Gender Effect on The Professional Integration and Remuneration of Tunisian Young Higher Education Graduates

Asma Lasram
University of Sousse, Tunisia, https://orcid.org/0000-0002-0114-233X

Sameh Boukef
University of Sousse, Tunisia, https://orcid.org/0000-0003-1956-8213

Hajer Chaker
University of Tunis El Manar, Tunisia, https://orcid.org/0000-0002-4832-3541

Hatem Dellagi
University of Carthage, Tunisia, https://orcid.org/0000-0002-7239-0605

Abstract: In Tunisia, the problem of the professional integration of higher education graduates has persisted since the 1990s. A survey was developed among graduates to determine the indicators and determinants of unemployment among young graduates as part of the quality support program initiated by the World Bank. In this context, we compared the graduates' perceptions of agricultural engineers and licensed students in economic and managerial sciences about the entrepreneurial skills needed for employment and their evaluation of the corresponding academic programs. The survey analysis result indicates that unemployment affects girls much more, especially undergraduates. Significant gender differences were observed both in waiting time to get the first job and in remuneration, mainly for agronomic engineers. Engineer perceptions for entrepreneurship skills were significantly higher, revealing poor academic performances in this issue. Reform of the studying program integrating entrepreneurship, technology, critical thinking, and soft skills is an urgent issue to enhance the attractiveness of the agronomic institutes and increase youth engagement in the agronomic pathway.

Keywords: Gender, Agronomic Engineers, Entrepreneurship Skills

Introduction

Issues related to young university graduate employment are of concern in the current challenging socio-economic environment and massification of higher education because high unemployment rates of university

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graduates were reported increasingly in many developed and developing countries (Wu, 2011; Xing et al., 2017; Esposito and Scicchitano 2022).

In Tunisia, estimated at 30.1% in 2020, the unemployment rate is 1.6 times higher than at the national level (INS, 2021). Engineer students, studying for two supplemental years compared to bachelors, represent 15% of the total regular students (MERS, 2021). Their labor market integrations are supposed to be easy and immediate. Therefore, they are less affected by unemployment when compared to their counterparts with other degrees. However, of all engineers, unemployment is more prevalent among agriculturalists (ONEQ, 2015). This situation affected the attractiveness of their corresponding academic institutes. Indeed, the total number of regular students in Tunisian agronomic engineering institutes has lost 20% of the total headcount during the last decade (ONAGRI, 2018). The unemployment rate is even higher for the Tunisian license graduates (Céreq., 2015). This conjecture situation emphasizes the failure of the educational system in preparing students to face workplaces in ever-changing industries and socio-economic environments, as explained by Aziz et al. (2016). Griffin and Annulis (2013) reported that the most common employer complaints turned around the lack of decision-making, problem-solving, teamwork, and self-learning skills by graduates. Misni et al. (2020) suggested that universities must realize that employability skills are not limited to securing a job but must also help graduates succeed in their work, and this could be achieved by understanding the demanded skills that employers require.

On the national scale, and besides unemployment problems, interest has risen in increasing gender gaps. The unemployment rate is superior for women, estimated at 40.7% versus 17.6 % for men (INS, 2021), although they represent 66% of the total regular registered students in 2020 (MERS, 2021). However, gender gaps in employment could differ according to sector activities and degree types of graduates (Oh and Lewis, 2011; Pullman, 2018; Jehn et al., 2019; Galperin and Arcidiacono, 2021). It is important to note that males and females perform differently in classrooms as well (see Banihashem et al., 2021; Noroozi et al., 2020; 2022). For engineers, female students represent 43% and two-thirds of the students in the agronomic field (ONEQ, 2015; MESRS, 2021). Paradoxically, field surveys reported that gender employment gaps were more severe in the agronomic sector to the disadvantage of women (ONEQ, 2015). This situation is also persisting on the international scale and has scarcely changed on the aggregate level over the last 15 years (OECD, 2017).

In this context, entrepreneurship training is gaining more and more ground to prepare students for self-employment (Premand et al., 2012; Jumana, 2019). Additionally, the tutelage authorities had initiated a debate on the reform of the Tunisian university agronomic system education and its restoration of attractiveness. Therefore, exploring the agronomic graduates' perceptions about entrepreneurship skills and their academic program adequacy with the labor market could enlighten specific education system deficiencies and help decision-makers adopt appropriate reform strategies. A comparison analysis about the importance of entrepreneurship skills to get a job between agronomic engineer perceptions and licensed students whose academic background is rich in entrepreneurship concepts could also bring more understanding of the situation.

In this context, this work is motivated by two objectives. First, it targets quantifying the gender gaps in the employment process for both degree types. Secondly, it aims to explore perception discrepancies related to the evaluations of the academic program and the importance of entrepreneurship skills between horticulture agronomic engineers and undergraduate students in economics, management, and marketing.

Methodology

The database used in this work is developed through an online survey for 2016-2020 Tunisian graduates of the High Agronomic Institute of Chott Mariem (ISA CM) and the Faculty of Economics and Management of Nabeul (FSEGN). The survey application link was repeatedly sent to graduates, using their last email given by the institute administrations, for a period of 3 months going from May to July of 2021 for undergraduates for all specialties for FSEGN and from October to December 2021 for all ISA CM agronomic engineers specializing in horticulture. These surveys campaigns were carried out for the first time in these two academic institutes as a part of their quality improvement process. ISA CM students' study for five years to get an agronomic engineering degree. However, FSEGN students spend only three years to get a degree in economics, management, or marketing. The rate of female representation, in these two institutes, is the same representing about 78% for the 2016-2020 period, which is higher than the national level.

The survey covered many topics like the actual professional situation, the first job remuneration, the waiting time to get the first job, the perceptions about the importance of generic and technical competencies for professional integration, and the perceptions about the academic program adequacy to the labor market. The perceptions were measured with a Likert scale from a negative perception of 1 to a positive one of 4.

100 and 379 fresh graduates participated in the survey for ISA CM and FSEGT, respectively. 299 and 94 responses were selected for statistical analysis after eliminating the responses with many missing values. The corresponding participatory rates of the target communities were 19% and 74%, respectively. The levels of women's responses were 75% and 73% for ISA CM and FSEGN institutes, respectively, which is close to their representativeness.

Chi-square test of independence and logistic binary regressions were used as statistical test analysis for gender and degree types' effect assessments and perceptions discrepancies.

Results

Gender Employment Gaps

The unemployment rate is close to 40% and 50% for agronomic engineers and licensed students of FSEGN, respectively (see Figure 4). The employment rate of men graduates represented 65 and 63% of the total men respondents for ISA CM and FSEGN, respectively. This rate was 60 and 49% for women respondents,

respectively (see Figure 4). The data analysis also reveals that the gender effect was significant for FSEGN (p value=0.043) and not significant for ISACM (p value=0.717).

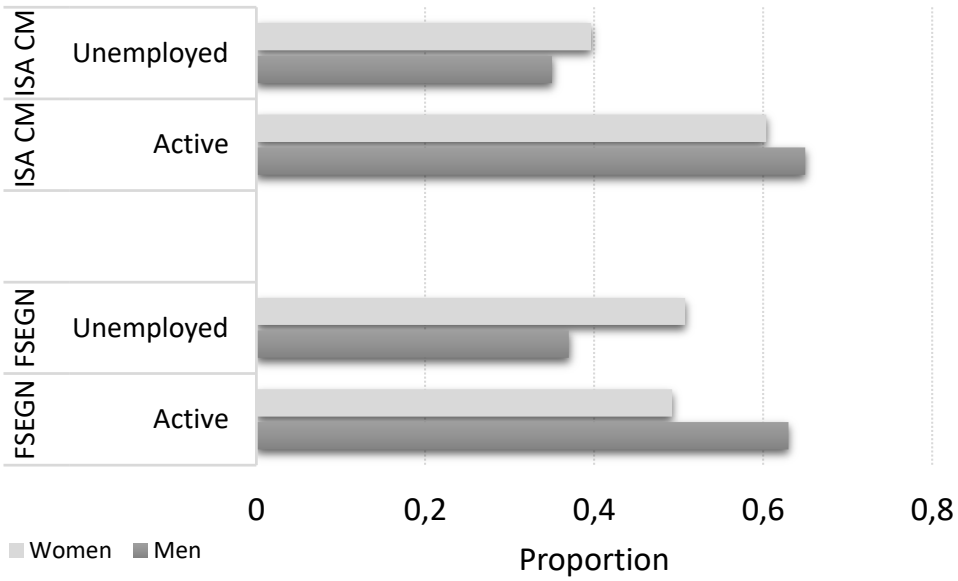

Figure 4. Unemployed And Active Graduates' Proportions Represented by Gender and Institutes

The middling period of waiting to be integrated into professional activities after graduating was estimated by a weighted average according to classes proportions presented in Figure 5. For the class corresponding to a waiting period of more than one year, the value considered was 15 months. The results showed that ISA CM women horticulture engineers were the most disadvantaged category regarding waiting time to be hired. These average periods for women and men were about 4 and 4.2 months, respectively, for the bachelors of FSEGN. They were about 8 and 4.5 months, respectively, for the engineers of ISA CM.

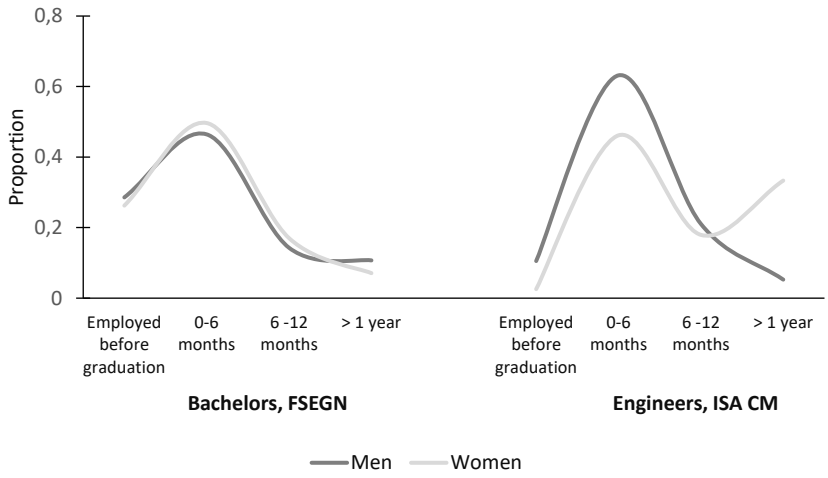

Figure 5. Density Curve of Distributions of Waiting Time to Get the First Job of Respondents by Institutes and Gender

The average first remuneration was estimated in Tunisian dinars (1$=3,003DT according to the Central Bank of Tunisia on 7 April 2022) by a weighted average according to the proportions of the classes presented in Figure. The value considered for the class corresponding to remuneration higher than 1500 TD was 1750 TD. Results showed that women horticultural engineers at ISA CM were, once again, the most underprivileged in terms of the first pay scale. The average remunerations for women and men were about 691 and 910 DT, respectively, for the licensed students of FSEGN. They were about 654 and 704 DT, respectively, for the engineers of ISA CM.

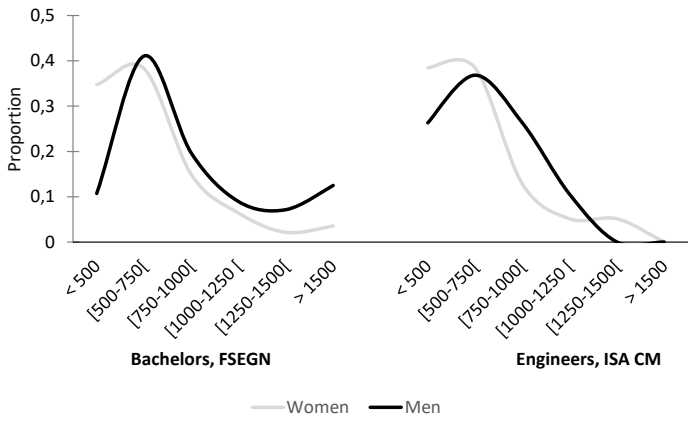

Figure 3. Density Curve of Distributions of The First Remuneration of Respondents by Institutes and Gender

Graduates Perceptions

The score levels of the student perceptions related to academic curriculum adequacy with the labor market requirement were similar between the two institutions and the lowest compared to the other scores for both institutions (see Table 1). Among entrepreneurship skills perceptions, communication skills were highly scored, whereas awareness of societal values had the lowest scoring for both institutes. ISA CM engineers gave more importance to technical skills, cross-culturally ability, and entrepreneurship skills, than the licensed students of FSEGN. These results were consistent with the binary logistic regressions (see Table *2*). According to academic institutes (ISA CM vs FSEGN), the odds ratios of the perception scores were significantly superior to one.

Table 1. Means And Standard Deviation (SD) Of Graduates' Perception Scores for The Two Academic Institutes

		FSEGN		ISA CM	
Topics	Perceptions	Mean	SD	Mean	SD
Academic program adequacy	Recognition of degree in market job	2.82	0.86	2.73	0.88
	Adequacy of the theoretical training	2.73	0.82	2.81	0.83
	Adequacy of the practical training	2.55	0.88	2.52	0.86
Technical skills and	Ability to mobilize knowledge	3.07	0.74	3.35	0.67

		FSEGN		ISA CM	
Topics	Perceptions	Mean	SD	Mean	SD
cross-culturally ability	Methods and tools expertise	3.20	0.80	3.49	0.62
	Ability to work in an international context	3.00	0.88	3.38	0.67
Entrepreneurship skills	Project management	3.10	0.84	3.62	0.57
	Communication skills	3.54	0.70	3.72	0.52
	Ability to solve problems	3.46	0.67	3.64	0.50
	Working in teams	3.49	0.68	3.60	0.55
	Leadership	3.29	0.74	3.59	0.58
	Sense of initiative and creativity	3.30	0.75	3.61	0.57
	Ability to identify training needs	3.17	0.70	3.40	0.66
	Language skills	3.35	0.77	3.55	0.58
	Awareness of societal values	3.04	0.77	3.36	0.65

Higher odds ratios between ISA CM engineers and FSEGN graduate students are noticed for entrepreneurial skills than for technical skills and cross-culturally ability (see Table 2).

Table 2: Odds Ratio of The Binary Logistic Regression Depending on Institute and Gender

Topics	**Student perceptions**	**Odds Ratio ISACM/FSEGN**	**Odds Ratio Male/Female**
Academic program adequacy	Recognition of degree in market job	0.70	0.74
	Adequacy of the theoretical training	1.40	0.60
	Adequacy of the practical training	0.90	0.80
Technical skills and cross-culturally ability	Ability to mobilize knowledge	5.54**	0.97
	Methods and tools expertise	5.16**	0.52
	Ability to work in an international context	5.95**	0.88
Entrepreneurship skills	Project management	22.21**	0.58
	Communication skills	4.15*	0.55
	Ability to identify training needs	4.73*	0.82
	Ability to solve problems	4.29*	1.78
	Working in teams	2.13	1.74
	Leadership	7.22**	0.62
	Sense of initiative and creativity	8.24**	0.84
	Language skills	3.63*	0.33*
	Awareness of societal values	6.48**	0.37*

** Significant to 1%, *significant to 5%.

Among the entrepreneurial skills, perceptions of the importance of project management, initiative and creativity, and leadership skills showed the highest odds ratio between the two groups of graduates. Gender discrepancies perceptions were only significant for languages skills and awareness of societal values. The odds ratios (male vs female) were significantly inferior to one attesting that men give less importance to these generic skills than women do.

Discussion

Although the results did not show a significant gender difference in the hiring rate of agricultural engineers, discrimination in salaries and the waiting time to be recruited were noticeable. These results are consistent with assertions in the published literature about gender discrimination (Boye et al., 2017; Shor et al., 2019; Matteazzi, 2020). The still conservative rural Tunisian environment, in favor of qualified men, is one of the barriers facing women in agriculture engineering to get an immediate job unless they consent to underpayment. Lack of high remuneration opportunities in agriculture employment sectors repulses male students in agronomic studying engagement. Indeed, the first wages of engineers were 23% lower than licensed students when comparing male university groups, despite the two additional years of study for engineers.

The persistently high unemployment rate of agronomic engineers could be related to the difficulties of the public sector to absorb the graduates (Grundke and Goldstein, 2022) and the discordance of university education with the agricultural profession (Agili, 2020). These unemployment causes were also reported in many other countries (Mirakzadeh and Ghiasv, 2011; Odongo et al., 2017).

Overall unsatisfied with their level of study, fresh graduates evaluated severely their academic program's adequacies to the employment market requirement. The contrasting high score perceptions related to the importance of technical and entrepreneurial skills for market labor reveal poor academic performances (see Farrokhnia et al., 2022). For needed competencies, placed at the first level for both institutes, communication skills seemed to be the most lacking skills for all the graduates. Engineering academic programs are more focused on technical skills, and less on entrepreneurial skills, unlike the licensed graduates in marketing, managerial and economic sciences, which increase the engineer perception scores of the importance of these skills in being hired. Among entrepreneurship skills perceptions, project management is the most discriminant given the desire of most engineers to succeed in self-employment projects and avoid jobless in the current economic Tunisian crisis characterized by the recruitment standstill in the public sector. Leadership skills and a sense of initiative and creativity also segregated the two categories of graduate perceptions, which reveal a greater eagerness of agricultural engineers to modernize their education programs by centering on courses that foster their creativity and critical thinking.

Female and male perceptions are expressed similarly for almost all the needed competencies except for language skills and awareness of societal values. Social engagement could positively influence the employer's hiring decision (Heinz, 2017) and female graduates were more aware of that. For language skills, women were more perceptive to these generic competencies in Tunisia, where gendering the French language was frequently reported (Walters, 2011).

Conclusion

Enduring high levels of unemployment and rare opportunities to be well-remunerated for their first job, agronomic engineering and licensed economic and managerial students had low regard for their academic programs and recognition of their diploma in the labor market. These negative perceptions are at the heart of the decline in the attractiveness of higher education. Fresh graduates are demanding modernizing their studying programs by incorporating entrepreneurship, technology, critical thinking, and soft skills. Agronomic engineers are more eager for entrepreneurship skills integration in their academic programs. Presently, accelerating the reform process of the academic program is an urgent issue to enhance the attractiveness of the agronomic institutes and increase youth engagement in the agronomic pathway.

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