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Academic performance and factors that influence the desertion of engineering students: a study with a gender approach

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Academic performance and factors that influence engineering students dropout: a gender perspective study

Abstract
In the last decade, the participation of women in STEM careers has shown a slight increase. Despite this, it is still insufficient regarding the representation of women in these areas [1]. Success in the curricular advancement of women who decide to study an engineering career becomes an important factor to achieve gender equality in the labor field, for which some factors such as academic performance, the student community environment, teaching support, financial support, among others [2], are key to promoting the interest of female students to stay and complete their engineering university studies. Thus, it is highly relevant for educational institutions to promote the entry of women into STEM careers and oversee the environment and factors associated with their curricular advancement so that they are in equal conditions as male students. The purpose of this work is to make visible the difficulties and reasons that could lead students to give up their careers and analyze whether this cause is associated with gender representation. This is a quantitative study that contemplates a survey administered to the Industrial Engineering career students, in the regular and continuity of studies modalities. Based on the results obtained: (1) a descriptive analysis based on the characterization of the students and (2) an inferential analysis is carried out to identify the main causes that may affect women's academic development. This work will allow us to reflect on gender equity in STEM careers dropout rates and identify its leading causes, allowing for the generation of future institutional actions that support women to stay and complete their careers.
Keywords: STEM, academic dropout, gender representativeness, gender equity

I. Introduction

It is widely documented that during a person's study life, the stage in which gender segregation begins to be seen with pronounced notoriety is at the university level [1]. This gap is most noticeable in Science, Technology, Engineering, and Mathematics (STEM) areas [2]. This gender gap in STEM education has a negative impact on Sustainable Development Goal No. 4 of the United Nations Educational, Scientific, and Cultural Organization (UNESCO), which is to guarantee inclusive, equitable, and quality education and promote lifelong learning opportunities for all. It also enhances existing gaps in income levels and social status [3]. Currently, the women participation percentage in these careers is low, showing an average of 19.8% in OECD countries and 22.2% in Chile [4]. Because of this, the number of women entering the labor force is limited, which is then extrapolated to segregation in the engineering and technology fields. Therefore, reversing this situation will allow women to acquire the skills and knowledge to enhance their development both in the professional and social areas. The retention rate in Chile for first-year students in STEM areas in 2020 was 90.3% [5], and the timely graduation rate is 16% [6]. Results have been reported in the literature on this topic. Among the most relevant causes of student dropout in STEM careers, we identified low self-confidence in their mathematics and science skills [4] and family, school, and social factors [3]. Furthermore, success in the curricular advancement of women who decide to study an engineering career becomes an essential factor in achieving gender equality in any country's labor, social, and economic development areas [7, 8].

This study aims to analyze the possible dropout causes of students from the Industrial Engineering career at Universidad Andres Bello in Santiago, Chile. Also, the goal encompasses identifying the leading reasons that lead a student to abandon the engineering career and whether these are associated with gender equity. The following sections present the

methodology used to obtain the results. Then, we discuss the findings with the related literature; finally, we give the conclusions of the present work.

II. Methodology

We used quantitative methods to analyze responses on a survey implementation to students of the Industrial Engineering career of the Universidad Andres Bello in all modalities (daytime, evening, and continuity of studies). The population of this study is comprised of 1658 students, of whom 395 responses were obtained, representing a confidence level of 95% and an error of 4.3%. Nonparametric statistical tests were used because the data distribution was not normal. The following sections explain the characteristics of the sample, the instrument used, and the description of the data analysis.

A. Sample Characteristics

The sample was made up of 72.41% male students (n=286), 27.34% female (n=108) and 0.25% non-binary students (n=1). Table 1 shows the distribution of students according to their gender and study modality (for more details on the modalities, review [9]).

TABLE 1
DISTRIBUTION OF STUDENTS BY STUDY PROGRAM AND GENDER

	Gender			*Total*
	Male	*Female*	*Non-binary*	
Undergraduate Day	63	26	0	89
Evening Undergraduate	19	8	0	27
Continuity of studies	204	74	1	279
Total	286	108	1	395

Own elaboration.

In relation to their employment situation, 66.58% of the students surveyed have a stable job (n=263), 16.71% a part-time job (n=66), and 16.71% do not work (n=66). Regarding their family group, 216 students do not have children; this group comprises 66.20% men and 33.80% women. Of the rest of the students (n=179), 79.89% are male students and 19.55% female students.

B. Survey

The data was collected using the *Students Leaving Engineering* survey conducted by [7] and published on the Internet portal aweonline.org as a reference. This survey addresses the factors that contribute to student retention and dropout in STEM programs. The information was collected through an online questionnaire, which was sent to the students' institutional email. Due to the differences between contexts, the original complete survey was not used, the questions asked to the students are described below.

1. Why did you initially decide to major in engineering? (Check all that apply)
   - Attracted by the challenge of a difficult curriculum
   - Parents, other relatives or friend is an engineer
   - Good at math or science
   - Parents, siblings or other relatives recommended it
   - High school adviser or teacher recommended it
   - Received or anticipated possibility of good college scholarship
   - Like to solve problems

- Wanted to be able to get a well-paying job after I graduate
- Like the design work that engineers do
- Participated in engineering camp or workshop that influenced me
- Wanted to use engineering solutions to address social problems
- Not Sure
- Other:

2. When you began your engineering degree, how confident were you that you would complete it? (Check one)
   - Not very confident; I was already unsure of my plan to study engineering
   - There was about a 50% chance that I would complete a degree in engineering
   - I was fairly confident that I would complete a degree in engineering
   - I was very confident that I would complete a degree in engineering
   - Other:
3. At the present time, how confident are you that you will complete a degree at this institution? (Check one)
   - Not very confident; it is highly likely I will not complete any college degree at this institution
   - There is about a 50% chance that I will complete a degree at this institution
   - I am fairly confident that I will complete a degree at this institution
   - I am very confident that I will complete a degree at this institution
   - Other:

The first part of the survey asks students to select why they initially chose the career they currently study. Subsequently, the following questions were asked, based on the Students Leaving Engineering survey, shown in Table 2.

TABLE 2

STATEMENTS ABOUT THE FACTORS THAT COULD INFLUENCE THE DROPOUT OF STUDENTS AND THEIR NUMBER INTO THE SURVEY

Statement	*Item*
Engineering faculty/departmental personnel showed little interest in me.	R5
Unfriendly climate in engineering classes.	R7
Faculty did not help me understand what practicing engineers do.	R9
Poor teaching by engineering faculty, instructors or graduate assistants.	R10
Poor academic advising by engineering faculty or advisors.	R11
Ability to find satisfactory CO-Ops and / or internships.	R12
Poor interactions with other engineering students.	R15
Negative experiences in design teams or other collaborative learning experiences in engineering.	R16
Unreasonable workload of the engineering classes.	R6
Unsatisfactory performance on my grades in engineering.	R8
My personal abilities/talents are not a good “fit” with requirements in engineering.	R13
Not confident about succeeding in future engineering classes.	R14
Lack of opportunities for financial aid or scholarships	R4

Own elaboration.

The analysis method for results obtained through the *Students Leaving Engineering* survey is presented below.

C. Data analysis

Based on the results obtained, the following was carried out; (1) a descriptive analysis based on the characterization of the students and (2) an analysis to identify the leading causes that can cause academic dropout and whether these are associated with gender representation. The information collected through the survey corresponds to the gender, age range, modality of study, type of program, employment status, number of children, and the questions represented in the previous section of the *Students Leaving Engineering* survey. The Mann-Whitney U test was applied to the variables, with hypothesis test H0: There are no significant differences between X and Y. The results found are presented in the following section.

III. Results

Results are presented in the following order: 1) results related to why students initially chose the career they are studying, differentiating the choices by gender; 2) results related to the self-confidence of the students in being able to complete their engineering degree at the beginning of their career and their future projections in this regard, and; 3) results on the factors that could influence career dropout.

A. Results on why participants decided to major in industrial engineering

The main motivations of the students to study Industrial Engineering are shown in Figure 1.

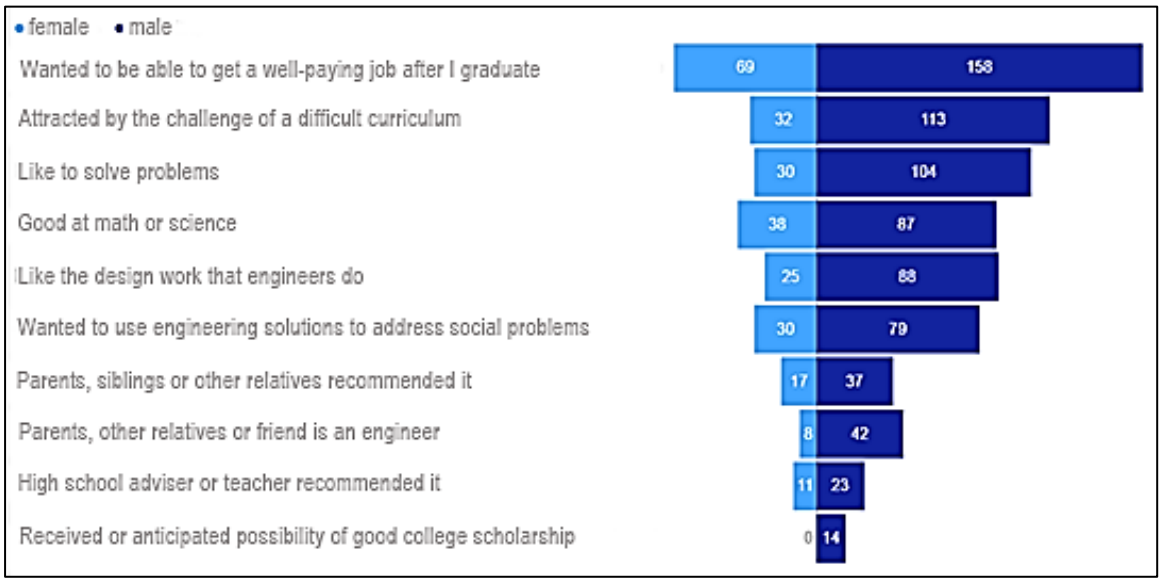

Fig. 1. Main motivations to study an Engineering career. (Source: Own elaboration.)

In Fig. 1, it can be observed that students choose their career mainly for reasons related to professional projection, choosing the option of getting a well-paid job after graduation, with a preference percentage of 26.5% (n=69) and 21.2 % (n=158) of female and male students, respectively. In addition, the challenge of studying a challenging curriculum stands out, which obtained a preference of 12.3% (n=32) in women and 15.2% (n=113) in men. The least chosen motivations are related to family influence or other actors related to students (teachers or counselors) and obtaining scholarships, an option that no female student selected.

B. Results on initial self-confidence and future projection on completing the Engineering degree

Concerning the students' self-confidence in completing their degree, a comparison was made between the students' perception of starting their career and the current moment of their curricular advancement. In the first stage, when starting the degree, most of the students had a high self-confidence in completing the degree, with a weighting of 44.2% (n=46) in the case of women and 57.0% (n=159) among men. The second group corresponds to the students who were sure of finishing the degree, with a distribution of 35.6% (n=37) in the case of women and 29% (n=81) in men. On the other hand, the segment that felt less than a 50% chance or was unsure about finishing the degree corresponds to 20.2% (n=21) and 14.0% (n=39) in women and men, respectively. When comparing these preferences with future projections in this regard, they maintain a high level of self-confidence, see Tab. 3.

TABLE 3

LEVEL OF SELF-CONFIDENCE TO COMPLETE THE DEGREE

Gender	*How sure were you of completing the degree?*	*At the beginning*	*Nowadays*	*Difference*
Women	I had a lot of self-confidence in getting it	44.2%	48.1%	3.8%
	I was sure I would get	35.6%	25.0%	-10.6%
	I felt there was a 50% chance	14.4%	26.9%	12.5%
	I wasn't very confident	5.8%	0.0%	-5.8%
Men	I had a lot of self-confidence in getting it	57.0%	55.2%	-1.8%
	I was sure I would get	29.0%	29.4%	0.4%
	I felt there was a 50% chance	11.1%	12.2%	1.1%
	I wasn't very confident	2.9%	3.2%	0.4%

Own elaboration.

In the case of female students with 73.1% (n: 76=50+26) and 84.6% (n: 236=154+82) in the case of men. This represents a decrease of 6.8% in women and 1.4% in men. Regarding the segment of students with a lower self-confidence level, either because they considered that there was less than a 50% chance or were not very sure about finishing the degree, there is an increase of 6.7% for women and 1.5% in the case of male students.

C. Results on the factors that could influence dropout

The results of this analysis are summarized in Table 4 (on the scale 0 = Not a Factor and 4 = A Significant Factor). The statement *"Lack of opportunities for financial aid or scholarships,"* associated with student financing reasons, has the highest score (2.64). They are followed by the statement *"Unreasonable workload of the engineering classes,"* with an average of 2.42. On the other hand, the statements associated with a lower dropout cause correspond to *"Poor interactions with other engineering students."* and "*Unfriendly climate in engineering classes."* with an average of 0.96 and 1.15, respectively.

TABLE 4
DESCRIPTIVE SUMMARY TABLE OF THE ANSWERS TO THE QUESTIONNAIRE

Statement	*Mean*	*Variance*	*Std. Dev.*
R4	2.64	2.22	1.49
R5	1.77	2.26	1.50
R6	2.42	1.54	1.24
R7	1.15	1.87	1.37
R8	1.76	2.03	1.42
R9	1.80	2.20	1.48
R10	2.07	2.22	1.49
R11	2.01	2.26	1.50
R12	1.55	2.00	1.42
R13	1.38	2.21	1.49
R14	1.26	1.94	1.39
R15	0.96	1.64	1.28
R16	1.28	1.92	1.38

Own elaboration.

Regarding data dispersion (Tab. 4), the statements with the highest variance correspond to a value of 2.26, *"Engineering faculty/departmental personnel showed little interest in me."* and *"Poor academic advising by engineering faculty or advisors. "*; and a 2.20 in *"Faculty did not help me understand what practicing engineers do."*; and in *"Lack of opportunities for financial aid or scholarships."*

D. Inferential Statistical Analysis

Descriptive statistics were used in the data analysis through the Power BI program and SPSS to conduct the Mann-Whitney U non-parametric test for independent samples with a self-confidence level of 95%. The purpose of this is to test whether there are statistically significant differences between the dropout factors and the variables of age, year of study, number of children, type of career, gender, and employment status of the students. Table 5 shows the results of the Mann-Whitney U test. A significant difference was identified ($p<.05$) in the importance of some factors related to career dropout, mainly with the year of study and the type of program.

TABLE 5
MANN-WHITNEY U TEST RESULTS

	Age	*Year*	*Children*	*Modality*	*Gender*	*Job*
R4	.056	.733	.128	.001	.020	.277
R5	.590	.664	.365	.339	.522	.786
R6	.259	.035	.837	.033	.224	.024
R7	.250	.709	.016	.353	.968	.721
R8	.122	.110	.035	.004	.122	.221
R9	.291	.001	.184	.241	.160	.198
R10	.332	.100	.057	.100	.785	.314
R11	.614	.034	.122	.209	.393	.819
R12	.032	.004	.021	.001	.199	.000
R13	.628	.442	.337	.023	.017	.669
R14	.707	.435	.529	.568	.028	.292
R15	.924	.113	.672	.279	.384	.928
R16	.520	.005	.070	.369	.692	.633

Own elaboration.

Table 5 shows the 18 statements of the survey in which significant differences were identified concerning age, year of study, children, modality, gender, and work. The responses to each statement are analyzed to assess which factors present greater difficulty to the students and whether there is a gender gap.

1. Analysis by year of study

When carrying out the analysis in consideration of the year of study that the students are studying, significant differences were identified in the following questions. About question R6, it can be seen in Table 6 below that there is a greater weighting in the first two years, with an average of 2.44 in men and 2.65 in women. However, this result decreases as the students advance in their careers, with an average of 2.05 in men and 1.60 in women. The main gender differences were seen in the fourth year, where female students considered that the workload is unreasonably heavy in engineering classes by 25.19%, higher than the perception of male students, a situation that is reverted in year No. 5, where the perception of women about this factor was 21.86%, lower than the perception of men.

TABLE 6

RESULTS OF R6, R9, R11 AND R16 BY YEAR OF STUDY AND GENDER

	1st Year		*2nd year*		*3rd year*		*4th year*		*5ft year*	
	Men	*Women*	*Men*	*Women*	*Men*	*Women*	*Men*	*Women*	*Men*	*Women*
R6	2.44	2.65	2.47	2.77	2.41	2.00	2.08	2.60	2.05	1.60
R9	1.58	2.00	1.91	1.66	1.37	2.00	1.73	1.00	2.57	3.00
R11	1.82	2.14	2.10	1.74	1.88	2.40	1.88	0.80	2.38	3.27
R16	1.04	1.07	1.46	1.20	1.32	1.30	0.92	2.20	1.90	2.13

Own elaboration.

As shown in Tab. 6 in statements R9, R11, and R16 (Tab. 1), the greatest weighting occurs in the fifth year. From the gender gap perspective and the perception of the difficulties that students face to continue in the degree, it is seen in Table 6 that these vary according to the year of study. Let us analyze the main gender gaps shown in Fig. 2 below.

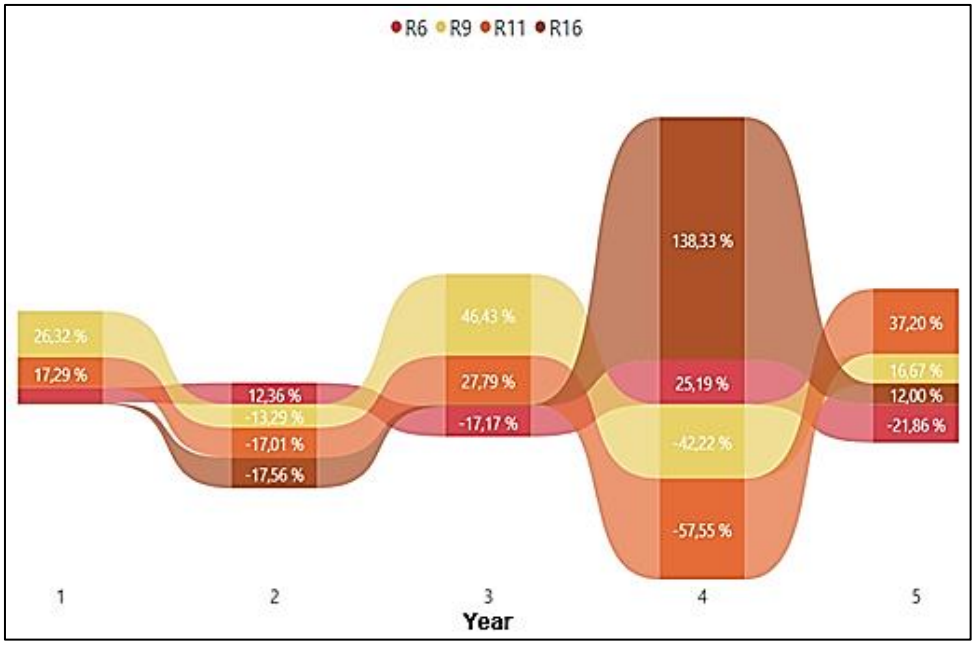

Fig. 2. Gender differences in evaluation weighting questions R6, R9, R11, and R16 concerning the year of study. (Source: Own elaboration.)

As shown in Fig. 2, the main gender gaps are presented in the fourth year R9, R11, and R16 (Table 1) with favorable conditions for women in R9 and R11 with -42.22% and -55.55% concerning men. However, there are also unfavorable gaps for women in the same year (R16) of 138.33% and in year 5 (R6) with -21.86%.

2. Analysis by children (parenthood/motherhood)

Based on the condition of whether or not the students have children, significant differences were identified (Tab. 5) in the following statements: R7, R8, and R12 (Table 1). Figure 3 shows the results of the questions R7, R8, and R12 differentiated by gender.

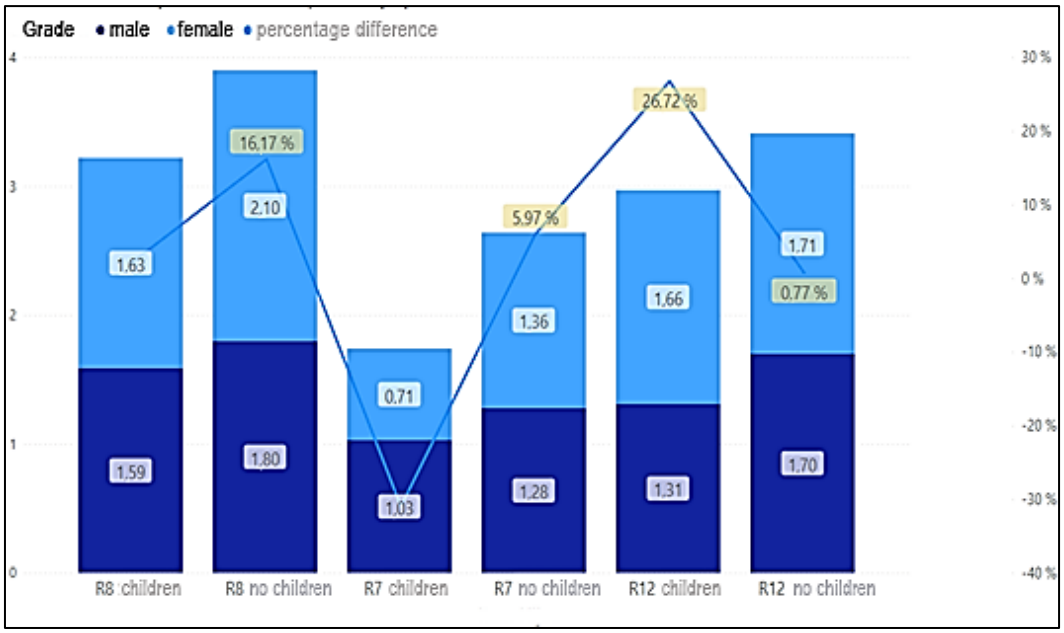

Fig. 3. Results of R7, R8 and R12 by family composition and gender. (Source: Own elaboration.)

In the graph of Figure 3, the cause with the highest weight corresponds to academic performance with an average of 1.95, and the one with the lowest weight corresponds to a hostile class atmosphere. Perception of the difficulties in continuing the career in female students is greater than in male students, the most remarkable difference seen in R12, with 26.72%. This is different from the hostile classroom atmosphere, where there was a difference of -30.98% in favor of female students.

3. Analysis by study modality

In the analysis based on the study modality, significant differences could be identified in the following statements: R4, R6, R8, R12, and R13 (Table 1). The summary of responses classified by program modality and broken down by gender is shown in Table 7. When analyzing these results, the item related to the financial aspect (R4) is the one that is identified with the highest weight, with an average of 3.00. While in the evening regular modality program students are presented with greater difficulty, with an average of 3.71.

On the other hand, the item with the lowest weighting is question R13, with an average of 1.69. In this statement, students of the regular afternoon modality program declared a higher weighting concerning students of the other modalities.

TABLE 7

RESULTS OF R4, R6, R8, R12 AND R13 BY TYPE OF STUDY AND GENDER

	Regular Evening Program			*Prog. Continuity of Studies*			*Regular Day Program*		
	Men	*Women*	*Gap*	*Men*	*Women*	*Gap*	*Men*	*Women*	*Gap*
R4	3.53	3.88	9.89%	2.45	2.88	17.44%	2.48	2.77	11.83%
R6	2.37	1.63	-31.39%	2.43	2.74	13.05%	2.25	2	-11.27%
R8	2.47	1.88	-24.20%	1.57	1.74	11.13%	1.89	2.54	34.39%
R12	1.63	1.63	0.00%	1.29	1.65	27.40%	2.14	1.85	-13.85%
R13	1.79	2.38	32.72%	1.16	1.59	37.84%	1.52	1.69	11.06%

Own elaboration.

The main differences in perception based on the gender of the students were presented in questions; R6, R8, and R13. Female students declared a higher difficulty level concerning male students regarding academic performance (R8), with a gap of 34.39% in the regular day program. In skills and talents (R13) with 32.72% and 37.84% in the regular evening and Continuity of Studies programs, respectively. On the other hand, women presented a higher level of self-confidence about the academic load (R6), where the difference with men was -31.39% in the regular evening program and academic performance (R8) with a -24.20%.

4. Analysis by gender

Concerning the analysis by gender, the significant differences were in statements R4, R13, and R14 (Table 1), the weights of these questions are illustrated in Figure 4.

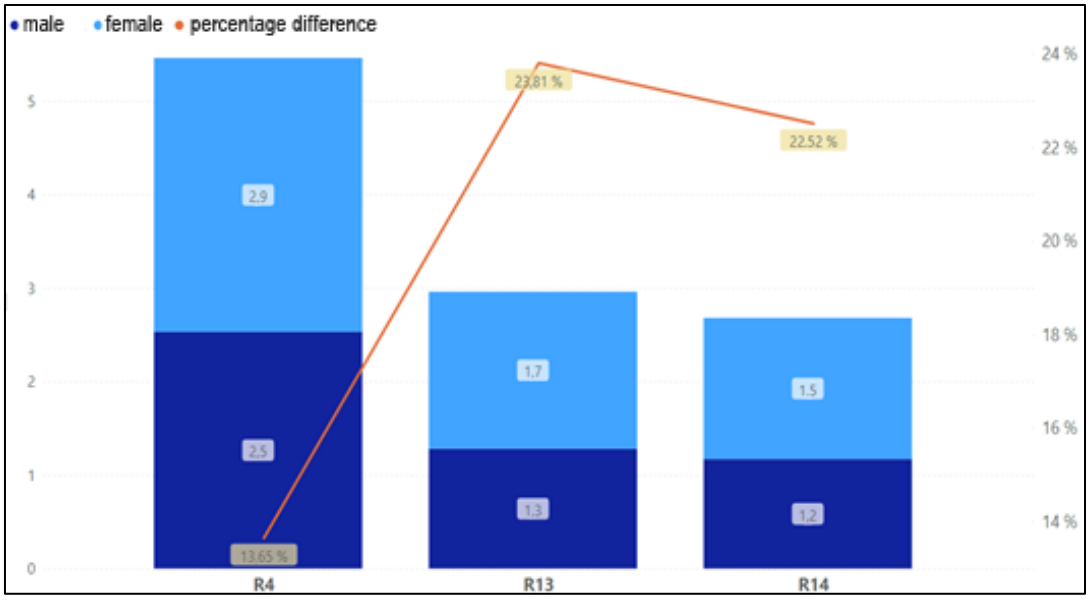

Fig. 4. Results of R4, R13, and R14 by gender. (Source: Own elaboration.)

It can be seen in the graph of Fig. 4 that for the students, the main reason that can lead them to drop out of the degree corresponds to financial support or scholarships (R4), with a difference in perception between genders, where female students are 13.65% higher than men. In questions R13 and R14, the gap increases to 23.81% and 22.52%, respectively.

5. Analysis by Employment Situation

When examining the significant differences concerning the employment situation of the students, it was possible to identify that they occur in the following statements: R6 and R12 (Table 1). As shown in Figure 5, the highest weighting associated with question R6 is in the segment of students who have a stable job, and concerning question R12, the highest weighting corresponds to the segment of the students who have a part-time job.

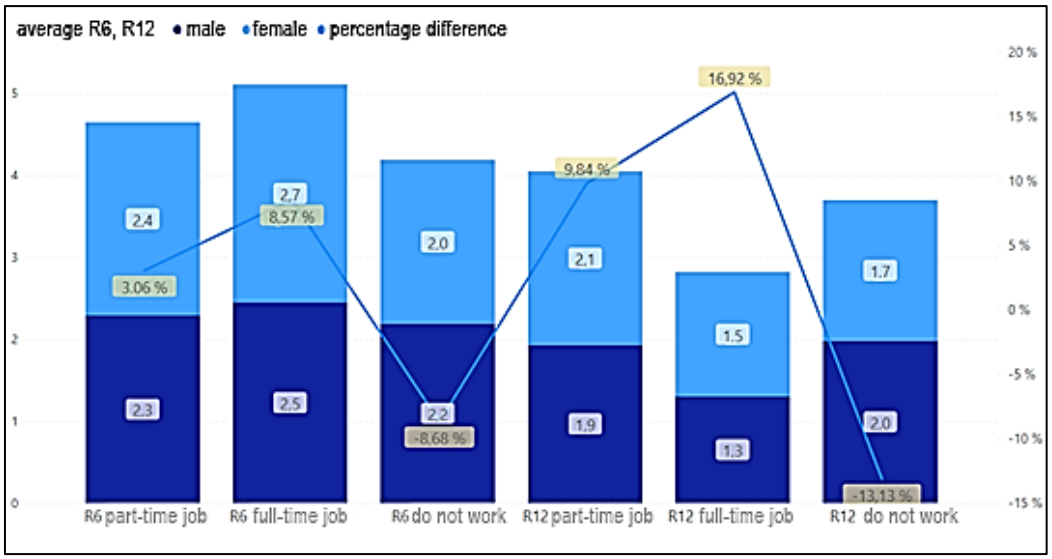

Fig. 5. Results of R6 and R12 by employment situation and gender. (Source: Own elaboration.)

Gaps associated with the academic load are identified, with a higher weighting level of 8.57% in female students concerning their male peers who have stable jobs. On the other hand, in the condition of students who do not work, the result is the opposite; women present a lower perception of difficulty than men by -8.68%. Regarding the possibility of finding good apprenticeship/internships, a greater difficulty is seen among women with stable work and part-time work, with 16.92% and 9.84%, respectively, only being more favorable to women than men in the case of students who do not work.

IV. Discussion

From the results, it was possible first to determine the analysis of the motivational profile that revealed that students entered to study Industrial Engineering were motivated mainly to get a well-paid job and to study a challenging curriculum for them. However, there is a more negligible difference regarding the third factor that corresponds to the motivation to solve problems in male students and to have good aptitudes for mathematics or science in the case of female students. Most of the students have a high level of self-confidence in obtaining the engineering degree, presenting minor differences at starting the degree and in the current period. These differences are seen in women, with an increase in the segment of students who have a high self-confidence in obtaining it of 3.8% and in men a decrease of 1.8%. In the group of students who were sure that they would get it, there was a decrease of 10.6% in women and an increase of 0.4% in men. On the other hand, the segment of students presented a lower level of self-confidence: I felt a 50% chance increased by 12.5% in women and 1.1% in men. Finally, in the group with the lowest self-confidence represented by the option, I was not very confident; it decreased by 5.8% in women and increased by 1.1% in men.

There is a gender gap in the students' self-confidence, which is reflected in the level of greater self-confidence in completing the degree; male students are 12.8% and 7.1% higher than female students at the time of starting the career and in the current period, respectively. Regarding answers concerning potential reasons for dropping out of the degree, the main differences are in questions R6, R8, R12, R13, and R4, which can be associated with the students' level of self-confidence and workload and the economic or financing factor. The latter is the one that represents the factor with the highest weight among the possible causes of dropout in students in the three study modalities.

Subsequently, in the study continuity program modality, the second factor corresponds to unsatisfactory performance concerning engineering grades (R6). While in the regular evening and regular day program modalities, it corresponds to the unreasonably heavy workload in engineering classes (R8). Essential differences were identified concerning the students' perception according to the student's gender, according to the study modality, unlike what is reported by [6], where differences in students' self-confidence are not by gender but by ethnic group.

In the case of regular evening programs and continuity of studies, a more significant barrier was identified concerning the perception that their skills/talents do not fit well with engineering requirements. The perception of female students is higher than 32% of male students. However, in the daytime program, this difference decreases to 11%. Some conditions were also identified in which the perception of women was more favorable than that of men, mainly associated with the academic results of students in the regular evening program (R6 and R8) and regular program (R6).

Concerning the students' year of study, the statements R6 and R11 mainly were chosen as dropout causes (in fifth-year students), observing an increase in this gap in students studying the third and fourth year, concerning first- and second-year students. This difference may originate from students in the first group (last years of their studies) who began their university experience in person. In contrast, first-year students have only participated in online academic activities due to the COVID-19 pandemic. Therefore, the pandemic has increased the perception gap concerning the possible causes of student dropout [10, 11].

When analyzing the significant differences between students who have children and students without children, significant differences were identified in three statements (R7, R8, and R12). In these statements, the condition of having a child has a positive effect on the causes of dropout since this group of students has a lower weighting on the grounds of dropout than students who do not have children. However, when exploring these results by gender, female students show higher weighting regarding possible causes of dropout than male students. The most significant gap was observed in students with children who must find satisfactory apprentice/internships.

Regarding the analysis of gender factors, the significant differences were presented in causes associated with economic issues and self-confidence, highlighting the main gender differences of 23.8% and 22.5% in statements R13 and R14. As in the analysis by the number of children, female students' responses indicate a greater perception of dropout difficulties in this instance. Regarding the students' employment status, it can be seen that the students with the highest scores in the reasons for dropping out of the degree are those with a stable job and the part-time job segment, specifically in the possibility of finding good apprentice/internships positions. It is essential to highlight that for students who work, either permanently or partially, the perception of female students presents a higher weighting in the qualification of dropout causes than the male students. On the other hand, among students who do not work, the perception of women is lower than that of men.

V. Conclusions

The objective of this work was to analyze the main factors that can affect student dropout and if these causes are associated with a gender gap. When contrasting these results with previous studies, the primary motivations identified among students to study and drop out of an Engineering career are similar to the results reported in the literature.

The *Students Leaving Engineering* survey was applied to 395 students of the Industrial Engineering degree at Universidad Andres Bello in the daytime, evening, and continuity of studies modalities. Through a quantitative analysis, it was observed that the principal motivation for the students surveyed to study this career is to achieve economic security since they consider that this degree represents an opportunity to get a well-paid job. In addition, there is a motivation from the academic sight, reflected in the interest in studying a challenging curriculum and the desire to solve problems.

There is a high student self-confidence in completing an engineering degree. However, a gender gap is identified, in which male students have a higher level of self-confidence than female students. The leading causes of career dropout are related to the unreasonably heavy workload in engineering courses and the high impact of economic difficulty on continuing the career. Therefore, it is essential to generate instances that allow socializing the scholarships or financial support programs available, either by the university or the Government of Chile.

Two groups at higher risk of dropping out were identified: first-year students and students in the regular evening program. Therefore, it is necessary to generate tutoring initiatives and academic support programs that allow male and female students to reduce the knowledge gaps they may have on entering the degree. In addition, to develop study methodology workshops to improve their self-confidence level so that students can effectively manage their academic performance load of the career.

It is crucial to support teachers with training processes to promote active methodologies during lectures and enhance collaborative learning so that students feel more included in their learning process to help improve their self-confidence.
Pertinent actions are needed to achieve more effective progress of the contents and learning results in the development of the syllabus and thus avoid an academic overload that implies difficulties for students to reconcile academic responsibilities with work and family commitments.

Our main findings relate to the identified gaps. This gives us the guidelines to generate changes at the Faculty level, so that female students increase their self-confidence. For this, developing actions that promote the participation and curricular advancement of women in the engineering career is relevant. This is mainly important in the segment of women who have children and work. In this group, there were significant differences regarding the perception of difficulties in continuing their studies. For this purpose, promoting initiatives that have emerged in the University, such as the gender equality committee, will guide the career directions to generate actions that support students in completing their careers.

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