

## Human Development for Enhancing Competitiveness: An Econometric Study According to the Competitiveness Index-The Economy and Human Development in Algeria during the Period (2010–2026)

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### **Abstract:**

Using a multiple linear regression approach, this study examines the impact of economic competitiveness on human development in Algeria (2010–2026). The analysis identifies a statistically significant relationship, where the **Competitiveness Index** serves as a critical driver for the **Human Development Index (HDI)**. Findings underscore that Algeria's economic growth is closely tied to advancements in human capital, noting a strong performance relative to Arab peers. The research concludes that enhancing national competitiveness is essential for achieving optimal human development outcomes.

**Keywords:** Human development; competitiveness; change; cost.

**Jel Classification codes:** A12 , B41, C12 ,C34.

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## **1. INTRODUCTION**

Algeria has become one of the most prominent Arab countries to participate consistently in the World Economic Forum, with its rankings published annually more than ever before. The subject of human development for enhancing competitiveness is among the most challenging and important topics, as it reflects the positive or negative developments that shape a country's image and standing within progress levels across all fields through the utilisation of its capabilities and human resources as an effective tool for development. The human element cannot be underestimated. With the advent of the new millennium, competition between countries has intensified in this domain, as they strive for maximum progress through concerted efforts to enhance the criteria set by this index. To survive, excel, and keep pace with rapid changes in its operational environment, Algeria, like other nations, must align with this era and rely on mechanisms that enable it to achieve competitiveness. Consequently, comprehensive reforms have been implemented across multiple sectors to increase the competitiveness of institutions, enabling them to face external competition and achieve the requisite superiority both now and in the future in an optimal manner. On this basis, the research question can be articulated as follows:

What constitutes human development for enhancing competitiveness according to the Competitiveness Index of economy and human development in Algeria during the period (2010–2026)?

To address this issue, the following two hypotheses are formulated:

There is an insignificant effect of economic competitiveness on human development in Algeria.

There is a significant effect of economic competitiveness on human development in Algeria.

### **Significance of the Study:**

The importance of this study lies in its focus on human development for improving competitiveness, as measured by the Competitiveness Index of the Economy and Human Development in Algeria, which holds considerable significance in keeping abreast of the era.

### **Objectives of the Study:**

This study aims to examine human development for the improvement of competitiveness according to the Competitiveness Index for economy and human development in Algeria during the period 2010–2026.

### **Methodology:**

This research adopts a descriptive-analytical approach to present and analyse the development of the study variables and an empirical quantitative approach employing statistical techniques to measure human development for improving competitiveness according to the Competitiveness Index for economy and human development in Algeria during the period 2010–2026, which is based on SPSS v26 software.

### **Structure of the Research:**

The research paper is divided into two main sections: the first is devoted to the theoretical framework of the study variables, while the second section is dedicated to the econometric analysis of human development for enhancing competitiveness according to the Competitiveness Index for economy and human development in Algeria during the period (2010–2026).

### **Previous studies**

Study by Salem Iyas (Salem, (June 2021)., pp. 230-248): This study aimed to highlight the concepts of competitiveness and competitive advantage in business organisations. One of the most prominent findings was that competitiveness differs from competitive advantage in that competitiveness reflects an organisation's ability to face competition and withstand competitors. In contrast, competitive advantage refers to the element of differentiation and distinction that the organisation possesses compared with its competitors, which constitutes a component of its competitiveness.

Study by AhadDardish (Dardish, (2019)., pp. 51-75): This study aimed to shed light on human development (its concept, indicators, and measurement methods). A key finding was that human development is the most significant advancement in modern developmental thought because

dominant development models prioritise economic growth, which often comes at the expense of other systems, such as the ecosystem.

Study by SouadQoufi (Souad, (February 2023), pp. 232-246): This study aimed to provide a theoretical comparison that explains the relationship between competitiveness and competitive advantage. A key result was that the relationship between the two variables is causally reciprocal (the advantage is both a cause and an effect of competitiveness simultaneously), as each institution in each group strives as much as possible to reach the best standards and create value.

Study by Latifa Lamtouch (Lamtouch, (31 March 2016), pp. 148-168): This study aimed to highlight human development in Algeria (its reality, measurement, and obstacles). A significant finding was the general improvement in the Human Development Index, which led to progress in its constituent indicators; however, efforts must be made to reach the desired global levels. It was also noted that women play a role in the development of leadership positions across various fields.

### **Distinctive features of the current study compared with those of previous studies:**

In terms of the study environment, the present research is analytical and econometric. The application sector uses a descriptive-analytical methodology that is suitable for examining and analysing the subject. The sample was analytical for the study variables and included global indicators for Algeria. Previous studies typically had a general research purpose while linking other variables related to the independent and dependent variables. This study, however, uniquely focuses on global indicators for Algeria and differs from previous studies in its objective of identifying the significant impact of the independent and dependent variables.

## **2. Theoretical Framework: HumanDevelopment and Competitiveness**

### **2.1 Concept of Human Development:**

Human development, according to the United Nations Development Programme (UNDP), is a process that aims to expand the choices available to people. In principle, these choices are continually evolving; practically, all development levels focus on three fundamental human choices: living a

long and healthy life free from disease, acquiring knowledge, and obtaining the resources necessary for a decent standard of living. Other choices include economic and political freedom, ensuring human rights, and respecting human dignity (Bordima, (15 June 2010), p. 166), human development has two aspects: the first is shaping human capabilities, and the second is enabling people to benefit from their acquired capabilities (Dr.Jawadi Ali, 2017, p. 164).

It has also been defined as encompassing two aspects: the formation of human capacities in health, education, knowledge, and welfare levels; and the empowerment of individuals to invest their capacities, whether for leisure, productivity, or participation in political, social, cultural, and other fields (Nasira, (1 July 2011), p. 33). Human development means developing people by, with, and for people. Development refers to investing in human capabilities, whether health, education, or skills, so that individuals can work productively and creatively. Development for people means ensuring that the resulting economic growth is distributed widely and fairly to some extent (Najwa, (2019), p. 79).

In short, human development can be described as achieving a level of welfare by obtaining the resources necessary for a decent standard of living.

## **2.2Relationship between Economic Development and Human Development:**

There is a fundamental difference between economic development and human development. The former is assumed to follow established economic principles, with economic planning serving as one of the primary tools to achieve these principles at the macro level. Additionally, cost–benefit analysis is the primary method at the project or micro level. Many social, cultural, and ecological considerations fall outside the scope of the economic system encompassing these principles and are thus regarded as outputs. Humans and social institutions are often viewed as means and obstacles to development. They are generally not represented among the direct objectives of economic development, which typically focus on production variables and sometimes distribution variables, assuming that

the highest levels of human welfare are achieved through sound economic processes. Conversely, human development seeks to integrate outputs and considers human and institutional elements as direct ends as well as means. Although economic principles and objectives generally apply to this field, they are not the only factors involved ( (Ali, (2005-2006), p. 122).

Ultimately, the relationship between economic development and human development lies in their differing principles: economic development relies on production and distribution variables, whereas human development focuses on achieving the highest levels of human welfare.

### **2.3 Concept of Competitiveness:**

Competitiveness is defined as a comprehensive set of behaviours that lead to achieving a sustained and continuous competitive advantage over competitors. In other words, competitive advantage is the goal or the expected outcome of competitiveness; competitiveness is the foundation from which competitive advantage emerges (Souad, previously cited, (February 2023)., p. 239). It can also be defined as the domain in which an organisation possesses a greater ability than its competitors do to utilise its physical or human resources. This may be related to technological quality, cost reduction capabilities, marketing efficiency, continuous innovation and development, excellence in management thinking, the abundance of financial resources, or the possession of qualified human resources (Hariri, (13-14 December 2011), p. 06).

The Organisation for Economic Co-operation and Development (OECD) defines competitiveness as the ability to produce goods and services that withstand external competition while maintaining the expansion of domestic income—that is, the country's capacity to generate the resources needed to meet national needs. The International Institute for Management Development (IMD) describes competitiveness as a tool for analysing how a state or company manages its capabilities to achieve profit. Some economists argue that it is not always possible to generalise competitiveness on the basis of trade balance because high living standards may be attainable despite a growing trade deficit (Bouqra, (8-9 November

2010)., p. 07). Moreover, the U.S. Council on Competitiveness defines competitiveness as a nation's ability to produce goods and services competitively in global markets while simultaneously achieving long-term living standards. The World Economic Forum defines competitiveness as the factor enabling national economies to achieve sustainable economic growth and long-term prosperity. The Arab Planning Institute defines competitiveness as relying on two indicators: first, external and investment markets, and second, foreign direct investment as essential for developing Arab competitiveness (Ibtisam, (2022), p. 242).

In conclusion, competitiveness refers to a state's ability to produce goods and services that can compete in global markets, thereby achieving a decent standard of living.

## **2.4 Models of Competitiveness Determinants**

### **Porter's Model of Competitiveness:**

Porter's analysis starts at the microlevel, considering the firm as the basic unit of analysis, on the basis of the idea that firms, rather than countries, compete in specific industries. A country's competitiveness is then derived from the competitiveness of its firms and the industries in which they operate. The main determinants of competitiveness according to this model include factors of production, local demand, firm strategy and objectives, the dominance of local competition, the state of related and supporting industries, and government policies.

### **LallSanjaya Model:**

Competitiveness is defined as the development of relative efficiency as well as sustainable development. This model identifies the determinants for building technological capabilities that directly reflect competitiveness, determined through a firm's interactions with three markets: the factor market, the incentive market, and the institutional market.

### **Brinkman Model:**

This study views competitiveness as the result of a set of national and international factors. At the national level, the determinants of industrial or firm competitiveness include resource allocation, technology, product

characteristics, organisation, and general policies (Abdelhafid, (2013), pp. 46-48).

In conclusion, the determinants of competitiveness have been defined through three models, each providing the primary factors for assessing a country's competitiveness.

## **2.5 Importance of Human Development in Supporting Competitiveness:**

In the current information age, human development is the true wealth of nations and the foundation of economic competitiveness, serving as the basis of creativity and innovation. A distinctive feature of human development from the material element is its inimitability and abundance rather than scarcity, as the relationship between knowledge and time is direct, unlike the inverse relationship between matter and time. Thus, the role of human competencies in supporting competitiveness can be summarised as follows:

### **2.4 Models of determinants of competitiveness:**

Preparing qualified and expert human competencies is key to economic and social development.

Human resources constitute the foundation of creativity and innovation, which are the basis of competitiveness.

Human resources enable the diversification of the national economy's structure, ensuring the sustainability of economic competitiveness.

Human resources contribute to competitiveness through active participation in building societal security and stability via various institutions while also contributing to the consolidation of civilisation, popular and national heritage and the transmission and exchange of experiences, sciences, knowledge, and cultures of other peoples, thereby selecting the best to serve society. The competitive advantage is determined on the basis of investment in human development as follows:

- Human capital is a fundamental determinant of competitive advantage.

- The necessity to invest in human resources (Rashdi, (2023), pp. 34-35)

In conclusion, the importance of human development in supporting competitiveness lies in active participation in building societal security and stability.

**3.Second Axis:** Measuring Human Development to Enhance Competitiveness According to the Economic and Human Development Competitiveness Index for Algeria during the period 2010–2026

### **3.1 Study Model and Variables:**

To assess human development to enhance competitiveness, annual time series data were used for the period from 2010--2026, where data on the Human Development Index for Algeria were obtained from United Nations reports in 2020 and from Algeria's Economic Competitiveness Index from the following Global Competitiveness Reports (2010/2011, 2011/2012, 2012/2013, 2013/2014, 2014/2015, 2015/2016, 2016/2017, 2017/2018, 2018, 2019), In addition to data on Algerian economic growth for the period (2020-2026), obtained from the Arab Economic Outlook 2025 report, and real growth figures for this sector from(2018-2021), obtained from the Arab Economic Competitiveness Repot2022, the Human Development Index for Algeria for 2023 is also included ((<https://hdr.undp.org>)., 2026).

The study variables are denoted as follows:

IDH: Human Development Index.

GCI: economic competitiveness index.

### 3.2 Results Analysis:

**Table 1:**

*Descriptive Statistics*

| Variable | Mean   | Standard Deviation | N |
|----------|--------|--------------------|---|
| IDH      | 0.7437 | 0.00744            | 8 |
| GCI      | 3.963  | 0.1408             | 8 |

**Source:** Extracts from SPSS v26

The above table illustrates the descriptive statistics, showing that the sample size was 8. The arithmetic means for human development and economic competitiveness were 0.7437 and 3.963, respectively, while the standard deviations were 0.00744 and 0.1408, respectively, indicating that the variables included in the regression model were used as dependent and independent variables.

**Table 2:**

*Correlation Matrix*

| Variable | Pearson Correlation | Sig. (One-tailed) | N |
|----------|---------------------|-------------------|---|
| IDH      | 1.000               | .                 | 8 |
| GCI      | 0.426               | 0.146             | 8 |

**Source:** Extracted from SPSS v26

The above table illustrates the correlation matrix between the variables in the regression model. The highest correlation coefficient between human development (IDH) and economic competitiveness (GCI) was 0.426, with a significance value of less than 0.01.

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**Table 3:**

*Variables Entered into the Regression Equation*

| Model | Variables Entered | Variables Removed | Method |
|-------|-------------------|-------------------|--------|
| 1     | GCI               | None              | Enter  |

Dependent Variable: IDH

All the requested variables were entered.

**Source:** Extracted from SPSS v26

The above table outlines the variables included in the regression equation, with human development (IDH) as the dependent variable and economic competitiveness (GCI) as the independent variable. No variable was excluded, and the method used was standard regression.

**Table 4:**

*Pearson correlation coefficient summary*

| Model | R     | R-Square | Adjusted R-Square | Std. Error of Estimate |
|-------|-------|----------|-------------------|------------------------|
| 1     | 0.426 | 0.182    | 0.045             | 0.00727                |

Dependent Variable: IDH

Predictors: (Constant), GCI

**Source:** Extracted from SPSS v26

The above table shows the Pearson correlation coefficient between the dependent and independent variables, indicating a moderate value of 0.426, a coefficient of determination (R-squared) of 0.182, and an adjusted R-squared of 0.045. This means that the independent variables explain 4.5% of the variance in human development.

**Table 5:**

ANOVA analysis results

| Model             | Sum of Squares | df | Mean Square | F     | Sig.   |
|-------------------|----------------|----|-------------|-------|--------|
| <b>Regression</b> | 0.000          | 1  | 0.000       | 1.332 | -0.292 |
| <b>Residual</b>   | 0.000          | 6  | 0.000       |       |        |
| <b>Total</b>      | 0.000          | 7  |             |       |        |

a. Dependent Variable: IDH

b. Predictors: (Constant), GCI

**Source:** Extracted from SPSS v26

The table above presents the ANOVA results, which test the significance of the regression model. The significance value (sig) is -0.292, which is greater than 0.01; therefore, the null hypothesis is rejected, and the alternative hypothesis is accepted, indicating that the regression is significant. Thus, the independent variables affect the dependent variable, and the dependent variable can be predicted from these independent variables.

**Table 6:**

Standardised and Unstandardised Regression Coefficients

| Model    | Unstandardised Coefficients B | Std. Error | Standardised Coefficients Beta | t     | Sig.  | Collinearity Statistics: Tolerance | VIF |
|----------|-------------------------------|------------|--------------------------------|-------|-------|------------------------------------|-----|
| <b>1</b> | (Constant)                    | 0.655      | 0.077                          |       | 8.458 | .                                  | .   |
|          | GCI                           | 0.023      | 0.020                          | 0.426 | 1.154 | 0.292                              | 1.0 |

a. Dependent Variable: IDH

**Source:** Extracted from SPSS v26

This table presents standardised and unstandardised regression coefficients, standard errors, t test values, significance values (p values), variance inflation

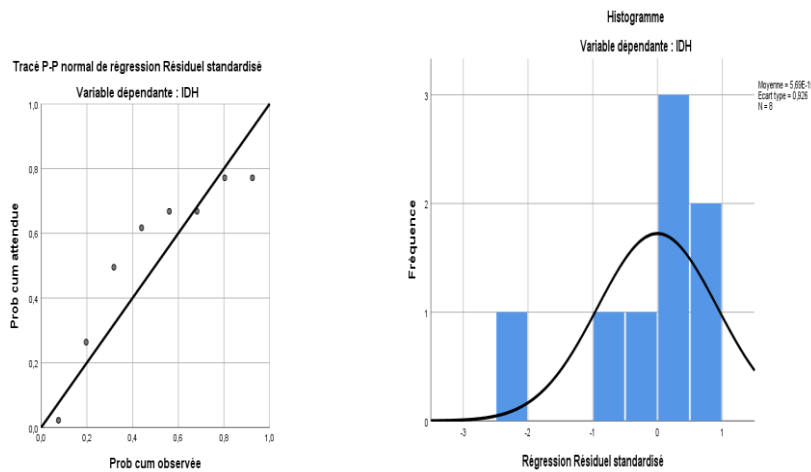
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factors (VIFs), and tolerancestatistics. The relationship  $Tolerance/1 = VIF$  indicates that no multicollinearity problem exists among the variables, as the VIF values are all less than 3. The above table helps derive the regression equation:

Predicted IDH = 0.655 + 0.023 (GCI)

**Figure 1:**

Results of the Residual Distribution and Data Aggregation Test



**Source:** Extracts from SPSS v26

The previous figures illustrate the moderate distribution of residuals and the clustering of data around a straight line. Consequently, the residuals follow a normal distribution, which is a prerequisite for the validity of regression analysis.

**Table7:**

Algeria's economic growth rate during the period (2020-2026)

| State   | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 |
|---------|------|------|------|------|------|------|------|
| Algeria | -5.0 | 3.8  | 3.6  | 4.1  | 4.4  | 4.5  | 4.5  |

**Source:** Prepared by researchers based on the Arab Economic Outlook report 2025, p 45.

The Algerian economy is expected to continue recording strong growth at a rate of (4.5) percent during the years 2025 and 2026, which should contribute to strengthening economic stability and achieving inclusive and sustainable growth.

**Table8:**

Real growth rate (%) - Algeria's real sector during the period (2018-2021)

| State   | 2018 | 2019 | 2020  | 2021 | Standard indicator | Order |
|---------|------|------|-------|------|--------------------|-------|
| Algeria | 1.1  | 1.0  | - 5.1 | 3.8  | -0.05              | 16    |

**Source:** Prepared by researchers based on the Arab Economic Competitiveness report 2022, p11.

Real growth during the pandemic period in 2020 and 2021 was approximately (-5.1%) and (3.8%), respectively Algeria ranked 16<sup>th</sup> among Arab countries.

**The Human Development Index For Algeria during the period 2023:**

Showed that Algeria's Human Development Index for 2023 reached a high level of human development among the countries of the world estimated at (0.763) (<https://hdr.undp.org>)13/03/2026.

#### **4. Conclusion:**

This study endeavoured to examine human development for enhancing competitiveness according to the Economic Competitiveness and Human Development Index for Algeria during the period (2010–2026), relying on an econometric study utilising multiple linear regression methodology. The Human Development Index for Algeria was treated as the dependent variable, explained by the Economic Competitiveness Index of Algeria as the independent variable. In addition to mentioning both the economic growth rate and the real growth rate of this sector in Algeria, the report also discusses the Algerian Human Development Index in an analytical manner. Prior to this, some previous studies were reviewed alongside theoretical concepts related to the study variables, leading to the following results:

- A positive relationship exists between the study variables.
- The regression model is statistically significant, indicating that the independent variables have a significant effect on the dependent variable.
- There is a significant effect between the independent and dependent variables.
- There is no multicollinearity problem between the study variables.
- Strong economic growth in Algeria compared to other Arab countries.
- Algeria has achieved a high level of human development compared to other Arab countries.

Therefore, the alternative hypothesis is accepted, and the null hypothesis is rejected.

On the basis of these results, the following recommendations are proposed:

- Focus on human development, as it is an element of organisational reform.
- Algerian competitiveness relies on economic wealth rather than quality of life.
- Focusing on human resources is a key source of competitiveness.
- Develop human capital to enhance Algerian competitiveness. Conclusion:

- This study attempted to examine human development for improving competitiveness according to the Economic Competitiveness and Human Development Index for Algeria during the period (2010--2019), relying on an econometric study using multiple linear regression methodology with the Human Development Index of Algeria as the dependent variable and the economic competitiveness index of Algeria as the independent variable. Before proceeding, a review of previous studies and certain theoretical concepts related to the study variables was conducted. The following results were reached:
- A positive relationship exists between the study variables.
- The regression model is statistically significant, indicating that the independent variables have a significant effect on the dependent variable.
- There is a significant effect between the independent and dependent variables.
- There is no multicollinearity among the study variables.
- Hence, the alternative hypothesis is accepted, and the null hypothesis is rejected.

On the basis of the results above, the following recommendations are proposed:

- Focus on human development, as it is an essential element of organisational reform.
- Algerian competitiveness is based on economic wealth rather than quality of life.
- The importance of human resources as a key source of competitive advantage is emphasised.
- Attracting and utilizing human capabilities.
- Develop human development to enhance Algerian competitiveness.
- Strengthening economic stability and achieving sustainable human development.

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