



## The Employment Policy in the Mining Industry: A Critical Study on Gender Discrimination

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### Abstract

The object of this paper is devoted to test for the presence of gender discrimination of hiring, in one of the main important economy sector of Tunisia, which is the Tunisian mining industry in the Southwest inmate fully by the largest public mining Firm **TPGC (1897)**, which is, in fact, the only industrial pole of employability of young scholars graduates in this region of the Tunisian mining Basin. The result of this study proves that is no equity between the two genders. The reason of this segregation in favor the masculine gender returns to the specificity of this mining sector that depends more in the physical efforts than mental practices.

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## 1. INTRODUCTION

The Tunisian Mining industry is the principal economic sector, which is considered the oldest industry, Tunisian industry phosphate (the discovery of Tunisian phosphate was in 1897) was able to acquire for that purpose, hot knowledge in this area mining activity that exceeds more than a century of exploitation and international marketing of this product gray sub-field which is fully localized in the Mining Basin Gafsa in Tunisia.

Thus, the Tunisian phosphate industry which is represented by the large public Firm TCGP (Tunisian Company Gafsa Phosphates)

has continued to proliferate more to finance a large share of other economic activities in the country. The contribution of this sector was 4.5% in the GDP in 2013. Although, like other sectors of economic activity, the global Tunisian phosphate industry has made some economic shocks in times of crises such as oil seventy years, debt in the mid-eighties and the last one in 2008 subprime crisis.

But the Tunisian mining industry has resisted facing this very difficult international crisis for any mining company exporting whatever their economic size. As soon as the late eighties - under the efforts of Government assistance, through various policies to encourage research into new fields, exploration of markets and partnership - the Tunisian phosphate sector has regained its vitality through the technological modernization of working tools and could

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therefore generate a significantly positive outcome and that is really real date overview of this industry for a more phosphate promoter since the mid-ninety today.

In this context, the Tunisian mining Firm was engaged in a program of reorganization and technological upgrading to significantly enhance its profitability, to handle to allow him to compete with foreign (Morocco the main competitor in the North Africa) more intense global and precisely address this global economic environment nowadays, unfavourable to the exporters, despite the plan of support and backup in various forms of aid by the Government.

Given that the mining sector is the main industrial activity in the regions of the Tunisian mining basin, more than 67% of the population active works in this sector. Recruitment for young scholars of universities and vocational schools celebrate according to available vacancies in factories and mining firms in relation to this sector of activity. In 2008, the recruitment rate is high at 8% while in 2011, this rate multiplied by 4, is therefore more than 32% of the population of young people (male and female) active job-seekers.

But the most remarkable, according to INS national statistics, 2013, as the gap by hiring two gender segregation at the same level of the university diploma widened to 56.19%, are 86.98% human (H) graduates and 23.45% only of the woman (F) equivalent degree. This gender discrimination, [Hallock et al. \(1998\)](#) in recruitment positions is not new. Indeed, this mining sector saw their own technical specificity is characterized by the physical effort and the good body form of the worker [Hampton and Heywood \(1993\)](#).

For this reason, men are more requested for these positions of work that require a weight and a more efficient physical body to perform these tasks in a difficult work environment in mines. While women are less qualified to manage these workplaces [Johnson and Neumark \(1997\)](#) moreover they are not able to assume the risk of mines in there [Laband and Lentz \(1993\)](#).

We want to know from the survey passed to young graduates (academics and those of vocational schools) if the discrimination between the two sexes still remains, in the last five years (2008-2013), and what are the main causes.

This paper is divided into two sections: in the first we will present a general overview of Tunisian mining activity and the date's key of their creation and their contribution to the national economy in recent years. The second section is required to analyze and interpret the results of the survey on the presence or not of the degree of discrimination between the graduate's young of different sex.

### **1.1 Presentation of the Tunisian mining industry**

Tunisia is a pioneer in the world regarding the field of extraction of phosphates and industry phosphate fertilizer. This is connected directly to the prestigious and oldest Company. It occupies the first places in the world in terms of the production of phosphate (5th place) with an annual production in late 2010, which exceeds 8.5 million tones of phosphate raw ([INS, Tunis, 2010](#)) exported to fifty countries worldwide. (*cf.* Exportation of the product around the world, below).

Founded in 1897, Tunisia Company of Phosphates Gafsa, TCGP, is a company more than a century, which is the public operator of phosphates in Tunisia. Its expansion is unprecedented in the underground opening that extends to other areas of the mining area of Gafsa.

### **1.2 Foundation and remarkable contribution**

The extraction of phosphate product began in Tunisian Mining Basin more than 110 years ago. Although, in global level, Tunisia is the second country after Morocco which began to recover in the last fifty years in the Tunisian Chemical Group in Sfax, which is a subsidiary company directly linked to the parent TCGP, a remarkable share nearly 80% of this natural product in phosphate fertilizers quality (phosphoric acid, DAP, TSP etc.) very competitive and great demand in World Market phosphate fertilizers WMPF.

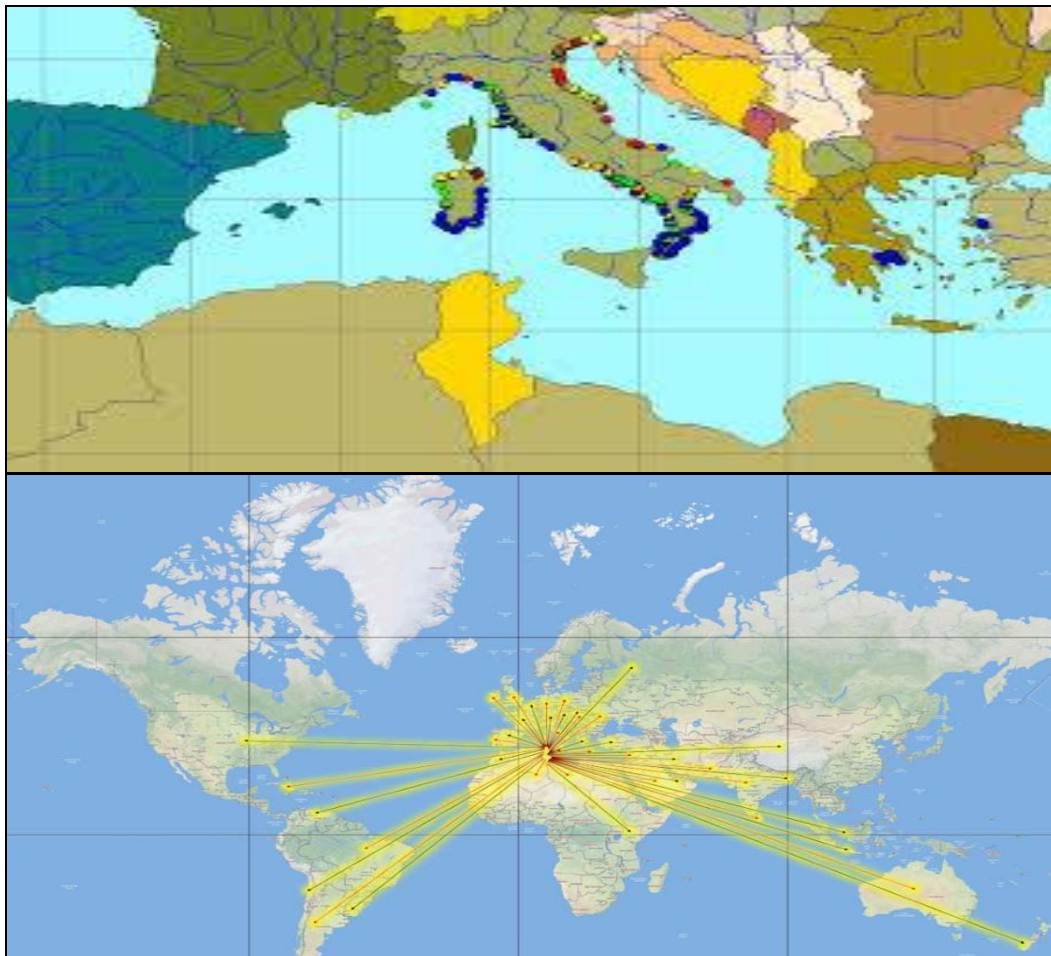


Figure 1: Tunisian mining industry: exportation of the product around the world

Source: [http://min.firmeco.com/content/image/2013/01/34/20145782\\_1.jpg](http://min.firmeco.com/content/image/2013/01/34/20145782_1.jpg)

### 1.3 The main key dates

1885: Date of the first discoveries of mineral phosphate to Jebel Thelja Mélaoui  
 1897: Date of creation of the company of Phosphates and railway Tunisian  
 1920: Date of entry into force of the society of Medilla Phosphates  
 1976: Fusion of all corporations in single mining firm named the Gafsa  
 1994 Phosphates society: Unification of the two seats Tunis-Gafsa, and appointment of a single CEO.

2001: Programme of swarming and stimulation to SMEs subsidiaries of the parent company  
 2008: Capitalistic Joint-Venture /Alliance (Tunisian-Indian) Firms.

### 1.4 The contribution of the mining industry to national economic

The annual result of the net income (cf. Table 1), a synthesis of the ten years behind will allow us to provide the following data.

Table 1: Annual result of the net income of sells (2003-2012) in million TND

Year	Annual result		Net income (After extra-charge deductions)
	Collected income	VAT	
2003	251	142	29
2004	240	131	25
2005	290	189	47

2006	330	210	54
2007	403	268	99
2008	1406	1242	951
2009	613	460	269
2010	783	605	375
2011	590	466	187
2012	687	553	243

**Source:** Finance direction of the Tunisian mining firm, Dep. of Budget. Jan.2013. (Author contribution)

From this table, the net income (after deduction of the VAT and other charges) recorded an unexpected cash gain for a twenty year, 951 Million TND at the end of 2008 (11 times that of 2007 and nearly 4 times the net income in 2009). This increase in receipts recorded following the increase in the price of mining products has very positive consequences for the Tunisian Firm Mining. This last one, had registered a surplus gain which is continued in (2009 to 2012), to 243 Million TND. By this effect, the budget balance is reached since 2008 provide a remarkable added value to create new investments and strengthened the prospecting of new niche for the Tunisian mining product markets.

Furthermore, a share of this surplus of currency flows, have turned to regional development of the basin Miner of Gafsa, land exploitation and production of ores basements. In the end, this mining industry that participates in more than 4% to the Tunisian GDP in 2012, is still the main economic sector where to support the Tunisian State to support the economy in the various serious economic circumstances: as of the end of 2008 and the period post-revolution from 2012 till our days.

### 1.5 Empirical studies

Our study is based on a survey of 167 persons, just 67 responses are valid. Young graduates which are, 34 men and 35 Female and direct interviews, with leaders (3 Directors) and 3 persons of the Labour unions groups persons. We had used the SPSS 20.0 with ANOVA regression's and Cross tables [Thietart \(1999, 2001\)](#).

### 1.6 Problematic and hypotheses

The purpose of this paper is to test and analyze the presence of discrimination against the female sex [Cuberes and Teignier](#)

(2012), and the lack of fairness in application process in the [Tunisian mining industry \(2013\)](#) basin (BMG), approximation of annual data from the National Institute of statistics INS Tunisian, 90's-2013.

Moreover, the question witch we'd to response, in the one hand, is if the gender affects the job opportunity in favour young mal and, in other hand, had had it impact on the discrimination between young scholars having the same diploma levels?

### 1.7 Postulate to check

Hyp0: Equity between male (M) and female (F), absence of gender and diploma discriminations

0.1- Absence of gender discrimination in the mining industry

0.2- Equity and transparency between the young diploma scholars

Hyp1: Presence of the gender and diploma discriminations against the female sex and lack of fairness.

1.1- Persistence of the gender discrimination in the mining industry

1.2- Segregation the same group of young diploma scholars.

### 1.8 Rate of employability of the great industrial pole: discrimination M - F?

#### 1.8.1 Prospecting studies sector

The Tunisian mining industry witch tow Firms composed (TCPG and TGC). Our area of this study is the main Firm CPG who is the large share of hiring, 1254 workers, almost men (98%). This sector is dominated by male M (men: engineers geological and technicians in mechanical-hydraulic and electrics).

This sector depends on fitness and work constantly at night with metrological

conditions [Baron and William \(1985\)](#). This is the reason for the dominance [Laband and Lentz \(1993\)](#) of the kind of masculine workers (M) in detriment of female (F).

### 1.8.2 Administrative area

Discrimination is flexed [Darity et al. \(1998\)](#) in this sector, (1054, M, against 195, F). Remarkably, fairness can be kept over the years past in the second sector compared with the first. This is due that the administrative task request however that resources and data desktop easy to manipulate by both sexes (M, F).

### 1.8.3 Sector research and competitiveness

Women engineers in place are (23%). Between the 1998-2013 women managers (Baccalaureate +5 years) come significantly compete with men [Tounta \(2006\)](#) in areas were previously dedicated only for male's engineers (i.e., mechanics, electricity, telecommunications and exploration of international markets, etc.)

### 1.8.4 Stock of the product and transport

Men are more present in this post. Discrimination [Cohen \(2000\)](#) is present in the hiring. This is the in fact, to the culture of the mining company that promotes men candidates at the expense of women [Raymond \(2002\)](#) as we have suggested them the target of our sample population.

### 1.8.5 Repair of machines and plants

Young graduates, men's 100%, are the only present. This activity will support primarily on male physical exertion than feminine. This craft is essentially masculine. Therefore, an overview in these workplaces contradicts the hypothesis, and checks the presence of discrimination in the hiring of young female graduates in these positions.

From the mid-90 of the last century [Fernandez \(2013\)](#), the Tunisian mining industry with these different units of production and marketing have adopted a new procedure for recruitment of young (M, F). This time, citizens of vocational schools are more accepted than those graduate academics. More generally discrimination dug over, since in vocational schools the quasi-totality is young men (just 4.2%

female).

## 1.8.6 Results and statistical data:

### Candidate selections

Despite the improvement in the rate of employment [Tounta \(2006\)](#) [Deszo and Ross \(2011\)](#) for both young graduates scholars gender in the mining industry (*cf.* Table1), the gap is still significant (almost four times more in favour men) to the detriments of young female graduates for the same period (1996-2013). Thus discrimination [Reskin \(2000\)](#) is still significant 80%. Argument contradicts the alternative hypothesis. To ensure good results, we will refer to the results of our survey.

**Table 2: Evolution of the gender segregation gap**

Candidates (%)	Sep.1996	Sep.2013	Gap (%)
Male (M)	8.76	86.98	78.22
Female (F)	1.42	23.45	22.03

Source: Statistic data NSI, Tunis 2013

## 2. INTERPRETATION OF THE SURVEY RESULT

### 2.1 Cross table analyses

The criterion of the candidate selections [Deszo and Ross \(2011\)](#) is still in favour young male (M) graduates. The arguments collected from our survey among our sample (M & F) youth relate to: the culture of the Mining Firm, the specificity of the Mining industry, the physical working condition and undetected hazards in mines, etc. All these exogenous variables allow strengthening the unfairness in the selection of candidates and including discrimination in the hiring of the female remains very significant.

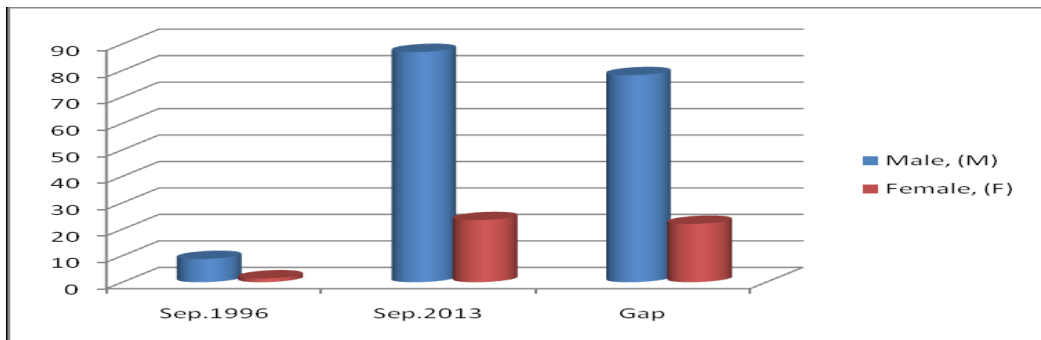


Figure 2: Percent evolution’s of the gender segregation gap

Source: Statistic data NSI data, 2013

Table 3: Responses repartition of the candidates by gender (cross table)

Cross table									
		Gender discrimi					Diploma discrimi		
		No	Yes	Total			No	Yes	Total
Gender	Female	0	35	35	Gender	Female	15	20	35
	Men	17	15	32		Men	0	32	32
Total		17	50	67	Total		15	52	67
		-25.30% (74.6%)					(22.3%) (77.6%)		

Source: Survey data, 2014, (Author contribution)

According to the table 3, we note that candidates had answered (74.6%) for presence of the gender discrimination between young (Female and Men), just 25.3% said they opposed. For the second variable, Diploma discrimination, 77.6% of the responses had agreed that was a no transperance on the job selection by diploma degree by gender. The first look on the cross

table had mentioned the gender effect on the tow variables (Job candidature and Diploma degree).

**2.2 Test statistics and subject effect tests**

In order to specify the independence of the variables, we had made the test statistics ( $X^2$ , Chi-square). The results are mentioned in the (Table 4a and Table 4b) in below.

Table 4 a: Test results between variables on the survey

Test Statistics	Gender	Gender discrimi	Diploma discrimi
Chi-Square	0.134 <sup>a</sup>	16.254 <sup>a</sup>	20.433 <sup>a</sup>
Df	1	1	1
Asymp. Sig.	0.714	0.000	0.000

a. 0 cells (, 0%) have expected frequencies less than 5. The minimum expected cell frequency is 33, 5.

Source: Idem Survey data, 2014, (Author contribution)

The results are significant (sig, p-value 0.000< 0.050). The coefficients are significant at level 5% for the variables (cf. Table 3). The tests for the first two parameters show a preference for hiring of young male graduates at the expense of the female Duflo (2012). So the first hypothesis (H<sub>0</sub>) is rejected. This is shown by the other independent predictors whose respective coefficients are most significant for young

men. However, the test between variable (Gender Discrimination and Diploma degree discrimination), is also significant (p-value.000<0.050) and lets showing, clearly, the political hiring of this mining Firm in favour mal scholars Diploma vs. female gender: because men are more likely to work in difficult mining conditions in the various sectors of this mining firm. (Social Institutions and Gender Index (SIGI, 2012).

**Table 4 b: Test results between variables on the survey (following)**

Tests of between-subjects effects						
Dependent Variable:gender						
Source	Type III sum of squares	df	Mean square	F	Sig.	
Corrected Model	8,145 <sup>a</sup>	2	4.072	30.408	0.000	
Intercept	11,117	1	11.117	83.007	0.000	
Disc_Gen	3,736	1	3.736	27.897	0.000	
Disc_Dip	1,929	1	1.929	14.400	0.000	
Disc_Gen * Disc_Dip	2,200	1	1.254	11.52	0.000	
Error	8,571	64	0.134	.	.	
Total	32,000	67	.	.	.	
Corrected Total	16,716	66	.	.	.	

a. R Squared = 0.487 (Adjusted R Squared = 0.471)

Source: Idem Survey data, 2014, (Author contribution)

**2.3 Correlation variables**

In order to know the correlation link of

dependence between the variables, we had investigated the data on the (cf. table 5).

**Table 5: Matrix’s correlation of the variables: results of independence**

Var-Correlations		Sex	Gender discri	Diploma discri
Gender	Pearson Correlation	1	-0.610**	0.514**
	Sig. (2-tailed)		0.000	0.000
GenderDiscri	Pearson Correlation	-0.610**	1	-0.313**
	Sig. (2-tailed)	0.000		0.000
DiplomaDiscri	Pearson Correlation	0.514**	-0.313**	1
	Sig. (2-tailed)	0.000	0.000	.

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Source: Idem Survey data, 2014, (Author contribution)

According to the Table 4, the coefficient of the variables (gender Discri and Education

Diploma Discri) are significant (p-value 0.000<0.01) respectively. This means that

the Gender factor has an affected to the transparency of job candidature and also on the level of education. This gender discrimination Sen (2001) is accentuated with the new strategy of employability of the professional schools (students Pro.). Leaders prefer well students in the professional schools at the expense of young female graduates Beller (1982). To the screen, the academics (M) nationals are the most recruited; the hiring policy had focused in 2005 to professional occupations (graduates of professional life UN and ILO,

2012).

### 2.4 Analyze of variance (ANOVA)

The variance analyze is the main statistic technical, witch used to compare means of many population (representative sample). The means comparison of two populations is used by Test-t or normal test of Fisher-z. However, if the independent populations acceding tree and more, we use the ANOVA, there for we present the table 6 below.

**Table 6: ANOVA and independence variables test: effect of causality**

		Sum of Squares	df	Mean square	F	Sig.
GenderDiscri	Between Groups	4.718	1	4.718	38.483	0.000
	Within Groups	7.969	65	0.123		
	Total	12.687	66			
DiplomaDiscri	Between Groups	3.070	1	3.070	23.284	0.000
	Within Groups	8.571	65	0.132		
	Total	11.642	66			

Source: Idem Survey data, 2014, (Author contribution)

According to the table 5, in last colon, the p-value (Sig, 0.000) is under the level of 5%. So, the alternative hypothesis  $H_1$  is accepted ( $H_0$  rejected). This result given by ANOVA, the gender means, of the variance for the tow factors (Gender Discrimination and Diploma Discrimination),

Are significant and statistical representative of the information disposition of the variables, (4.718), F (38.483) and 3.070, F (23.284). That means gender Elisabeth and Kelan (2009) affect the transparency and the diploma level of the young candidates (Female and Male) Aigner and Cain (1977).

### 3. CONCLUSION

Our survey made in the Tunisia mining Firm industry had proved that the presence of the gender discrimination accentuated by the no transparence equity in the diploma level between the young posted to the jobs. Moreover, the professional occupation jobs in the mining industry had dug more discrimination and inequity between the gender (IMF & WB, 2011). Young academic females (F) are the most affected, which square the unemployment gap and obviously the unemployment rate skyrockets to young graduates (M & F) without exception since 2004 (NSI, Tunis 2004).



Worrying situation in the mining industry: the role of the Labour Unions and the Government is very useful (International Labour Organization (ILO, 2010) to find effective solutions Mia (2010), before the situation worsens more in 2014, as the unemployment rate of young graduates of

internal and especially mining regions, currently reaches 40% at the end of 2013. What will be the future policy, to redress differences of hiring for the Tunisian mining areas? It's the next, our current research by economic models.

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