The Effect of Job Satisfaction on Work Accidents: Empirical Study in Algerien Electricity and Gas Company – Hassi Messaoud

Asma Youcef, https://orcid.org/0009-0000-7306-4855

Associate Professor, Doctor of Management, Management Department, Faculty of Economics and Business Administration, University of Kasdi Merbah Ouargla, Algeria

Corresponding author: Asma Youcef, assma60@gmail.com

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Abstract: *Work accidents are a public health problem; it is necessary to conduct research that contributes to accident prevention and health promotion. It is also considered Electricity and Gas Company - Electricity Transmission is a sector that employs more than 82 thousand employees, and the number of customers reaches more than 11 million electricity customers and more than 7 million gas customers, and appeals to many branches of work and professions. However, it suffers from high work accidents.to this end, this study sought to determine the effect of job satisfaction on work accidents in the Algerian Electricity and Gas Company - Electricity Transmission - Hassi Messaoud. The study population included all employees works in the exploitation and human resources departments of the Algerian Electricity and Gas Company. A random sample was used which consisted of 120 employees, and 101 questionnaires were returned, representing (84. 16 per cent) of the sample as a whole. The study's findings showed that there is a relationship between job satisfaction and work accidents in the Algerian Electricity and Gas Company's Electricity Transmission - Hassi Messaoud at the level of (0.05). the means demonstrate that employees at the institution under study had a high level of perception of the concept of job satisfaction and its dimensions as evidenced by an average score of 3.72. the mathematical means, the level of the employee's perception of the use of preventive measures to reduce work accidents in the institution under study was (average)In the institution under study, it indicate that the average value of work accidents is 3.12, there is no difference at the level (0.05) in the number of work accidents that can be attributed to demographic factors (Gender, age, educational level, experience, work ranking). Future studies Should be researched to reduce occupational accidents; further efforts are necessary to understand the numerous aspects involved, considering diverse sectors of the economy and different areas.*

Keywords: job satisfaction, work accidents, satisfaction with the supervision style, exploitation and human resources departments, Algerian Electricity and Gas Company, Hassi Messaoud.

JEL Classification: J28, M54, D23.

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Introduction

Globalization has led to significant socioeconomic changes, altering the dynamics of individuals' engagement with their occupations. Consequently, many elements have emerged that can influence individuals' physical and mental well-being. As a result, the performance of work tasks occurs in the context of increased stress and a significant volume of work, leading to job dissatisfaction and an increased probability of workplace incidents (Silva, 2017; Huebra et al., 2018). The experience of discontentment at the workplace can lead to various adverse consequences on an individual's conduct, overall welfare, physical condition, and vocational and personal spheres. The repercussions of occupational dissatisfaction can impact an individual's health, including multiple factors and potentially providing insights into the individual's mind (OMS, 2017).

Job satisfaction results from an employee's perception of their work and the impact of their actions, attitudes, and values on personal and professional domains. Experiencing a profound sensation might elicit emotions of joy and serenity. However, this emotional state is deemed unfavourable or unsatisfactory. Under such circumstances, the potential consequences may include high staff turnover, elevated rates of absenteeism, substance abuse problems such as alcohol or drug addiction, and even workplace accidents. According to the OMS (2017), The occupational hazards faced by the working team in the Electricity and Gas domain are notably pronounced, owing to the vast array of accident risks in their work environment. This phenomenon can be attributed to the prolonged duration of their workdays, hostile and demanding working conditions, and the frequent rotation of shifts, among other contributing variables. According to the studies conducted by Porto et al. (2016) and Bezerra et al. (2015), a range of characteristics have been identified that can contribute to worker dissatisfaction and elevate the probability of work-related accidents within this professional cohort compared to other groups.

The primary factors contributing to workplace dissatisfaction within the Electricity and Gas Department include insufficient compensation for the risks involved, excessive workload, an unappealing working environment, disorganized service delivery, and a lack of well-established norms and protocols. In addition to the factors above, concerns about management, including insufficient commitment and motivation towards job responsibilities, communication difficulties, restricted collaboration among peers, inadequate support, and a shortage of recognition for professional accomplishments, also play a role in fostering dissatisfaction among professionals and a subsequent decrease in productivity. Therefore, these elements can potentially enhance the probability of workplace accidents, thus serving as risk factors (Ribeiro et al., 2012; Ozanam et al., 2019).

Given the factors above, it is crucial to investigate the associations between the variables above (accident and discontent) to comprehend further and promote these employees' well-being and safety, hence raising the quality of their work. Moreover, considering the limitations of prior studies investigating the possible correlations between occupational accidents and dissatisfaction, it is crucial to delve deeper into the interrelationships between these two factors (accident x discontent). Hence, the primary objective of this research endeavour was to examine the potential correlation between job satisfaction levels among individuals employed in a corporate environment and the probability of work-related accidents.

Literature Review

Work-related incidents exert a substantial adverse influence on the well-being of workers. Workplace accidents pose a significant public health issue, leading to financial costs for organisations and the country and emotional, psychological, and social ramifications (Amponsah-Tawiah and Mensah, 2016; Muchiri et al., 2019). The Algerian Social Security system, as outlined in Law 83-13-Art, is a subject of discussion. According to Section 06 of the Algerian legislation in 2022, a work accident is described as an occurrence resulting in physical harm due to an unforeseen external factor, which transpires within the context of an established employment arrangement, namely within designated working hours.

The International Labour Organisation (ILO, 2016) reports that worker fatalities due to accidents or occupational diseases occur globally every 15 seconds. Additionally, a substantial number of workers, namely 153 individuals, suffer from work-related injuries.

According to the organisation's findings, it has been ascertained that insufficient health and safety measures contribute to around 4% of the worldwide Gross Domestic Product (GDP). Numerous organisations use diverse approaches, such as implementing management systems subject to evaluation and certification, to evaluate and improve their risk management strategies for their products, services, and operations. Several studies have been conducted on this topic, including those by Airagnes et al. (2018), Alves (2012), Drakopoulos & Theodossiou (2016), Salminen (2016), Sheikhalishahi et al. (2016), among others. Siren and Knudsen (2017), Thurston and Glendon (2018), and Siren and Knudsen (2017) have been cited in the present discourse.

The topic of workplace accidents is a multifaceted occurrence that encompasses a range of factors capable of impacting diverse outcomes, such as health, job satisfaction, and absenteeism (Amponsah-Tawiah & Mensah, 2016; Drakopoulos & Theodossiou, 2016; Arotar Iek & Mulej, 2016; Thurston & Glendon, 2018). Consequently, the occurrence of accidents can be attributed to a complex network of interconnected personal and behavioural factors (Airagnes et al., 2018; Cheung, 2014; Gembalska-kwiecie, 2017; Rakhshandehroo et al., 2015; Sakina and Omar, 2018), organisational factors (Eskandari et al., 2017; Muchiri et al., 2017; Yilmaz & Tosun, 2018; Thurston & Glendon, 2018; Sawhney & Cigularov, 2018), as well as work/task factors (Mullen et al., 2017; Sawhney & Cigularov, 2018; Sheikhalishahi et al., 2017; Yilmaz & Tosun, 2018). The existing body of empirical research conducted over the past thirty years has consistently identified two essential components contributing to workplace accidents. These factors include internal aspects linked to the dispositional traits of workers and external causal factors associated with the work environment (Sherry, 1991).

Various models of the accident process have incorporated variables about the social work environment of employees, the organisational climate, work behaviour, and personality attributes. The notion of job satisfaction is significant within organisational contexts as it exerts a central influence on work-life equilibrium. As a result, a considerable amount of academic research has been dedicated to investigating this subject, as evidenced by the studies conducted by Dormann and Zapf (2001) and Hardy and Wall (2003). In his seminal work, Locke (1976) established a widely accepted definition of job satisfaction, in which he conceptualized it as a state characterized by positive emotions or enjoyment that stems from an evaluation of one's job or job-related experiences. The level of pleasure experienced by an individual in their employment is dependent on their perception of how well their desires and expectations align with the actual fulfilment of those desires by the job (Locke, 1976: 1300).

Therefore, it is widely recognized as a psychological response to an individual's job and a reflection of the current work conditions (Dormann & Zapf, 2001; Lund, 2003). The measurement of job satisfaction has been conducted using either a single-item scale, as demonstrated by Gyekye in 2005, or multiple-item measures, as exemplified by Judge et al. (2003). As mentioned earlier, current understandings of job satisfaction portray it as a multifaceted notion shaped by two main factors: the individual personality traits of employees and the contextual effects within the work environment (Dormann and Zapf, 2001; Judge et al., 2000). The definitions suggest that both internal and external factors have a significant role in shaping job satisfaction. Extensive research has investigated these two factors' influence on job satisfaction assessment (Judge et al., 2000; Gerhart, 1987).

Numerous empirical investigations have provided evidence supporting a robust correlation between job satisfaction and a range of dispositional personality traits (Gerhart, 1987). On the contrary, alternative research has suggested that job satisfaction exhibits a higher degree of correlation with situational circumstances. Iverson and Erwin (1994) assert that scholarly literature suggests that a thorough assessment of the influence of job satisfaction on organisational behaviour necessitates the integration of several views. Numerous studies have provided substantial evidence regarding the significance of job satisfaction in organisational settings, specifically its influence on effectiveness, productivity, employee relations, absenteeism, and turnover. A study conducted by Harter et al. (2002) showed that individuals who have exceptional performance, exhibit dedication to their organisations, enjoy stable employment, and indicate contentment with their income tend to experience heightened levels of job satisfaction.

Previous research has indicated that absenteeism and voluntary turnover levels among the individuals under investigation are significantly lower than their dissatisfied counterparts (Hardy & Wall, 2003; Tett & Meyer, 1993). The personnel under consideration have exhibited proactive engagement in extracurricular activities beyond their central organisation, as exemplified by their demonstration of organisational citizenship behaviours (Williams & Anderson, 1991). Furthermore, they have demonstrated a reduced incidence of participating in harmful corporate practices (Chen & Spector, 1992). Implementing safety management policies (Gyekye, 2005; Probst, 2001) has been associated with reduced accident involvement rates among

persons who have complied with these policies, in contrast to their dissatisfied counterparts (Gyekye, 2005; Probst, 2004). The claims above are supported by a recent study conducted by Barling et al. (2003), which found evidence of a mediating association between job satisfaction and occupational injuries.

Methodology and Research Methods

The Study Problem and its Questions. Despite the considerable focus dedicated to causal attributions and job satisfaction in the existing body of organisational literature, there needs to be more empirical evidence supporting a relationship between these two prominent organisational variables. However, it is worth noting that theoretical evidence suggests some form of connection between them. The objective of the present work is to address this research gap. This study investigates the causal attributions provided for workplace accidents and explores the impact of job happiness on these attributions. It specifically looks at the effect of job satisfaction on work accidents, exploitation, and the human resources divisions of the Algerian Electricity and Gas Company − Electricity Transmission − Hassi Messaoud.

Consequently, the following questions serve as a representation of the research problem:

1. What is the degree to which employees at Algerian Electricity and Gas Company − Electricity Transmission − Hassi Messaoud perceive their level of job satisfaction and its dimensions?
2. What percentage of preventive measures are used in the Algerian Electricity and Gas Company's Electricity Transmission?
3. Does the rate of work accidents at Hassi Messaoud, an electricity transmission company owned by the Algerian Electricity and Gas Company, depend on job satisfaction?

The Study Objectives. This study aims to determine how job satisfaction affects work accidents at the Algerian Electricity and Gas Company's Electricity Transmission facility in Hassi Messaoud. Attaining the following goals will help with this.

➢ Determining job satisfaction, its components, and the fundamental theories that address it.
➢ Determining how to apply preventive measures to lower work accidents in the Hassi Messaoud Electricity Transmission Division of the Algerian Electricity and Gas Company.
➢ Examining how job satisfaction affects work-related accidents at the Algerian Electricity and Gas Company's Hassi Messaoud transmission facility.

The Study Hypotheses. The study's hypothesis has been put forth considering the problem at hand and its objectives:

The first hypothesis (H1): In the Algerian Electricity and Gas Company − Electricity Transmission − Hassi Messaoud, job satisfaction statistically impacts work accidents.

The second hypothesis (H2): In the Algerian Electricity and Gas Company − Electricity Transmission − Hassi Messaoud, job satisfaction dimensions have a statistically significant effect on work accidents.

The third hypothesis (H3): The differences in job satisfaction at the level (0.05) in the Algerian Electricity and Gas Company's Electricity Transmission − Hassi Messaoud can be attributed to demographic factors (gender, age, educational level, experience, and work ranking).

The Study Model. The figure below illustrates the correlation between job satisfaction and its components, namely workload, work stability, salaries and benefits, contentment with supervision style, and joy with group and work environment, about work accidents.

Dependent variables
Job satisfaction
Workload
Work stability
Salaries and benefits
Satisfaction with the supervision style
Satisfaction with group and work environment

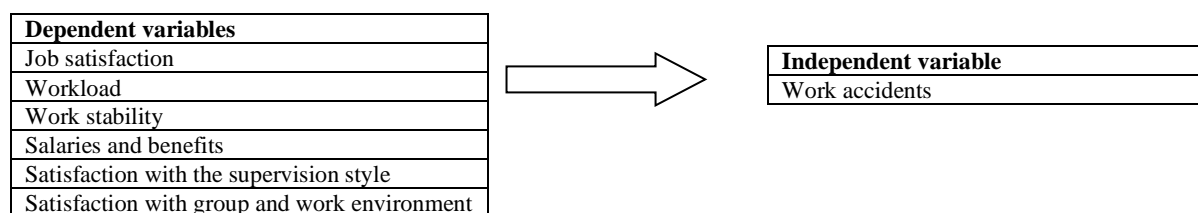| **Independent variable** |
|---|
| Work accidents |

Figure 1. The Study Model

Source: The researcher has compiled this report after careful consideration of relevant sources (Gyekye & Salminen, 2006) and (Alveset al., 2020)

The Study Methodology. This study employs both descriptive and analytical methods. In order to accomplish the study's goals, The methodology employed in this study involves the characterization of the study population and the collection of data through the development of a questionnaire. The construction of the questionnaire is informed by relevant literature, including the works of Gyekye and Salminen (2006) and Alves et al. (2020). The survey instrument will facilitate data collection, followed by data entry into a computer system for analysis. Given the potential difficulties associated with employing alternative data collection methods such as interviews and various tools, this strategy is widely regarded as the most suitable approach.

The Study Population and its Sample. The study population comprises all workers working in the exploitation and human resources departments of the Algerian Electricity and Gas Company − Electricity Transmission − Hassi Messaoud (184). We drew a simple random sample of 120 employees in the company under study out of 179, where 120 questionnaires were distributed to the number of employees in the company, and (110) were retrieved, equivalent to (**91.66**%). The number of questionnaires that were not retrieved was (10), i.e. (**8.33**%). As for the questionnaires that were not valid for analysis, it was (09) questionnaire, which is equivalent to (**7.5**%), and for the questionnaires that were valid for analysis, it was (101) questionnaire, which is equivalent to (**84.16**%).

The Study Tool. To gather the study's data, the following sections of a questionnaire were used. *The first section* includes the respondent's necessary demographic data, such as gender, age, educational level, experience, and work ranking). *The second section* depicts a factor affecting job satisfaction. The sentences in this variable were created using the research of (Alveset et al., 2020). It contains five sub-dimensions (Workload, Work stability, Salaries and benefits, Satisfaction with the supervision style, and Satisfaction with group and work environment) to measure job satisfaction. Workplace accidents are represented in *the third section.* In the exploitation and human resources divisions of the Algerian Electricity and Gas Company − Electricity Transmission − Hassi Messaoud, the Likert-Scale was utilized to gauge job satisfaction and its impact on work accidents.

Three levels of a scale were used to evaluate the job satisfaction dimensions and the level of work accidents, and the cut degree was determined by dividing the difference between the highest value on the scale (which was 5) and the lowest value on the scale (which was 1) into three levels. e. (1-5/3) = 1.33 was the cutoff. The three levels of assessment are as follows.

Table 1. Scoring Range of Likert Scale of the Survey

The degree of evaluation is relatively low	The average level of evaluation	The level of evaluation is high
2.33 − 1	3.67 − 2.34	5 − 3.68

Source: Compiled by the author

The validity and reliability of the study was measured as follows.

A. Validity of Tool. To ensure the reliability of the questionnaire's paragraphs and obtain feedback on each section, as well as the overall questionnaire's alignment with the study variables and dimensions, the questionnaire was reviewed by a panel of referees consisting of faculty members from the University of Kasdi Merbah Ouargla who possess both technical and academic expertise. After carefully examining the reviewers' feedback, specific paragraphs were modified or omitted to enhance the replies' comprehensibility.

B. Reliability of Tool. As shown in Table 2 below, the reliability coefficient was computed with Cronbach's Coefficient Alpha to assess the internal consistency of the paragraphs within the questionnaire and the dimensions of all variables. The findings in Table 2 indicate that all variables and study dimensions have high-reliability coefficients, which are reliability percentages commonly used in statistical analysis and scientific research.

Table 2. The Findings about the Reliability Assessment of the Study Tool, Precisely the Internal Consistency of the Questionnaire Items

Variables and dimensions	Number of items	Cronbach's Alpha
Job satisaction	20	84,00%
Work acccidents	17	77,10%
Overall tool	37	82,90%

Source: Author's research based on SPSS 23 Program

Statistical Treatment Methods. Descriptive and analytical statistical approaches from the Statistical Package for the Social Sciences (SPSS) were employed to address the research questions and evaluate the study's hypothesis.

1. Utilizing Cronbach's Alpha coefficient, each variable's dimensions and each paragraph of the questionnaire were tested for internal consistency.
2. Using a descriptive statistical scale, you can use percentages to describe the characteristics of the study sample, providing answers to the research questions as you go.
3. The third research question was addressed using simple linear regression, and the initial hypothesis was put to the test.
4. To test the second hypothesis, stepwise regression analysis was used.
5. To determine the evenness of the distribution, use the Kolmogorov-Smirnov test.
6. To test the third hypothesis we used the Mann-Whitney test and Kruskal-Wallis test.

Results

1. The Findings about Addressing the First Question. The study analyzed determine the average and standard deviation of the estimates provided by the respondents in the context of Algerian Electricity and Gas Company − Electricity Transmission − Hassi Messaoud. This study aimed to evaluate the degree of job satisfaction and its many characteristics among employees inside the organisation. The data in Table 03 indicates that the average level of job satisfaction is relatively high, as evidenced by an average score of 3.72. Furthermore, calculating the standard deviation for job satisfaction yields a value of 0.448.

The results indicate that the average score is above the benchmark of (3) out of (5) degrees. This data illustrates that participants provided a favourable assessment, suggesting that employees at Algerian Electricity and Gas Company − Electricity Transmission − Hassi Messaoud exhibited significant job satisfaction. The findings about each dimension of the variable "job satisfaction" indicate that according to respondents from the Algerian Electricity and Gas Company − Electricity Transmission − Hassi Messaoud, the size of "Satisfaction with the supervision style" is ranked first. It is based on a mean score of 3.93 and a standard deviation of 0.646. On the other hand, the dimension of "Salaries and benefits" is ranked fifth and last, with a mean score of 3.42 and a standard deviation of 0.641. The data presented above indicate that the mean values for all dimensions of job satisfaction are more significant than the established benchmark, set at a level of 3 on a 5-point scale. The results of this study indicate that the degree of employees' perceptions of job satisfaction and its many components at the Algerian Electricity and Gas Company − Electricity Transmission − Hassi Messaoud was high

Table 3. Means and Standard Deviations of Respondents' Responses to the Job Satisfaction Dimensions and Work Accidents

No	Job satisfaction dimenions	Means	Standard deviation	Ranks	Perception level
01	Workload	3.77	0.634	03	High
02	Work stability	3.88	0.580	02	High
03	Salaries and benefits	3.42	0.641	05	average
04	Satisfaction with the supervision style	3.93	0.646	01	High
05	Satisfaction with group and work environment	3.57	0.578	04	average
06	Job satisfaction	3.71	0.448	-	High
07	Work accidents	3.12	0.479	-	average

Source: Author's research based on SPSS 23 Program

2. Results that Relate to the Second Question's Solution. The study's second question, "What percentage of preventive measures are used in the Algerian Electricity and Gas Company's Electricity Transmission?" utilized the averages and standard deviations of the respondent's estimates in the Hassi Messaoud branch. These calculations were performed to assess the level of perception regarding this variable and to evaluate the dispersion of responses from their arithmetic means. The objective was to identify the need for implementing preventive measures to reduce work accidents within the company.

The results presented in Table 3 indicate that the average value of work accidents is 3.12, with a standard deviation of 0.479. The results indicate that the overall arithmetic mean does not meet the prescribed test threshold of 3 out of 5 degrees. The result above indicates that the evaluation provided by the participants was favourable, suggesting that the employees' views on work-related incidents at the Algerian Electricity and Gas Company − Electricity Transmission − Hassi Messaoud were average. These findings demonstrate the

(average) employee perception of using preventive measures to reduce workplace accidents at the Algerian Electricity and Gas Company's Electricity Transmission division.

3. Testing the Study Hypothesis

First hypothesis (H1): In the Algerian Electricity and Gas Company − Electricity Transmission − Hassi Messaoud, job satisfaction statistically impacts work accidents.

This hypothesis was tested using a simple regression, the results of which are shown in Table 4. Table 4 shows the correlation between the job satisfaction variable and work accidents R = (0.214). The result indicates that (0.046) of the variance (R-Square) on work accidents has been significantly explained by job satisfaction. The R sq\. (0.046), which is the explained variance, is the square of the multiple R $(0.214)^2$.

Table 4. Regression Model Summary for Hypothesis (1) b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.214a	.046	.036	.47042
a. Predictors: (Constant), job satisfaction				
b. Dependent Variable: work accidents				

Source: Author's research based on SPSS 23 Program

According to Table 5, Table of the regression coefficients, the t value of (2.185) is significant at (0.05) level. Because of this, there is a statistically significant relationship between job satisfaction on work accidents in the Algerian Electricity and Gas Company − Electricity Transmission − Hassi Messaoud.

Second hypothesis (H2): In the Algerian Electricity and Gas Company − Electricity Transmission − Hassi Messaoud, job satisfaction dimensions have a statistically significant effect on work accidents.

The data presented in Tables 6, 7, and 8 demonstrate that after conducting a stepwise linear regression analysis to determine the impact of the independent variable on the dependent variable.

➢ The final regression model, which employs the linear gradual regression method, demonstrates that salaries and benefits, the independent variable, have a significant and statistically significant impact on work accidents as a dependent variable.
➢ The stepwise linear regression method was used to exclude the independent variables associated with the workload, work stability, satisfaction with the supervision style, satisfaction with the group, and work environment.
➢ The analysis's findings revealed that the coefficient of determination is equal to 0.159, which indicates that external factors cause 84.10% of the variance in work accidents and that only 15.90% of it is caused by the influence of the independent variable.
➢ The analysis's findings revealed that the following describes the regression equation.

$$Y=2.111+0..297x \tag{1}$$

Y: dependent variable (work accidents); x : independent variable (salaries and benefits).

The analysis results showed that the value of t = 4.322 and that the calculated significance level is less than the level of significance adopted in the study, indicating a statistically significant effect between independent variables combined with the dependent variable.

In the Algerian Electricity and Gas Company − Electricity Transmission − Hassi Messaoud, there is a statistically significant relationship between job satisfaction and work accidents.

Table 6. Variables Entered/Removeda

Model	Variables Entered	Variables Removed	Method
1	salaries and benefits	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
a. Dependent Variable: work accidents			

Source: Author's research based on SPSS 23 Program

Table 7. Stepwise Linear Regression Model Summary for Hypothesis (2) b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.398a	.159	.150	.44175
a. Predictors: (Constant), salaries and benefits				
b. Dependent Variable: work accidents				

Source: Author's research based on SPSS 23 Program

Table 8. Stepwise Linear Regression Coefficients Result for Hypothesis (2) a

Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	2.111	.240		8.801	.000
salaries and benefits	.297	.069	.398	4.322	.000
a. Dependent Variable: work accidents					

Source: Author's research based on SPSS 23 Program

Third hypothesis (H3): The differences in job satisfaction at the level (0.05) in the Algerian Electricity and Gas Company's Electricity Transmission − Hassi Messaoud can be attributed to demographic factors (gender, age, educational level, experience, and work ranking).

To verify this hypothesis, a test of normality of distribution (Kolmogorov-Smirnov) was conducted to determine the appropriate tests (parametric or non-parametric), and the results are shown in Table 9.

Table 9. Testing the Normal Distribution of the Respondents' Responses about Work Accident Rates According to Demographic Variables

Work accidents rates		Kolmogorov-Smirnov		
		K-M test value	df	P value
Gender	male	0.083	89	0.172
	famle	0.283	12	0.009
Age	Less than 30 years	0.211	7	0.20
	From 31 to 40 years	0.144	39	0.04
	From 41 to 50 years	0.082	40	0.20
	More than 50 years	0.087	15	0.20
Educational level	Basic	0.195	9	0.20
	secondary	0.145	19	0.20
	Senior technician	0.186	44	0.001
	university or more	0.009	29	0.20
Work ranking	Execution agent	0.163	31	0.034
	control factor	0.071	48	0.200
	frame	0.214	18	0.029
	Sublime frame	0.216	4	/
Experience	Less than 10 years	0.163	33	0.025
	From 11 to 20 years	0.100	53	2000.
	More than 20 years	0.225	14	0.052

Source: Author's research based on SPSS 23 Program

The first sub-hypothesis: The rates of work accidents in the Algerian Electricity and Gas Company − Electricity Transmission − Hassi Messaoud do not differ according to gender. Through the results of the previous Table 9, the author notices in the test of the normal distribution of the respondents' responses about the rates of work accidents according to the sex variable that the probability value sig is less than the level of significance 0.05 for females, and this indicates that the data does not follow the normal distribution, and therefore it cannot be used T-test for independent samples, which makes us depend on the Mann-Whitney test as shown in the following Table.

Table 10. Results of the Mann-Whitney Test for Work Accident Rates According to the Gender Variable

Summary of the Mann-Whitney U-Test for Independent Samples	
Total N	101
U of Mann–Whitney	594.000
W of Wilcoxon	672.000
Test statistics	594.000
standard error	95.144
Standardized test statistics	.631
sig. asymptotic (two-tailed test)	.528

Source: Author's research based on SPSS 23 Program

It is clear from the previous Table that the probability value Sig = 0.528 is greater than the significant level (($\alpha \leq 0.05$). From it, the rates of work accidents in the Algerian Electricity and Gas Company − Electricity Transmission − Hassi Messaoud do not differ according to gender.

***The second sub-hypothesis*:** The rates of work accidents do not differ in the Algerian Electricity and Gas Company − Electricity Transmission − Hassi Messaoud according to the age variable. Through the results of the previous Table 9, we notice in the test of the normal distribution of the respondents' responses about work accident rates according to the age variable that the probability value sig is less than the significance level 0.05 in the category of workers between the ages of 31 and 40 years, and this indicates that The data does not follow a normal distribution and therefore one-way analysis of variance cannot be used, which makes us rely on the Kruskal-Wallis test as shown in the following Table.

Table 11. The Results of the Kruskal-Wallis Test for Work Accident Rates According to the Age Variable

Kruskal-Wallis test			
K-M test value	df	P value	N
9.882	03	0.02	101

Source: Author's research based on SPSS 23 Program

The previous Table shows the results of the Kruskal-Wallis test, where the probability value was Sig = 0.02, which is smaller than the significance level of 0.05, and from it, the author rejects the hypothesis: The rates of work accidents in the Algerian Electricity and Gas Company − Electricity Transmission − Hassi Messaoud do not differ according to the age variable.

The third sub-hypothesis: The rates of work accidents do not differ in the Algerian Electricity and Gas Company − Electricity Transmission − Hassi Messaoud according to the educational level variable. Through the results of the previous Table 9, one can notice in the test of the normal distribution of the respondents' responses about work accident rates according to the educational level variable that the probability value sig is less than the significance level 0.05 in the category of workers who have a high technical level, and this indicates that the data does not Following the normal distribution, one-way analysis of variance cannot be used, which makes us rely on the Kruskal-Wallis test, as shown in the following Table.

Table 12. The Results of the Kruskal-Wallis Test for Work Accident Rates According to the Eductional Level Variable

Kruskal-Wallis test			
K-M test value	df	P value	N
3.567	03	0.312	101

Source: Author's research based on SPSS 23 Program

The previous Table shows the results of the Kruskal-Wallis test, where the probability value was Sig = 0.312, which is greater than the significance level of 0.05. There is a hypothesis from it: the rates of work accidents in the Algerian Electricity and Gas Company − Electricity Transmission − Hassi Messaoud do not differ according to the educational level variable.

***The fourth sub-hypothesis*:** The rates of work accidents do not differ in the Algerian Electricity and Gas Company − Electricity Transmission − Hassi Messaoud according to the work ranking variable. Through the results of the previous Table 9, it can be noticed in the test of the normal distribution of the respondents' responses about the rates of work accidents according to work ranking variable that the probability value sig is less than the significance level 0.05 in the category of tires, and this indicates that the data does not follow

the normal distribution, and therefore does not One-way analysis of variance can be used, which makes us depend on the Kruskal-Wallis test as shown in the following Table.

Table 13. The Results of the Kruskal-Wallis Test for Work Accident Rates According to the Work Ranking Variable

Kruskal-Wallis test			
K-M test value	df	P value	N
4.209	03	0.240	101

Source: Author's research based on SPSS 23 Program

The previous table shows the results of the Kruskal-Wallis test, where the probability value was Sig = 0.24, which is greater than the significance level of 0.05. The hypothesis is accepted: the rates of work accidents in the Algerian Electricity and Gas Company − Electricity Transmission − Hassi Messaoud do not differ according to the work ranking variable.

The fifth sub-hypothesis: The rates of work accidents do not differ in the Algerian Electricity and Gas Company − Electricity Transmission − Hassi Messaoud according to the experience variable. Through the results of the previous Table 9, we notice in the test of the normal distribution of the respondents' responses about the rates of work accidents according to the seniority variable that the probability value sig is less than the significance level 0.05 in the category of workers whose seniority ranges from one year to 10 years, and this indicates that the data do not follow a normal distribution and therefore one-way analysis of variance cannot be used, which makes us rely on the Kruskal-Wallis test as shown in the following Table.

Table 14. The Results of the Kruskal-Wallis Test for Work Accident Rates According to the Experience Variable

Kruskal-Wallis test			
K-M test value	df	P value	N
5.974	03	0.113	101

Source: Author's research based on SPSS 23 Program

The previous Table shows the results of the Kruskal-Wallis test, where the probability value was Sig = 0.113, which is greater than the significance level of 0.05. Then, the author accepts the hypothesis: the rates of work accidents in the Algerian Electricity and Gas Company − Electricity Transmission − Hassi Messaoud do not differ according to the experience variable.

Conclusions

The following conclusions were drawn from this study:

➢ The means results demonstrate that employees at the Algerian Electricity and Gas Company's Electricity Transmission-Hassi Messaoud highly perceived job satisfaction and its dimensions.
➢ According to the findings of the mathematical means, the level of the employee's perception of the use of preventive measures to reduce work accidents in the Algerian Electricity and Gas Company's Electricity Transmission − Hassi Messaoud was (average).
➢ There is a relationship between job satisfaction and work accidents in the Hassi Messaoud division of the Algerian Electricity and Gas Company. In the Algerian Electricity and Gas Company − Electricity Transmission − Hassi Messaoud, there is a relationship between job satisfaction and work accidents.
➢ In the Algerian Electricity and Gas Company − Electricity Transmission − Hassi Messaoud, there are no demographic variables (gender, age, educational level, experience, or work ranking) that are statistically significantly different from one another at the level (0.05) for work accidents.

The author provides the following advice in light of the study's findings:

➢ Fairness must be incorporated into the promotion standards that encourage staff members to work toward the organisation's objectives.
➢ The company's keenness to provide all means of prevention and safety in the work environment.
➢ The company must develop plans and procedures for work accidents and emergency cases.
➢ The need to provide material and moral incentives commensurate with the nature of the work.
➢ The requirement for dangerous parts of the machines that the worker handles to be labelled.

> The company must be aware of what is occurring to the employees and guarantee that occupational safety and prevention measures are applied to decrease or prevent work accidents, which are regarded as one of the most serious types of accidents.

It is imperative to acknowledge the limitations inherent in this study. The research was conducted at a singular large-scale electric power utility in Hassi Massoud. Hence, it is recommended that future research efforts encompass a broader range of electric power utilities, encompassing many aspects that may influence occupational accidents, excluding the variable of job satisfaction. Another factor that necessitates careful interpretation of the findings given in this study is the limited scope of the outsourcer companies, which exclusively worked inside the confines of a singular electric energy company.

Further research should be undertaken in diverse contexts to explore similar phenomena. Illustrative instances encompass many entities operating in alternative economic domains, including mining, telecommunications, and construction. Additional variables that may impact accident rates but were not included in the present study should be explored in future research. Hence, future studies must examine various organisations with varying types and sizes situated in distinct locations or nations. To effectively mitigate occupational accidents, it is imperative to allocate additional resources toward comprehensively understanding the multifaceted elements at play across many sectors of the economy and in distinct geographical locations.

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