



***Human Engineering as an Approach to Stimulate
Organizational Energy - A Case Study of the Algerian Water
Company – Bordj Bou Arréridj Province***

ZEMMIT Fouad ^{1*}

¹ The research lab "Economic Studies on Industrial Zones in the
Context of the University's New Role", University of Mohamed
Bachir El Ibrahimi - Bordj Bou Arreridj, (Algeria),
Fouad.zemmit@univ-bba.dz

Received: 19/03/2026

Accepted: 12/04/2026

Published: 05/06/2026

Abstract

This study examines the role of ergonomics as an approach to enhancing organizational energy, through a case study of the Algerian Water Company in Bordj Bou Arréridj. The research combines theoretical and empirical approaches. The theoretical part reviews key concepts of ergonomics and organizational energy, highlighting the importance of adapting working conditions to human capabilities. The empirical study uses data analyzed with SPSS. Results reveal a significant relationship between ergonomics and organizational energy. Improving working conditions enhances employee motivation and performance. The study recommends adopting ergonomics-based policies to improve organizational outcomes.

Key words: Ergonomics, Organizational Energy, Work Environment.

JEL classification codes: M12, D23.

***Corresponding author:** ZEMMIT Fouad

1. Introduction

Human engineering aligns employees with their work environment to improve efficiency, safety, and reduce work-related problems. Organizational energy reflects the capacity to mobilize employees' cognitive, emotional, and behavioral resources. Applying human engineering principles enhances organizational energy and employee engagement. This leads to greater loyalty, productivity, and overall organizational performance.

Research Problem:

Based on the foregoing, the research problem can be formulated as follows:

Is there an effect of human engineering on organizational energy in the Algerian Water Company?

Research Questions:

- Is there a statistically significant positive effect of the human dimension of human engineering on the organizational energy of the company at a 5% significance level?.
- Is there a statistically significant positive effect of the organizational dimension of human engineering on the organizational energy of the company at a 5% significance level?.
- Is there a statistically significant positive effect of the environmental dimension of human engineering on the organizational energy of the company at a 5% significance level?.

Research Hypotheses:

- The human dimension of human engineering has a statistically significant positive effect on organizational energy at a 5% significance level.
- The organizational dimension of human engineering has a statistically significant positive effect on organizational energy at a 5% significance level.
- The environmental dimension of human engineering has a statistically significant positive effect on organizational energy at a 5% significance level.

Study Objectives:

- To provide a comprehensive theoretical framework on the main study variables, namely human engineering and organizational energy, through a review of specialized literature and relevant previous studies.
- To determine the level of implementation of the main study variables within the organization, focusing on human engineering and organizational energy.
- To examine the direct effect of human engineering components—including posture and movement, environmental factors, information and processes, and work organization—on the three dimensions of organizational energy: physical energy, emotional energy, and cognitive energy.

Methodology and Tools:

- **Descriptive-analytical approach:** This approach is employed to clarify concepts and theories related to the impact of human engineering on organizational energy, based on library resources such as scientific references, journals, and specialized studies.

Statistical-analytical approach: This approach is used to analyze data and practices related to human engineering and organizational energy, employing statistical and mathematical tools, particularly those used in prediction and data analysis, to measure both the direct and indirect effects of the variables.

Previous Studies

- Al-Fatlawi & Al-Rubaie (2016): Analyzed organizational energy in Iraqi universities from a management perspective. Survey of 163 managers found that efficient organizational performance relies on positive utilization of physical, emotional, and cognitive energy, supported by leadership and culture
- Cuff & Barkhulzen (2013): Sought to validate an organizational energy scale in South Africa's energy sector. Survey of 304 employees revealed differing perceptions of energy between senior

and lower-level staff, underscoring the need for further empirical study

- Ziari, Rad Yadegari & Ranjbbar (2018): Studied the effect of task characteristics and information availability on human capital in sports. Found that clear communication and task understanding boost intrinsic motivation and job satisfaction, enhancing organizational energy (physical, emotional, cognitive) and commitment.

2. Concepts of Ergonomics and Organizational Energy

2.1 Preface:

Attention to the human element is essential for organizations to achieve their goals and enhance organizational energy, To support this, ergonomics is applied to ensure compatibility between workers and their work environment, It also involves using appropriate methods to perform tasks correctly and efficiently.

2.2 Theoretical Introduction to Ergonomics

a) The Concept of Ergonomics

meaning laws. It is a concept closely related to the work environment and its associated settings. Simply put, as Mevey (2001) explains, ergonomics is the study of the relationship between people, the work they perform, and the environment in which both mental and physical work activities occur. Consequently, ergonomics methodologies are generally applied to organizational objectives to determine the best ways of working in order to maximize individual performance. This includes designing the work environment and optimizing the availability of tools and equipment to enhance the safety, comfort, effectiveness, and efficiency of employees in performing their tasks. (Plaza, 2025, pp. 90-104)

The International Ergonomics Association (IEA) describes ergonomics as a scientific discipline that focuses on understanding the interactions between the work system, its elements, and humans, with the aim of ensuring employee well-being and improving overall

system performance—essentially achieving alignment between economic and social objectives. (Plaza, 2025, pp. 90-104)

From the previous definitions, we can identify the importance of ergonomics in the following aspects (Hilmi, 2024, pp. 90-104):

- ✓ It helps prevent accidents by studying and analyzing the causes of previous injuries.
- ✓ It addresses sustainability issues by recognizing the human as a creator, operator, and client. Here, the role of ergonomics engineers becomes crucial in designing and operating systems and processes efficiently and safely.
- ✓ It increases organizational flexibility, enabling the organization to respond effectively to challenges and changes that may occur during task performance.

b) Types and Components of Ergonomics

First: Types of Ergonomics

Ergonomics can be categorized into specialized types depending on the way problems are addressed and the level of workers' perception and understanding) Salmon(194 صفحة 2017 ،

- ✓ **Physical Ergonomics:** Physical ergonomics refers to all interventions at the physical level of the work environment, which combine technical aspects of the human–environment–machine system. It may involve various aspects of the workplace, such as noise, dust, lighting, as well as the temporal or spatial arrangement of the work environment.
- ✓ **Organizational Ergonomics:** Organizational ergonomics focuses primarily on the mindset of socio-technical systems. It involves attention to organizational structure, work rules, and procedures. Its main concerns also include communication, human resource management, and the design of new work formats, all within the context of the interaction between these factors.
- ✓ **Cognitive Ergonomics:** Cognitive ergonomics encompasses all mental activities related to work, from perception to understanding to response, and examines how these cognitive processes interact

with machines. This approach is commonly referred to as cognitive ergonomics.

Second: Components of Ergonomics

The components of ergonomics represent a set of factors that help achieve safety and security in the workplace. Researchers in the field of ergonomics generally agree that these components can be divided into five main elements (**mounir, 2010, p. 242**):

- ✓ Workstation Design.
- ✓ Hazard Control and Prevention.
- ✓ Education and Training.
- ✓ Continuous Evaluation
- ✓ Occupational Health and Safety Management.

c) Dimensions of Ergonomics

The field of ergonomics focuses on studying several dimensions of the work environment, including the human dimension, the organizational dimension, and the environmental dimension, which can be summarized as follows (**Safar, 2019, pp. 117-118**):

- ✓ **Human Dimension:** This dimension focuses on human responses to physical, cognitive, and social factors in the work environment. Addressing these aspects reduces hazards, improves productivity, performance, and morale, and lowers turnover and absenteeism. It also emphasizes the alignment of human capabilities with tasks and machinery, enhancing human–system interaction, decision-making, and social harmony at work.
- ✓ **Organizational Dimension:** This dimension, as noted by Hilal and Mahmoud, focuses on optimizing administrative and organizational systems, including structures, processes, and policies. It addresses communication, teamwork, work design, motivation, safety culture, and group interactions, as well as task variety, self-regulation, and feedback. The goal is to enhance job satisfaction and commitment while reducing costs by harmonizing all system elements.
- ✓ **Environmental Dimension:** According to Al-Samman and Al-Obaidi, the environmental dimension focuses on designing the work environment to ensure balanced work effort. It considers

climatic factors (heat, cold, humidity, ventilation), auditory factors (noise, acoustic pollution), and visual factors (lighting, visual pollution), all of which affect human interactions with tasks, systems, and outputs.

2.3 Organizational Energy

a) The Concept of Organizational Energy

The true emergence of the concept of energy in the organizational workplace began at the individual level, focusing on personal energy. Over time, the focus has shifted toward the organizational level, giving rise to the concept of productive organizational energy, introduced by Bruch and Ghosha in 2003 in their study titled “Unleashing Organizational Energy” published in the SLOAN Management Review (MIT). This was followed by several important studies, including research conducted by Cole and colleagues in 2005. **(Saad Ali Al-Anzi, pp. 5-6)**

Organizational energy has been defined as collective engagement characterized by knowledge sharing, enthusiasm, and group cohesion aimed at achieving organizational goals. It is also described as a set of intangible human potentials, including physical, emotional, and cognitive energy, which significantly influence the success or failure of any organization. **(Bakkar, 2016, pp. 33-44)**

b) Characteristics and Levels of Organizational Energy

First: Characteristics of Organizational Energy

Some researchers point out that productive organizational energy is distinguished by several key characteristics: **(Bouhafs, 2004, p. 32)**

- ✓ Productive organizational energy is an invisible force that drives behavior.
- ✓ It acts as a motivational force that encourages employees to perform tasks effectively and efficiently according to their psychological state.

- ✓ Organizational energy serves as a measure of effort in accomplishing work tasks.
- ✓ Productive organizational energy is a collective approach possessed by all employees; it originates at the individual level but embodies the higher (organizational) level of analysis.
- ✓ It is a three-dimensional concept, consisting of cognitive, emotional, and behavioral energy.

Second: Levels of Organizational Energy

According to Schiuma et al. (2007), three levels of energy can be distinguished within organizations: individual (human) energy, collective (team) energy, and organizational energy (collective–organizational energy). (Cameron, 2012, pp. 692-702)

c) Dimensions of Organizational Energy

The conceptual analysis of productive organizational energy shows that it is a multi-dimensional construct composed of three core dimensions: affective energy, cognitive energy, and behavioral energy. Each dimension is described as follows: (Alexiou, 2018, pp. 155-172)

- ✓ **Affective Energy:** Affective energy describes the collective positive emotions, enthusiasm, and inspiration that organization members share regarding work tasks and organizational goals. This energy reflects shared positive feelings and purposeful emotional engagement, leading employees to feel satisfied with their roles and rarely express frustration. It also manifests as vitality and high energy in performing tasks. Affective energy enhances the effective use of resources, sustains performance, helps employees adapt to change, and supports the
- ✓ **Cognitive Energy:** Cognitive energy reflects the collective ability of organization members to think productively and proactively, identifying solutions to problems related to task performance. It encompasses shared mental processes that drive employees to continuously and constructively address work-related issues, involving focus, attention, and the ability to avoid distractions that

could disrupt goal-directed thinking. In organizations with high cognitive energy, employees are mentally prepared to work at any time, genuinely care about organizational outcomes, and collectively demonstrate a willingness to take necessary actions to achieve objectives. Active cognitive energy encourages purposeful and collaborative thinking about work issues, focusing on current tasks, and plays a critical role in generating new processes and resources that enhance organizational effectiveness.

- ✓ **Behavioral Energy:** Behavioral energy reflects collective and coordinated work behavior of organization members directed toward achieving organizational goals effectively. It describes the shared efforts of employees designed for the organization's benefit, including the amount, intensity, and progress of effort invested purposefully to achieve objectives.

Organizations with high behavioral energy typically have employees who go beyond formal job requirements to ensure organizational success. They often work long hours without complaints, show consistent activity, and maintain a very fast work pace. When behavioral energy is active, employees engage extensively in productive activities, which directly facilitates communication, collaboration, and resource sharing among team members.

3. Applied Study (ADE)

In the theoretical part of the study, we addressed the key points regarding the impact of ergonomics on organizational energy. To further illuminate the topic, an applied study was conducted to assess the extent of ergonomics' effect on organizational energy. This chapter highlights the methodology used in the fieldwork, the various tools employed, and the use of the statistical software SPSS for data analysis, as well as the presentation and interpretation of the results.

3-1 A Brief Overview of the Algerian Water Company

The Algerian Water Company is a public institution of industrial and commercial nature, with legal personality and financial

independence. It was established under Executive Decree No. 101/01 issued on April 21, 2001 (Official Gazette No. 24), in which Article One stipulated the creation of a “national public institution of industrial and commercial nature under the name Algerian Water Company...”. The institution operates under the supervision of the Minister in charge of water resources and is headquartered in Algiers. It manages an annual budget ranging from 25,000,000 to 100,000,000 USD. The official working languages of the institution are Arabic and French. Its activities include the production of drinking water and the provision of water for industrial use. Among the units affiliated with the parent institution, the Bordj Bou Arréridj unit serves as the focus of the applied study on deferred taxes.

3-2 Analysis of the Study Results

a) Development and Reliability of the Study Tool

➤ **Development of the Study Tool:** In this study, the questionnaire will be primarily used as a means of collecting data, in addition to relying on scientific observation, It consists of two sections:

- ✓ Section One: This section collects general information about the personal data of a sample of employees from the Algerian Water Company in Bordj Bou Arréridj, such as gender, age, educational qualification, nature of work, and professional experience.
- ✓ Section Two: The second section consists of two parts, Part One, Focuses on ergonomics and contains 18 items, and Part Two, Focuses on organizational energy and contains 22 items.

➤ **Validity and Reliability of the Study Tool :** Several tests were conducted on the questionnaire to ensure its validity and reliability. This included expert evaluation by specialists in the field, in addition to the necessary tests to verify both validity and reliability.

The questionnaire items were examined using Cronbach's Alpha, as shown in the following table:

Table 1: Cronbach's Alpha Reliability Coefficient

Reliability Coefficient	
Cronbach's Alpha	Number of Items
0,939	45

Source: Prepared by the researcher based on SPSS output

The overall Cronbach’s Alpha is 0.939 (93.9%), well above the 0.60 benchmark, indicating high reliability. This shows that respondents interpret the items consistently, making the questionnaire suitable for the field study.

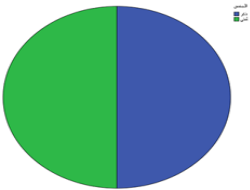
b) Characteristics of the Study Respondents

In this section, we describe the nominal variables using frequencies and percentages.

➤ Distribution of the Study Sample by Gender:

Based on Appendix 02 and Figure 1, the distribution of the sample by gender is clear, showing 50% males and 50% females, indicating an equal representation of respondent.

Figure 1: Pie Chart of the Gender Variable

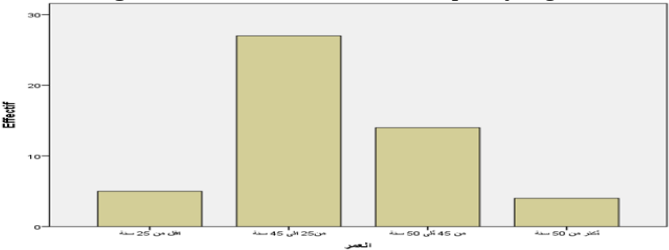


Source: Prepared by the researcher based on Appendix 02

➤ Distribution of the Study Sample by Age Groups

Based on Appendix 03 and Figure 2, it can be observed that the age groups are predominantly young, representing 54% of the sample, which allows the organization to leverage youthful energy to increase productivity, work speed, and accuracy. Meanwhile, the age group over 50 years accounts for only 8%, a low percentage due to the partial retirement of several employees in previous years. Nevertheless, this group should not be overlooked, as its members possess valuable experience and competence.

Figure 2: Distribution of the Sample by Age

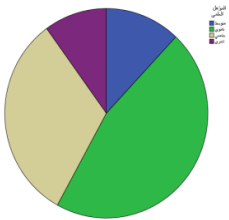


Source: Prepared by the researcher based on Appendix 03

➤ **Distribution of the Sample by Educational Qualification**

Based on Appendix 04 and Figure 3, it is evident that employees holding a high school diploma represent 46% of the sample, followed by those with a university degree, representing 32%. This indicates a good level of competence among the company’s workforce, which significantly contributes to their ability to handle modern technologies effectively.

Figure 3: Distribution of the Sample by Educational Qualification

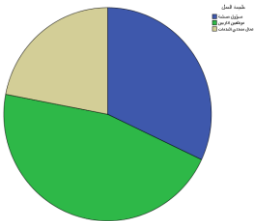


Source: Prepared by the researcher based on Appendix 04

➤ **Distribution of the Study Sample by Nature of Work**

Based on Appendix 05 and Figure 4, it can be observed that the largest proportion of employees, 46%, are administrative staff, followed by 32% who are department supervisors, and 22% who are multi-service workers. This indicates that the company benefits from functional diversity, with each employee playing a distinct and effective role within the organization.

Figure 4: Distribution of the Sample by Nature of Work



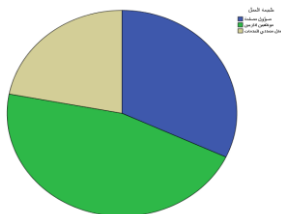
Source: Prepared by the researcher based on Appendix 05

➤ **Distribution of the Study Sample by Professional Experience**

Based on Appendix 06 and Figure 5, it can be observed that 46% of employees have professional experience ranging from 5 to 15 years, followed by 38% with more than 15 years of experience, and 16% with less than 5 years of experience. This indicates that the majority of

respondents possess sufficient experience in their field, enabling them to perform their duties effectively and stay fully informed of all developments within the company.

Figure 5: Distribution of the Sample by Professional Experience



Source: Prepared by the researcher based on Appendix 06

c) Descriptive Statistical Analysis of the Study Variables

➤ Statistical Analysis of the Independent Variable Ergonomics :

The ergonomics variable includes three dimensions: human, organizational, and environmental. In the human dimension, effective communication (Mean = 2.52, SD = 0.95), belonging (Mean = 2.46, SD = 1.01), and social cohesion (Mean = 2.42, SD = 0.86) showed good satisfaction, while needs alignment (Mean = 3.04, SD = 1.43) and health insurance (Mean = 2.60, SD = 1.22) were neutral. In the organizational dimension, efficiency models (Mean = 2.46, SD = 1.029), financial balance (Mean = 2.42, SD = 0.861), and transparency (Mean = 2.40, SD = 0.735) were satisfactory, whereas consultative decision-making (Mean = 3.04, SD = 1.424) and balanced task allocation (Mean = 2.60, SD = 1.224) were neutral. In the environmental dimension, access (Mean = 2.52, SD = 0.95), heating/cooling (Mean = 2.46, SD = 1.03), lighting (Mean = 2.42, SD = 0.86), and work efficiency (Mean = 2.40, SD = 0.74) were acceptable, while building suitability (Mean = 3.04, SD = 1.43) and ventilation (Mean = 2.60, SD = 1.22) were neutral. Overall, employees show moderate satisfaction with ergonomics, with some areas needing improvement. (See Appendices 7, 8, and 9).

➤ Statistical Analysis of the Dependent Variable: Organizational Energy

The organizational energy variable comprises three dimensions: emotional, cognitive, and behavioral energy. In the emotional dimension (Appendix 10), most items were neutral, with key means including: eagerness to work (Mean = 3.02, SD = 1.00), enthusiasm

(Mean = 2.94, SD = 1.12), and motivation through recognition (Mean = 2.78, SD = 1.07); dissatisfaction appeared in psychological care (Mean = 3.40, SD = 1.38) and stress relief (Mean = 3.16, SD = 1.04). In the cognitive dimension (Appendix 11), neutral items included collective thinking (Mean = 3.08, SD = 1.42) and skill improvement (Mean = 2.66, SD = 1.33), while satisfactory items were readiness to work (Mean = 2.46, SD = 1.07) and seeking new opportunities (Mean = 2.40, SD = 1.35). In the behavioral dimension (Appendix 12), neutral items included self-initiative (Mean = 3.06, SD = 1.32) and task alignment (Mean = 2.90, SD = 1.27), while acceptable items were minimizing overtime (Mean = 2.56, SD = 1.11) and health insurance coverage (Mean = 2.48, SD = 1.19). Overall, employees show moderate satisfaction with organizational energy, with certain areas requiring improvement. (See Appendices 10, 11, and 12)

3-3 Presentation and Analysis of Study Results

a) Test of Distribution Normality for the Study Variables

The Kolmogorov-Smirnov test will be used, as the sample size is 50, to determine whether the sample data follow a normal distribution.

➤ Normality Test for the Independent Variable: Ergonomics

✓ First Dimension: Human Dimension

Table 02: Normality Test for the Human Dimension

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistique	ddl	Sig	Statistique	ddl	Sig
Human	,075	50	,200*	,984	50	,722

Source: Prepared by the researcher based on SPSS outputs

From the previous table, it can be observed that the significance level is greater than 5%, indicating that this dimension follows a normal distribution.

✓ Second Dimension: Organizational Dimension

Table 03: Normality Test for the Organizational Dimension

	Kolmogorov-Smirnova			Shapiro-Wilk		
	Statistique	ddl	Sig	Statistique	ddl	Sig
Organizational	,066	50	,200*	,983	50	,678

Source: Prepared by the researcher based on SPSS outputs

From the previous table, it can be observed that the significance level is greater than 5%, indicating that this dimension follows a normal distribution.

✓ **Third Dimension:** Environmental Dimension

Table 04: Normality Test for the Environmental Dimension

	Kolmogorov-Smirnova			Shapiro-Wilk		
	Statistique	ddl	Sig	Statistique	ddl	Sig
Environmental	,129	50	,036	,963	50	,122

Source: Prepared by the researcher based on SPSS outputs

From the previous table, it can be observed that the significance level is less than 5%, indicating that this dimension does not follow a normal distribution. Therefore, it was adjusted to make the variables follow a normal distribution. After performing the adjustment using SPSS, we obtained:

Table 04: Normality Test for the Environmental Dimension

	Kolmogorov-Smirnova			Shapiro-Wilk		
	Statistique	ddl	Sig	Statistique	ddl	Sig
Environmental 01	,063	50	,200*	,987	50	,862

Source: Prepared by the researcher based on SPSS outputs

From the previous table, it can be observed that the significance level is now greater than 5%, indicating that this dimension, after the adjustment, now follows a normal distribution.

➤ **Normality Test for the Dependent Variable: Organizational Energy**

Table 06: Normality Test for Organizational Energy

	Kolmogorov-Smirnova			Shapiro-Wilk		
	Statistique	ddl	Sig	Statistique	ddl	Sig
O. E	,084	50	,200*	,977	50	,435

Source: Prepared by the researcher based on SPSS outputs

b) Testing the Study Hypotheses

➤ **Testing the First Sub-Hypothesis :** The first sub-hypothesis states: "There is a statistically significant positive effect of the human dimension on the organizational energy of the institution." To test this hypothesis, the statistical method of simple linear regression is used. Using SPSS:

Table 07: Variable Coefficients

Coefficientsa						
Modèle		Coefficients non stand		Co.stand	t	Sig.
		A	Erreur standard	Bêta		
1	Constante	1,004	,283		3,548	,001
	human	,726	,107	,701	6,817	,00
a. Dependent Variable: Organizational Energy						

Source: Prepared by the researcher based on SPSS outputs

Table 08: Correlation Between Variables

Récapitulatif des modèles				
Modèle	R	R-deux	R-deux ajusté	Erreur standard de l'estimation
1	,701a	,492	,481	,49902
a. Valeurs prédites : (constantes), human				

Source: Prepared by the researcher based on SPSS outputs

From the previous two tables, the following relationship can be derived between the human dimension as the independent variable and organizational energy as the dependent variable:

$$Y = 1,004 + 0,726X$$

It can be observed that the calculated Student's t-values for all items of the human dimension are greater than the critical values, with a probability of error less than 5%. This indicates that all estimates are statistically significant at the 5% significance level in explaining organizational energy during the study period, and therefore, they are influential variables on organizational energy.

It can be concluded that each one-unit increase in the human dimension attribute will lead to an increase of 0.726 units in organizational energy.

➤ Testing the Second Sub-Hypothesis

The second sub-hypothesis states: "There is a statistically significant positive effect of the organizational dimension on the organizational energy of the institution." To test this hypothesis, the statistical method of simple linear regression is used. Using SPSS:

Table 09: Variable Coefficients

Coefficients ^a						
Modèle		Coefficients non standardisés		Coefficients standardisés	t	Sig.
		A	Erreur stand	Bêta		
1	(Constante)	,804	,230		3,497	,001
	organizational	,700	,075,	802,	9,309	000,
a. Dependent Variable: Organizational Energy						

Source: Prepared by the researcher based on SPSS outputs

Table 10: Correlation Between Variables

Récapitulatif des modèles				
Modèle	R	R-deux	R-deux ajusté	Erreur standard de l'estimation
1	,802a	,644	,636	,41799
a. Valeurs prédites : (constantes), organizational				

Source: Prepared by the researcher based on SPSS outputs

From the previous two tables, the following relationship can be derived between the organizational dimension as the independent variable and organizational energy as the dependent variable:

$$Y = 0.804 + 0.700X$$

It can be observed that the calculated Student's t-values for all items of the organizational dimension are greater than the critical values, with a probability of error less than 5%. This indicates that all estimates are statistically significant at the 5% significance level in explaining organizational energy during the study period, and therefore, they are influential variables on organizational energy.

It can be concluded that each one-unit increase in the organizational dimension will lead to an increase of 0.70 units in organizational energy.

➤ Testing the Third Sub-Hypothesis :

The third sub-hypothesis states: "There is a statistically significant positive effect of the environmental dimension on the organizational energy of the institution." To test this hypothesis, the statistical method of simple linear regression is used. Using SPSS:

Table 11: Variable Coefficients

Coefficientsa						
Modèle		Coefficients non stand		Coefficients standa	t	Sig.
		A	Erreur stand	Bêta		
1	(Constante)	2,078	,377		5,51	,00
	environmental	,333	,153	,300	2,18	,03
a. Dependent Variable: Organizational Energy						

Source: Prepared by the researcher based on SPSS outputs

Table 12: Correlation Between Variables

Récapitulatif des modèles				
Modèle	R	R-deux	R-deux ajusté	Erreur standard de l'estimation
1	,300a	,090	,071	,66779
a. Valeurs prédites : (constantes), environmental				

Source: Prepared by the researcher based on SPSS outputs

From the previous two tables, the following relationship can be derived between the environmental dimension as the independent variable and organizational energy as the dependent variable:

$$Y = 2.078 + 0.333X$$

It can be observed that the calculated Student's t-values for all items of the environmental dimension are greater than the critical values, with a probability of error less than 5%. This indicates that all estimates are statistically significant at the 5% significance level in explaining organizational energy during the study period, and therefore, they are influential variables on organizational energy.

It can be concluded that each one-unit increase in the environmental dimension will lead to an increase of 0.333 units in organizational energy.

4. Conclusion

This study examined the effect of ergonomics on organizational energy at the Algerian Water Company – Bordj Bou Arréridj, using a methodology that combined theoretical and applied approaches, including questionnaires and statistical analysis via SPSS. The results showed that all dimensions of ergonomics (human, organizational, and

environmental) have a positive and statistically significant impact on the organization's energy, with analyses indicating that:

- ✓ The human dimension has the greatest effect on organizational energy ($\beta = 0.726$).
- ✓ The organizational dimension also contributes significantly ($\beta = 0.700$).
- ✓ The environmental dimension has a smaller but still important effect ($\beta = 0.333$).

These results highlight the importance of improving the work environment and considering human, organizational, and environmental aspects to enhance employee motivation and performance, thereby increasing overall institutional efficiency.

Practical recommendations include:

- ✓ Strengthening employee training and development programs to meet organizational needs.
- ✓ Focusing on employees' psychological and social well-being to enhance belonging and morale.
- ✓ Improving the work environment regarding lighting, ventilation, and equipment arrangement to facilitate task completion.
- ✓ Adopting clear organizational policies and balanced task distribution to enhance efficiency and effectiveness.

In conclusion, the study demonstrates that investing in ergonomics not only improves employee well-being but also leads to better institutional performance and increased organizational energy.

5. Bibliography List:

- G. P. al, (2025). *Ergonomics/Human Factors in the Era of Smart and Sustainable Industry: Industry. Management Systems in Production Engineering*, 2, pp. 229-238.
- Alexiou, A. K. (2018). *Productive organizational energy mediates the impact of organizational structure on absorptive capacity*. Alexiou, Athanasios, Khanagha, Soroush, & Schippers, Marcel. (2018). *Productive organizational energy mediates the impact of organizational structure on absorptiv Long Range Planning*, 02, pp. 155–172.

- Bakkar, A. (2016). *Najā‘at al-handasa al-bashariyya fi tahqiq al-salāma al-mihniyya li-afrād al-‘āmilīn: Dirāsat ḥāla Mu‘assasat Sonelgaz – Wahdat Intāj al-Kahrabā’ bi-Bashar*. ALGERIE: Amal Bakkar. (2016). *Najā‘at al-handasa al-bashariyya fi tahqiq al-salāma al-mihniyya li-afrād al-‘āmilīn: Dirāsat ḥāla Mu‘assasat Sonelgaz – University of Dr. Yahia Fares*.
- Bouhaf, M. (2004). *Al-‘amal al-bashari. Qism ‘Ilm al-Nafs al-Tanzimi wa al-Handasa al-Bashariya* (Vol. 2nd edition). Algeria: Dar al-Gharb lil-Nashr wa al-Tawzi.
- Cameron, K. S. (2012). *The Oxford Handbook of Positive Organizational Scholarship*. Oxford -ENG-: (COxford University Press.
- Hilmi, A. H. (2024). *Human-Centered Ergonomics: Advancements, Challenges, and Future Directions in Industrial and Occupational Settings*. *Malaysian Journal of Ergonomics (MJEr)*, 1, pp. 90-104.
- mounir, N. (2010). *Tasir al-mawarid al-bashariya. algrie: Diwan al-Matbou‘at al-Jamia‘iya*,.
- Płaza, G. K. (2025). *Ergonomics/Human Factors in the Era of Smart and Sustainable Industry: Industry. Management Systems in Production Engineering*, 2, pp. 229-238.
- Saad Ali Al-Anzi, A. A.-A. (s.d.). *Al-‘alaqa bayna al-taqa al-tanzimiya al-muntija wa al-ibtikar al-tanzimi: Dirasa tahliyyiya fi kuliyyat ‘ayina min al-jami‘at al-‘iraqiya. Iraq: Kulliyat ‘Ulum al-Tasjir, Jami‘at Baghdad*.
- Safar, B. A. (2019). *Al-handasa al-bashariya wa ‘alaqatuha bil-inhimak al-wazifi li-a‘da’ hay‘at al-tadris. ‘Arabiyya al-Su‘udiyya: uni AS*.
- Salmon, W. R. (2017). *Fitting methods to paradigms: are ergonomics methods fit for sys tems thinking?* 02, p. 194.

6. Appendices

Appendix 1: Determining the Rating Levels of the Questionnaire

Level of Agreement	Mean Value Range
Very Low	[1, 1.80]
Low	]1.80, 2.60]
Medium	]2.60, 3.40]
High	]3.40, 4.20]
Very High	]4.20, 5]

Source: Prepared by the researcher based on SPSS outputs

Appendix 2: Distribution of the Study Sample by Gender

Gender	Frequency	Percentage
Male	52	50
Female	25	50
Total	50	100

Source: Prepared by the researcher based on SPSS outputs

Appendix 3: Distribution of the Sample by Age

Percentage	Frequency	Age
10	5	nder 25 years
54	27	25–45 years
28	14	45–50 years
8	4	Over 50 years
100	50	Total

Source: Prepared by the researcher based on SPSS outputs

Appendix 4: Distribution of the Sample by Educational Qualification

Educational Qualification	Frequency	Percentage
Intermediate	6	12
Secondary	23	46
University	16	32
Other	5	10
Total	50	100

Source: Prepared by the researcher based on SPSS outputs

Appendix 5: Distribution of Study According to the Work Nature Variable

Frequency	Percentage	Work Nature
16	32	Department Head
23	46	Administrative Staff
11	22	Multi-Purpose Workers
50	100	Total

Source: Prepared by the researcher based on SPSS outputs

Appendix 6: Distribution of Study According to the Professional Experience Variable

Percentage	Frequency	الخبرة المهنية
16	8	Less than 5 years
46	23	From 5 to 15 years
38	19	More than 15 years
100	50	Total

Source: Prepared by the researcher based on SPSS outputs

Appendix 7: Represents the Human Dimension in Human Factors (Ergonomics)

Result	S. D	Mean	Statements	N
Agree	1,029	2,46	Enhancing belonging and unifying social identity	1
Agree	0,735	2,40	Balanced use of tools and equipment	2
Agree	0,949	2,52	Good and effective sensory/physical communication	3
Agree	0,861	2,42	Is there social cohesion and collaboration at work?	4
Neutral	1,427	3,04	Do the employee's needs and capabilities align with the tasks and activities they perform	5
Neutral	1,224	2,60	Does the employee have appropriate health insurance to maintain their physical safety?	6

Source: Prepared by the researcher based on SPSS outputs

Appendix 8: Represents the Organizational Dimension in Human Factors (Ergonomics)

Result	S. D	Mean	Statements	N
Agree	1,029	2,4600	Organizational models that achieve self-efficiency and motivation	1
Agree	0,735	2.4000	Work transparency that ensures trust and objectivity	2
Agree	0,949	2,200	Distribution of tasks and duties according to organizational interests	3
Agree	0,861	2,4200	Financial balance that ensures efficiency without waste	4
Neutral	1,424	3,0400	Decision-making process is participatory and collective	5
Neutral	1,224	2,6000	Division and allocation of work in a balanced and fair manner	6

Source: Prepared by the researcher based on SPSS outputs

Appendix 9: Represents the Environmental Dimension in Human Factors (Ergonomics)

Result	S. D	Mean	Statements	N
Agree	1,029	2,46	Does the organization provide heating and cooling throughout the year?	1
Agree	0,735	2,40	Can the work environment achieve the company's goals with minimal effort and cost?	2
Agree	0,949	2,52	Ease of access to locations, equipment, and tools	3
Agree	0,861	2,42	Lighting distribution complies with work requirements	4
Neutral	1,427	3,04	Buildings are suitable for purposes and needs, both in quantity and type	5
Neutral	1,224	2,60	Adequate ventilation ensures clean air	6

Source: Prepared by the researcher based on SPSS outputs

Appendix 10: Represents the Affective Energy Dimension in Organizational Energy

Result	S. D	Mean	Statements	N
Neutral	1,073	2,78	Our employees receive positive psychological motivation through recognition of their achievements.	1
Neutral	1,119	2,94	Employees feel enthusiastic about performing their jobs.	2
Neutral	1,000	3,02	Employees have the desire to perform their work tirelessly.	3
Disagree	1,388	3,40	Our company pays attention to employees' psychological factors to gain their loyalty.	4
Disagree	1,035	3,16	Employees experience high psychological comfort and low stress.	5

Source: Prepared by the researcher based on SPSS outputs

Appendix 11: Represents the Cognitive Energy Dimension in Organizational Energy

Result	S. D	Mean	Statements	N
Neutral	1,422	3,08	Our employees rely on collective thinking	1
Agree	1,070	2,46	Employees are ready to work at any time.	2
Neutral	1,357	2,90	Employees are mentally prepared in the present moment.	3
Neutral	1,543	2,74	Employees genuinely care about the company's fate.	4
Agree	1,347	2,40	Employees look forward to new opportunities within the organization for its development.	5
Agree	0,986	2,56	Employees have a collective desire to accomplish whatever work requires.	6
Neutral	0,915	3,06	The company encourages employees' cognitive processes and innovations.	7
Neutral	1,331	2,66	The company continuously improves employees' skills and abilities.	8

Neutral	1,631	2,96	Our employees feel that their intellectual efforts are valued.	9
---------	-------	------	--	---

Source: Prepared by the researcher based on SPSS outputs

Appendix 12: Represents the Cognitive Energy Dimension in Organizational Energy

Result	S. D	Mean	Statements	N
Neutral	1,280	2,84	Employees go beyond their formal job requirements to ensure the company's success.	1
Neutral	1,347	2,80	Employees maintain continuous activity in performing their tasks.	2
Neutral	1,449	2,98	Employees work at a very fast pace.	3
Agree	1,193	2,48	Our employees have appropriate health insurance to maintain their physical safety.	4
Agree	1,109	2,56	Our employees strive to minimize unnecessary overtime that causes physical fatigue.	5
Neutral	1,359	2,78	There is a balance between physical and mechanical effort in our company.	6
Neutral	1,276	2,90	Activities and tasks align with the employee's needs and capabilities.	7

Source: Prepared by the researcher based on SPSS outputs