers. Positioned between the scholastic and university systems on one side, and the realm of labor on the other, vocational training, as a regulatory entity, is tasked with simultaneously achieving two fundamental missions.

The first mission entails responding to societal demand, primarily originating from graduates of the educational system, especially those who have dropped out of formal schooling. This response is aimed at accommodating this segment's requirements. Simultaneously, the second mission involves addressing the demand for qualified labor articulated by production and industrial enterprises within the economic sector. This addresses the need for consistent and efficient production by providing diverse fundamental and theoretical knowledge, as well as appropriate technological insights required by companies. This is achieved by enhancing contemplative, research, and analytical competencies through a comprehensive range of training programs. These programs primarily encompass in-person "residential" training, remote vocational training, evening classes, continuous training, vocational training for youth who do not meet the required educational standards, and apprenticeship. They further extend to vocational training in traditional crafts and private sector vocational training.

These forms of training encompass distinct levels of proficiency, classified as follows:

- The first level culminates in a specialized worker graduating with a vocational training specialization certificate.
- The second level produces a qualified worker or assistant who earns a vocational competence certificate.
- The third level leads to the graduation of a highly skilled worker or assistant, awarded a vocational skill certificate.
- The fourth level results in a technician earning a technician certificate.
- The fifth level produces a senior technician who receives a senior technician certificate.

4.The Algerian Educational System in the Context of Surrounding Economic Forces

The most critical issue facing the Algerian educational system, with negative repercussions on its economy, is the brain drain. For instance, 32% of French doctors hold Algerian citizenship (**El Hachemie ,2023**). Furthermore, the contribution of scientific research to the gross domestic product (GDP) remains at a mere 1%, despite the significant attention allocated to higher education. The budget allocated to higher education has risen from 2.43% in 1971 to 6.97% in 2021. To address these challenges, the country is currently striving to implement an economic revitalization model based on the knowledge economy, innovation, and the intensification of non-petroleum exports. The goal is to elevate the industrial sector's contribution to the national income to 10%)Speech by the President of the Republic(2021 ‘, along with venturing into the realm of the film industry. All of these efforts are aimed at moving away from an economy heavily reliant on petroleum rent, and towards harnessing the nation's substantial potential.

One notable aspect is the diversification of natural resources and the cost-effectiveness of services . (**Tebboune, 2023**)

The country boasts an extensive scientific infrastructure with technological hubs, centers of excellence, and specialized schools in knowledge economy. This has led the government to adopt an approach that positions universities as catalysts¹ for driving the national economy (**Tebboune, 2023**) , promoting the establishment of startup institutions and fostering entrepreneurial centers within each university. This dual approach aims to facilitate students' integration into the job market while also establishing a mechanism to cultivate students' abilities to transform their ideas into viable projects².

The Algerian university possesses several mechanisms to guide the path of development, notably highlighted by its affiliation with the African Educational Accreditation Agency (**Tebboune, 2020**)

¹ The university operates as a vertical sector with connections to all other sectors across various domains.

²Emerging startups are awarded a certificate that enables them to undergo intensive training in their field of specialization or in other fields related to business development. Additionally, Algerian students, in this context, are demanding the completion of a graduation thesis with content that mirrors the business model of an emerging enterprise. This allows for the creation of interactions across various disciplines, aiming to expedite the establishment of business incubators. Currently, these incubators are primarily focused on technical specializations, yet future projects are anticipated to encompass a broader range of disciplines within the humanities.

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This agency serves as a continental gateway, enabling youth to access educational opportunities with global standards in any African country, thus providing them with regional employability prospects. Additionally, institutions specializing in mathematics, artificial intelligence, and renewable energies have emerged, garnering student interest and reflecting a positive trend. Furthermore, Algerian authorities are compelling economic institutions to engage in the knowledge economy (**Tebboune, 2021**). This contributes to strengthening higher education. Moreover, the dedication of an entire ministry to establish a knowledge-based economy across sectors, overseeing emerging institutions and creating accelerators for them, further underscores the commitment to these efforts. Amidst these diverse tools at the university's disposal to contribute to economic development, technology transfer and localization remain pivotal. This justifies the sector's earnest endeavors, especially in expanding high-speed internet access, revitalizing the role of overseas scientific expertise through engagement in digital sovereignty efforts, and promoting scientific research in agricultural development, entrepreneurship, and digital transformation.

After presenting the main educational issues with an economic dimension and addressing the significant educational potentials and measures taken by the sector to enhance the contributions to the national economy, a brief overview is provided of the key interactions between the university and its economic environment. In this context, the Higher School of Business plays a pivotal role in developing and retraining executive managers and company employees. These educational outcomes will subsequently be required to maintain their positioning in a highly competitive market. However, achieving this goal necessitates the adoption of a flexible research policy within the higher education sector, one that enables active engagement with the concerns of economic institutions. This engagement is facilitated through contractual methods, specifically the "win-win" agreement and the public-private partnership, both of which demand careful crafting of their provisions. Thus, various forms and foundations of these partnerships have emerged. (**Kerai, & Djenane 2020**).

The first foundation takes the form of contracts. Some are highly formal and rigorous, such as research contracts, study contracts, and experience contracts. Others assume a less formal and binding format, as observed in internship agreements and other agreements that do not require financial flows. Noteworthy here are the essential determinants of these partnerships, including the innovative nature of efforts by researchers and the technological intensity of the contracted institution. (**Kerai, & Djenane 2020**).

The second pillar is represented by emerging institutions, which serve as a bridge between the university and its economic environment. However, the absence of such

bridging can result in two significant consequences. First, the professional maturation phase of recent graduates is prolonged due to the mismatch between their training and the positions they occupy. Second, companies continue to abstain from hiring these graduates (**Kerai, & Djenane 2020**). To prevent these outcomes, relevant authorities have implemented a range of measures, including granting autonomy to universities that require further democratization, removing bureaucratic barriers, particularly regarding financial oversight and contract negotiations, which are progressing sluggishly in the face of rapid economic changes. These changes are compounded by geopolitical threats posed by regional conflicts such as those in Sudan and Ukraine, which exacerbate food and financial crises that cannot be delayed. The challenge is further intensified by climate variability. All these factors have compelled experts to adapt education to the economic environment. (**Tebboune, 2021**)

This adaptation involves enhancing the training of legal experts, promoting education in scientific and technical subjects, expanding English language learning, and embracing digital transformation. The higher education sector is at the forefront of enrolling students in e-learning platforms, which now faces the additional challenge of remote education.

Indeed, the Algerian economy is currently seeking to rely on micro-projects instead of solely focusing on costly manufacturing, which requires massive infrastructure. These projects are driven by emerging institutions guided by Ministerial Decision 12-75, entailing tax exemptions and a financial fund, with government support for domestic production. In this regard, Silicon Valley Algeria has been established on the plateau of Constantine³. However, these efforts are still in their early stages and face numerous obstacles and challenges that require a clear vision from all parties to avoid premature failure. Success conditions encompass a well-defined strategy, with respect to research and development, and an assessment of the university's capacity to comprehend and execute the research project within the required deadlines. In return, the university assesses the company's ability to exchange information, support research efforts, and capitalize on the outcomes at the end of the process (Mansour, 2019). This also necessitates effective resource management and a clear vision⁴, alongside possessing qualifications and technical skills. Additionally, careful consideration of the forms of collaboration between Algerian companies and universities is vital (Mansour, 2019) due to the weak commercial relationship between

³ Comprising more than 400 spaces for the localization of innovative businesses.

⁴ This entails the ability to measure performance, excel in planning, and possess a keen understanding of effective market positioning.

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the university and companies, especially concerning intellectual property rights (Kerai, & Djenane 2020).

In addition to the range of measures adopted to strengthen the relationship between education and the economy, the reinforcement of research in the domains of energy, food security, and healthcare has been introduced. In this context, research institutions are intensifying their collaboration with the industry to secure additional financial resources at a time when research funding is scarce. Consequently, the partnership between research, industry, and technological innovation gains central importance for researchers interested in innovation. Additionally, mechanisms for quality training have been instituted through the adoption of preparatory years before specialization. Furthermore, an approach for integrating individuals with special needs into the growth process has been embraced. This includes allocating 1% of recruitment competitions for this category, establishing a specialized school for deaf-mute teachers, and investing in school sports. The focus extends to the development of shipbuilding, fishing, targeted energy sectors, and pharmaceutical industry. Universities have also been engaged in creating laboratories to combat cheating)Republic(2020 .

A significant stride involves the establishment of a National Council for Scientific and Technological Research as the primary entity working to bridge the gap between economic considerations and scientific research. This council comprises 45 members, including six directors from key economic institutions actively involved in research and development. Six executive directors from the social and economic sectors, chosen for their competencies and roles in research and development, are also part of this entity. The formation of this council has been necessitated by the challenges faced by the Algerian economy, which cannot remain isolated from the global financial and business repercussions. It operates in a context characterized by the internationalization and globalization of economies (Kerai, & Djenane 2020). The university finds itself compelled to shift its focus away from merely enrolling students quantitatively and towards graduating entrepreneurs who provide employment opportunities. Thus, the principle of entrepreneurship is now embedded in its academic requirements. Concluding academic years no longer consist solely of awarding certificates; they encompass a deeper engagement. An overarching agreement was established between the Ministry of Education and Vocational Training and the Italian consortium "Stellanti.(Bentaher ..2023). To further reinforce this relationship, executive managers oversee internship reports to ensure the inclusion of these companies' concerns in the topics studied by students. Moreover, the involvement of business figures as part of the teaching staff across various academic and professional institutions has been pursued. Their collaboration with

university professors contributes to curriculum development and the definition of practical training outlines.

Despite the limited instances of bridging the Algerian university with the economy, the commendable attempts made warrant encouragement. Among the noteworthy endeavors, we highlight the following key examples:

1. An agreement between the University of Sidi Bel Abbès and the ENIE Consortium in the field of solar panel production;
2. The elevation of 30 research workshops to distinguished laboratories⁵;
3. An agreement between the SEVITAL Complex and the thematic agency for scientific and technological research⁶;
4. The training of the first cohort of Sonatrach executives in the anti-corruption and anti-bribery management system⁷ by the Algerian Institute for Standardization;
5. Vocational training centers undertaking the training of more than 289,000 beneficiaries of unemployment grants to enhance their employability;
6. Following in the footsteps of the university, the Vocational Training Code adheres to the government's priorities. Its training offerings are centered around construction, public works, water desalination, and the pharmaceutical industry.

The current economic circumstances in Algeria have compelled its education system to fully contribute to its economic growth. This is reflected in the government's strategy, which advocates openness to the economic and social environment through vocational training centers (Rabhi, 2011). Moreover, an agreement with the European Union aimed at qualifying the vocational training sector was implemented between 2003 and 2009. This initiative sought to enhance the vocational training system's capacity to meet individual and institutional needs, ensuring a better alignment between training supply and societal and economic demands. It aimed to increase the competitiveness of institutions by providing qualified labor, adapting vocational training to market economics, and affording individuals better opportunities for integration and requalification into the job market. The sector also

⁵They participate in the execution of research areas prioritized by national research programs. They may be called upon to take on the responsibility for sector-specific research projects and even projects falling within the realm of international collaboration.

⁶ In order to address industrial challenges and effectively implement the country's industrial innovation strategy.

⁷ In accordance with the international standard "ISO 37001".

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aims to strengthen collaboration, consultation, and coordination with other economic sectors to bridge the gap between training and the realm of labor. Additionally, it endeavors to facilitate professional integration (Elhadi, 2009). In a 2014 sector evaluation session, the President of the Republic issued instructions to promote traditional craftsmanship in the construction, hospitality, agriculture, and traditional industries sectors. Consequently, 80% of vocational training has been dedicated to traditional crafts. The curriculum documents were revised, and 44 new books were introduced in vocational education. Over 700 specialized books were selected for vocational training centers. The integration of new information and communication technologies was reinforced to disseminate knowledge and expertise to all vocational training structures)Achaab(2008 †.

The Enabling Law for Vocational Training was also enacted, which stipulates in Article 3 that vocational training, as an integral component of the educational system, will contribute to the qualification of a skilled workforce in all fields of economic activity and cater to the needs of the labor market. The state ensures equal opportunities for enrollment in the public vocational training facility, along with all means to implement the national policies for vocational training. These policies are guided by a national map for vocational and technical education that aligns with local and national needs. This alignment is established based on consultation with relevant entities, including the National Conference on Vocational and Technical Education, regional workshops on vocational and technical education, as well as the Vocational and Technical Education Partnership Committee. This committee also plays a role in shaping the national policies for vocational training and education. Furthermore, the Vocational Training and Education Observatory engages in forward-looking activities related to the requirements for qualification on both quantitative and qualitative levels⁸.

In response to the concerns of representatives, the minister affirmed that executive decrees pertaining to the law on apprenticeship, issued in 2018, have been prepared. This step is expected to positively activate apprenticeship. Regarding diversification of specialties, the minister highlighted that provincial training directorates have been tasked with creating pedagogical maps for sectors, as they are well-acquainted with the economic development reality of their respective provinces and their needs. The vocational training sector comprises 23 branches with 495 specialties, while the vocational education sector includes 7 branches encompassing 98 specialties. She further noted that her ministry has entered into 14 framework agreements spanning

⁸ Law No. 08-07, dated February 23, 2008, pertaining to vocational training regulations.

various sectors such as mining, maritime fishing, renewable energies, entrepreneurship, and more.

Considering all the aforementioned, educational policy must evaluate educational outcomes to align the produced human capital with the requirements of the labor market. For instance, it's perplexing that graduates with biology degrees who proved their efficacy during the COVID-19 pandemic face unemployment due to an excess of supply over demand⁹ (**El Hachemie ,2023**). There is a need to cease training in certain specialties and introduce others that cater to the labor market's needs. In other words, there must be alignment between the government's economic policy directions and the academic fields offered by universities. A careful analysis of the Algerian government's concerns regarding the quality of human resources needed for economic revitalization suggests the need to enhance training in various areas, including modern agricultural management for national product quality, climate-adapted agriculture and fishing, solar and renewable energy training, water control systems, particularly in distribution and consumption, transboundary water networks, mountain and desert agriculture, rural infrastructure development, and industries, modern agricultural crop storage techniques with a focus on safe well drilling to avoid salinity risks, livestock feed and modern fertilizer production techniques, accessing African markets, agricultural technology, crisis management expertise, infant milk production through foreign partnerships, value chain-related manufacturing, commodity markets, African mining, Training in the field of light industries, small and medium enterprises that generate wealth, and transformative industries in sectors such as mining products, vegetable oil, and sugar beet. Specialized training in modern industrial directory editing techniques, utilizing intelligent data processing systems for various industrial regions. A shift towards developing a human resource equipped with skills in managing big data and information databases. Training in the domain of intelligent statistics processing. Training in successful handling within the realms of agriculture, industry, informatics, and communications, with a particular emphasis on the need for more pedagogical exchange and twinning with universities worldwide. A direction towards training in the field of vigilance, legal auditing, administrative bureaucracy¹⁰, cyber security, as

⁹ According to the statement of the Director of Medical and Para-Medical Activities at the MostefaBacha University Hospital, during an interview on the morning guest show of the third channel on May 18, 2023, it was disclosed that his department received 3000 job applications for the position of biologist in the public healthcare sector, as opposed to the availability of only 30 positions. This raises the question of where the discrepancy lies.

¹⁰ An Analysis of Cabinet Reports for the Years 2021, 2022, and 2023.

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well as training in the field of audiovisual product distribution channels.

5. Results and Discussion

Our analysis reveals significant challenges facing the Algerian education system, with implications for the country's economic development, Among these challenges, we can mention the following:

- **The gap between education and economic needs:** Despite significant investments, the Algerian education system struggles to produce graduates with skills relevant to the demands of the labor market. This results in high unemployment rates, placing a burden on public finances and hindering economic growth.
- **Brain Drain:** A significant number of highly skilled Algerian professionals migrate to other countries, impacting the country's human capital base and slowing down economic development.
- **Weak research and development:** The contribution of scientific research to GDP remains low, reflecting a lack of funding and inadequate infrastructure.
- **Bureaucracy and lack of collaboration:** Existing bureaucratic barriers hinder effective university-industry partnerships and limit the transfer of knowledge and technology.
- **Weak commercial relationship between universities and companies:** This impedes the translation of research findings into practical applications and innovation.

However, in response to these challenges, the Algerian authorities are making efforts to address them, which can be listed as follows:

- **Transition to a knowledge-based economy:** The government aims to shift away from a petroleum-dependent economy and invest in a knowledge-based economy driven by innovation, entrepreneurship, and technology transfer.

- **University-industry partnerships:** Initiatives are being taken to foster collaboration between universities and industries, including research contracts, internships, and joint projects.
- **Vocational training reforms:** Significant efforts are underway to reform the vocational training system to better align with the demands of the labor market and equip individuals with relevant skills.
- **Strengthening research infrastructure:** Investments are being made in research centers, laboratories, and technological platforms to enhance the country's research capacity.
- **Encouraging entrepreneurship:** University initiatives encourage entrepreneurial thinking and skills development among students.

Algeria faces a critical challenge in aligning its education system with its economic development aspirations. That is why ,the Bereday model provides a useful lens for understanding the complex interplay of historical, cultural, political, social, and economic factors that influence the educational system and its impact on economic growth.

In other side, this analysis also reveals the need for a more nuanced approach to education policy, going beyond quantitative indicators of enrollment and focusing on quality, relevance, and the development of skills required by the modern workforce.

Recommendations:

In light of the intricate interplay of economic factors, we recommend the following policy interventions to drive human capital development and enhance Algeria's economic competitiveness.

- ✓ **Streamline university-industry partnerships:** Implement policy reforms to remove bureaucratic barriers, encourage collaboration, and ensure effective intellectual property protection.
- ✓ **Increase investment in research and development:** Allocate sufficient funding to research initiatives, particularly those aligned with economic priorities, and create a more conducive environment for innovation.
- ✓ **Reform curricula and training programs:** Regularly evaluate and update educational programs to ensure alignment with evolving job market demands and incorporate relevant skills such as digital literacy, critical thinking, and problem-solving.

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- ✓ **Develop effective vocational training programs:** Align vocational training with industry needs and ensure the availability of relevant programs that equip individuals with the skills required by the labor market.
- ✓ **Address brain drain:** Implement policies to attract and retain talent by offering competitive salaries, improved working conditions, and career advancement opportunities.

6. Conclusion

This study aimed to uncover the relationship between the Algerian educational system and the surrounding economic forces based on Bereday model. This topic has become pertinent due to the economic crisis experienced by Algeria and the substantial challenges posed by its educational system in all its components: educational, training, and research, which constitute fundamental drivers in the development process. In this analysis, we adopted George Bereday model, which serves as a practical tool to oversee the economic dimension pursued by any educational system that attempts to respond to the evolving and escalating needs imposed by contemporary societal transformation. This enabled us to discern various sector-specific efforts aimed at adopting a procedural mechanism, outlining development goals, and integrating research and training programs. These reformative actions align with driving the growth engine and necessitate further planning and educational scrutiny. Such endeavors will only be realized through future studies in this field, characterized by a global perspective and a methodical adoption of findings while comparing contextual circumstances that influence any modifications in this regard

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