Empleo en estudiantes universitarios de un instituto tecnológico y su efecto en el desempeño académico

Employment in college students from a Technological Institute and its effect on academic performance

Emprego em estudantes universitários de um instituto tecnológico e seu efeito no desempenho acadêmico

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Resumen

La investigación en torno a las ocupaciones académicas y laborales de estudiantes universitarios resulta de especial interés debido al alto porcentaje de alumnos que deben estudiar y al mismo tiempo trabajar. Por tanto, en este trabajo se analizó la influencia que ejerce combinar trabajo con estudios universitarios en el desempeño académico mediante una investigación correlacional y con un enfoque cuantitativo. Para ello, se utilizó como técnica la encuesta digital, y el análisis se hizo con herramientas de estadística descriptiva e inferencial. La muestra estuvo conformada por 305 estudiantes de una población de 1358 del Instituto Tecnológico José Mario Molina Pasquel y Henríquez, campus Puerto Vallarta. Los resultados indican que el empleo tiene un impacto negativo en el desempeño académico, pues los universitarios que solo estudian tienen menor índice de reprobación y mejores resultados académicos.

Palabras clave: desempeño académico, educación superior, empleo, estudiantes universitarios, trabajo estudiantil.

Abstract

The work in university students is of special interest for study due to the high percentage of students who combine work and school, and understanding the impact it has on their academic development is relevant for Higher Education institutions. The purpose of this study is to analyze the influence of combining work with university studies on academic performance through correlational research with a quantitative approach, in which the digital survey was used as a technique, and the analysis was done with descriptive and inferential statistical tools, the sample consisted of 305 students from a population of 1,358 from the Instituto Tecnológico José Mario Molina Pasquel y Henríquez, Campus Puerto Vallarta. The results indicate that employment has a negative impact on academic performance; students who only study have a lower failure rate and better academic results.

Keywords: academic performance, higher education, employment, college students, student work.

Resumo

A investigação sobre as ocupações académicas e laborais dos estudantes universitários é de especial interesse devido à elevada percentagem de estudantes que devem estudar e trabalhar ao mesmo tempo. Portanto, neste trabalho foi analisada a influência da combinação do trabalho com os estudos universitários no desempenho acadêmico por meio de pesquisa correlacional e abordagem quantitativa. Para isso, utilizou-se como técnica o levantamento digital, e a análise foi feita com ferramentas de estatística descritiva e inferencial. A amostra foi composta por 305 estudantes de uma população de 1.358 habitantes do Instituto Tecnológico José Mario Molina Pasquel y Henríquez, campus Puerto Vallarta. Os resultados indicam que o emprego tem um impacto negativo no desempenho acadêmico, uma vez que os estudantes universitários que apenas estudam apresentam menor taxa de reprovação e melhores resultados acadêmicos.

Palavras-chave: desempenho acadêmico, ensino superior, emprego, estudantes universitários, trabalho estudantil.

Introduction, contextualization and problematization

The José Mario Molina Pasquel y Henríquez Technological Institute, Puerto Vallarta campus (ITJMMPyH), offers academic programs that include careers such as Architecture, Tourism and Gastronomy, as well as engineering in Electromechanics, Computer Systems and Business Management. Puerto Vallarta, recognized as a tourist destination and considered a medium-sized city with a population of close to 300,000 inhabitants (López, 2020), is characterized by constant labor demand in the tourism sector, with notable seasonal increases during holiday periods, especially in areas such as lodging, gastronomy and recreation services.

Now, at the aforementioned university, there is a significant percentage of students who simultaneously manage their academic and work responsibilities, which is a consequence of the availability of jobs, the flexibility of schedules to adapt to tourist demands, and the seasonal nature of the market. work and ease of mobility in the city, which allows quick transfers between school, work and home.

ITJMMPyH students . Specifically, the main objective is to address the following research questions: what proportion of students combine work with their studies? Are there disparities in academic performance and failure rates between university students who work and those who only study? To what extent can the number of hours dedicated to employment influence academic performance and failure rates in university students?

To answer these questions, the following objectives were established within the framework of this study.

General objective

ITJMMPyH university students in order to assess its implications to propose recommendations that contribute to the improvement of training processes and the permanence in school of students who are at academic risk.

Specific objectives

1. Design an information collection instrument aimed at university students that allows them to relate academic performance and employment.
2. ITJMMPyH university students .
3. ITJMMPyH students that allow proposing recommendations aimed at improving the academic training of students in need of employment.

The topic of employment in university students has received limited treatment in research, since most studies in this area focus on the labor insertion of higher education graduates. However, employment is a factor of considerable importance with significant repercussions on students, since it can contribute positively to the development of skills and competencies linked to their career or, in contrast, represent a challenge for the training process by requiring a considerable investment of time, which can put continuity and academic performance at risk.

Theoretical and conceptual aspects of the academic performance of undergraduate students

The academic performance (or academic performance) of students constitutes an area of concern at a global level, addressed in various investigations that use different approaches and consider multiple variables, such as failure, terminal efficiency, standardized evaluations and average (the latter recognized as one of the most prevalent indicators) (Fazio, 2004).

Lerner *et al* . (2012) conceptualize academic performance as " the continuous way of achieving knowledge, which will always be susceptible to being expanded, revised, refuted and become the object of new interpretations" (p. 15). From another perspective, Espinoza (2006) describes it as the capacity to respond to stimuli and educational intentions, while for Navarro (2003) it implies the level of knowledge, skills and abilities of the students in line with factors such

as age and situations. contextual, providing answers to the evaluations carried out by teachers to evaluate the level of knowledge acquired.

From these definitions, it can be stated that academic performance refers to the degree of acquired competencies, measurable in relation to a predefined standard. However, various factors, social, economic, academic and individual, affect school performance and the probability of failure. Martínez *et al* . (1998) highlight the role of the family's economic and educational level, the configuration of the curriculum, educational regulations and infrastructure, as well as the individual characteristics of the students. Furthermore, Enkvist (2018) suggests that four actors (authorities, teachers, parents and students) influence academic performance.

A study carried out at the Technical University of Machala in Ecuador used linear regression to explore the possible relationship between the time spent studying by students and their academic performance in certain subjects. The results indicated that " the longer the study time, the higher the academic performance in university students" (Jaya *et al* ., 2017, p. 71). Furthermore, additional research has observed a higher dropout rate in students who do not dedicate full time to studies (Constante-Amores *et al* ., 2021).

Cortez *et al* . (2017), for their part, identified variables with a positive influence on student performance, such as the number of hours of study inside and outside of classes, origin from a private institution, parents' educational level, knowledge of another language and participation in research activities. On the other hand, some variables, such as marital status (being married), family income, origin from a public institution, type of housing and type of career, negatively influenced performance.

In short, the decision to work during university studies, a topic of interest in this study, could be linked to some of the factors mentioned by Martínez *et al* . (1998), that is, economic, academic and individual aspects. Additionally, the number of hours of study could have an impact due to the potential reduction in working students (Cortez *et al* ., 2017). These findings point to the possibility of exploring a relationship between academic performance and employment during university studies.

Work during university studies

For Weller (2003), employment is configured as a crucial element in the transition to adult life, since one's own economic income constitutes the basis for emancipation from parental dependence and achieving autonomous survival. Furthermore, work is positioned as an axis of social integration, since it provides meaning to personal life, serves as a space for citizen participation and acts as an engine of material progress.

The executive report of the 2021 National Graduate Survey (Universidad del Valle de México, 2021) reveals data collected from 11,648 participants, where 23.6% began their work career before entering university education (an increase of 8% compared to the previous year), and 27% got their first job while attending university.

Carrillo and Ríos (2013), in their study carried out at the University of Guadalajara (disciplinary campus in the metropolitan area of Guadalajara), identify a high proportion of students who simultaneously work in the labor market, reaching 43% of all students. , with an average workload of 29 hours per week.

This need to combine studies with work, according to Cruz *et al* . (2017), is based on the deficiency of family income. Other authors, such as De Garay (2009) and Guzmán (2004), suggest that the motivation to combine studies and employment goes beyond economic need, since it involves factors such as the search for family or economic independence, life as a couple, obtaining professional experience, among others.

Pérez and Ramos (2015) add that the labor insertion of young people, who seek autonomy and personal fulfillment, depends largely on their behavior towards the labor market, which is influenced by values, beliefs, motivations, work preferences, initiative, gender, among others.

Regarding this phenomenon, the 2021 National Graduate Survey (Universidad del Valle de México, 2021) highlights that 44% consider that the main difficulty in finding a job related to their career is due to lack of experience or work practice, which demonstrates the relevance of work during university studies to facilitate the job positioning of graduates.

For this reason, Carrillo and Ríos (2013) emphasize the importance of understanding the characteristics of students' labor participation to establish guidelines in the design of public policies in higher education. These actions could include the granting of scholarships, the flexibility of study schedules, the number of subjects per school year and institutional limitations on the extension of students' work hours, among others.

Based on the above, it can be concluded that various motivations drive the decision to combine work and studies in university students. In short, despite representing a challenge in terms

of adjusting time between work and academics—especially in the traditional educational model, which demands activities both in person and at home—this combination can strengthen the work experience, facilitate job insertion upon graduating and developing skills related to training areas.

Empirical studies on the relationship between academic performance and employment in university students

There is no consensus regarding the appropriateness of combining work and studies during university education. From a traditional perspective, exclusive dedication to studies is advocated to preserve the quality of academic training. A study carried out at California universities supports this view by revealing that Vietnamese, Korean and Chinese students, influenced by their families, avoid working while studying. These students, by dedicating themselves exclusively to their studies, achieved better academic results compared to their Anglo, African American, and Latino peers (Enkvist , 2018).

On the contrary, at a global level, there is a growing trend to combine work and study, with high proportions of students working in countries such as China, the United States and Australia (Carrillo and Ríos, 2013). In Mexico, there is also a significant increase, and according to the 2017 National Graduate Survey (Universidad del Valle de México, 2017), 48% of university students combine work and school (53% in private universities and 42% in universities public).

However , in the literature on the combination of work and study, and its effects on the academic performance of university students, there are empirical studies that indicate negative impacts on academic results (Cabrera et al., 2006; Carrillo and Ríos , 2013 ; Porto and Di Gresia , 2001). Constante-Amores *et al* . (2021) highlight that " the students who are most likely to remain in tertiary education are those who do not have a job" and those who work "are more likely to drop out" (p. 22).

Other studies indicate that early experience in the labor market can offer complementary learning paths to formal education. The integration of knowledge acquired at school with work experience can strengthen students' preparation (Cuevas and De Ibarrola, 2013). In addition, positive synergies have been documented that facilitate the employment of graduates after completing their studies (Baquero and Ruesga, 2020; Baert *et al* ., 2017; Quintini , 2015; Neyt *et al* ., 2019).

Considering the possible positive and negative effects of combining study and employment, it is essential to analyze specific factors that affect student outcomes. Ruesga *et al* . (2014) argue that working is positive " when the working day is less than 15 hours/week and when the student

has work experience prior to entering the university, even if the working day is greater than 15 hours/week" (p . 70). However, working more than 15 hours/week can have negative effects.

Another relevant data from Ruesga *et al* . (2014) indicates that academic performance improves with respect to the number of hours of work up to a maximum of 11 hours per week (that is, part-time employment can be beneficial); However, from this point onwards, diminishing returns are obtained and, after 22 hours of work per week, the effect is negative. Furthermore, new students without previous work experience are the group with the highest risk of obtaining low academic results.

Gavotto -Nogales and Castellanos- Pierra (2015) conclude that " the professional panorama in Mexico represents a limited scenario for university students" (p. 220) . 75% of unemployed people have university degrees, and the majority of employed professionals carry out activities unrelated to their training. That is, the investment in human capital is not recovered in the short term, although the majority of university students need to work to finance their studies, but the salaries offered to people without studies are insufficient to continue studying.

Given this scenario, working during university studies can present advantages by facilitating job positioning upon graduation and by providing experience in an area related to vocational training. In addition, the income obtained can contribute to family and school expenses. Given this complexity, it is pertinent to explore the determinants of employment and academic performance to obtain a more complete understanding of the circumstances that impact the education of university students.

Materials and methods

This work corresponds to an applied research with a quantitative approach, for which a non-experimental design with a correlational scope was used and an inductive method was used in its development. The target population consisted of students from the José Mario Molina Pasquel y Henríquez Technological Institute (ITJMMPyH), from whom a probabilistic sample stratified by major and gender was obtained.

The central variables under study were employment, considered as the independent variable, and academic performance, identified as the dependent variable. The purpose of this research was to evaluate the implications of employment on students' academic performance to establish relationships between these variables.

To collect data, a questionnaire was implemented in digital format through a web form. This instrument incorporated indicators of academic performance, such as school failure and the

average obtained by students. Information related to these variables was requested in the questionnaire and was corroborated with the institution's databases. Likewise, the *employment variable* covered aspects such as exclusive dedication to study or the combination of school and work, the type of employment, the assigned schedules and the number of hours worked per week.

The questionnaire was designed by the authors of the research in November 2021 in the city of Puerto Vallarta, Jalisco, Mexico. Its structure was based on a bibliographic review of similar projects, such as Carrillo and Ríos (2013), Planas-Coll and Enciso-Ávila (2013), Ruesga et *al* . (2014) and National Graduate Survey (2017, 2021). The validation of the questionnaire was carried out through the review of expert peers who evaluated the items.

Before its implementation, a pilot test was carried out with 40 students, who provided useful comments to make adjustments to the questionnaire before applying it to the selected sample. Specifically, modifications were made to the wording of two questions.

The reference population was made up of students enrolled in the February-July 2022 semester in the bachelor's degrees offered by the ITJMMPyH . This population included 1358 students, of which 546 were women and 812 men. The sample for the study was determined with a maximum error of 5% and a confidence level of 95%, which gave a size of 300 elements. Subsequently, rounding was adjusted to ensure proportional representation by gender and academic program, leading to a sample size of 305 items, consisting of 122 women and 183 men.

The application of the instrument was carried out through a link shared virtually to the students through various means, such as email and social networks, in the period from March 3 to 26, 2022. The data collected was exported to a spreadsheet to processing, and tables and graphs were created for analysis. To support the conclusions of the study, various statistics were used, such as frequencies, means, confidence intervals of proportions, Z and Student 's T hypothesis tests , linear regression and one-way Anova .
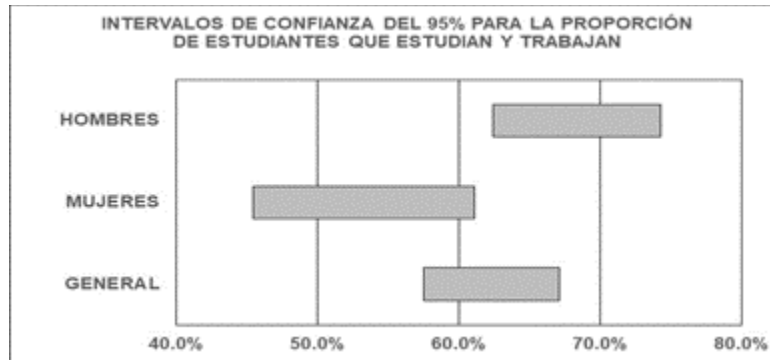
Results

Population that works and studies

The set of survey participants who reported on their work and study situation comprised 190 students, both women and men, which represented 62.3% of the sample. For employed women, the proportion reached 53.3%, while for men it was 68.3%. Based on these proportions, 95% confidence intervals were calculated for the proportions of students working and studying, both overall and disaggregated by gender. The overall range turned out to be between 57.5% and 67.1%.

For women, the corresponding range was 45.5% to 61.1%, and for men 62.4% to 74.3% (see Figure 1).
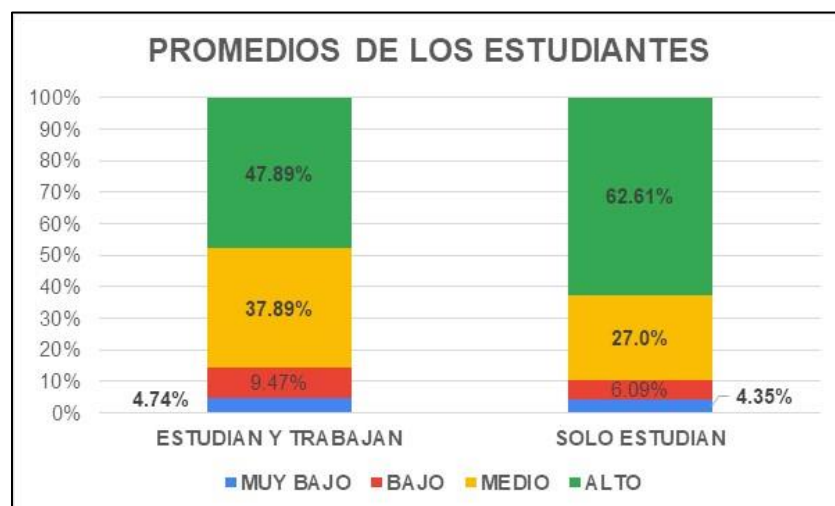
Figure 1. Confidence intervals

Source: self made

Work and study and impact on academic performance

In order to evaluate the impact of working and studying on academic performance, the average grade of students enrolled in the school control department of the academic unit was considered. The averages were classified into four categories: very low (less than 70 points), low (70-79.9), medium (80-89.9), and high (90-100 points). The proportions of each category were compared between students who work and study and those who only study. The results for the proportions of each category in both groups are presented in Figure 2.

Figure 2: Averages obtained by the groups

Source: self made

Based on these findings, hypothesis tests were carried out using the Z statistic to determine if the differences between the proportions corresponding to the categories of low, medium and high average in both groups of students were statistically significant, with a level of significance of 5%. The group under 70 was not considered, as no significant difference was identified between the groups. The calculation was carried out with:

$$Z = \frac{(\overline{p}_{te} - \overline{p}_e) - (p_{te} - p_e)}{\sqrt{\hat{p}(1 - \hat{p})\left(\frac{1}{n_{te}} + \frac{1}{n_e}\right)}}$$

Where

$\overline{p}_{te}$:Sample proportion of students who work and study.

$\overline{p}_e$:Sample proportion of students who only study.

n_{te}:Sample size of students who work and study.

n_e:Sample size of students who only study.

$\hat{p}$:Estimated overall proportion. Calculated with:

$$\hat{p} = \frac{n_{te}\overline{p}_{te} + n_e\overline{p}_e}{n_{te} + n_e}$$

Table 1 . Z test of difference in proportions between students who work and study, and those who only study, by range of averages

Low average (70 to 79.9 points)	Average average (80 to 89.9 points)	High average (90 to 100)
H_0 : There is no difference between the proportion of students who work and those who only study.		
H_1 : The difference in proportions is in favor of working students.		H_1 : The difference in proportions is in favor of students who only study.
Right end test		Left end test
Significance: 0.05		
Z critical value:1.645		Z critical value:-1.645
Calculated value of test statistic:		
$Z = 1.048$	$Z = 1.951$	$Z = -2.494$
Decision: The null hypothesis is accepted.	Decision: The null hypothesis is rejected.	
Conclusion: There is no difference between the proportion of students who work and those who only study.	Conclusion: The difference in proportions is in favor of working students.	Conclusion: The difference in proportions is in favor of students who only study.

Source: self made

Table 1 shows the results of the hypothesis tests, which indicate the following:

1) The proportion of students with a low GPA is statistically the same for the groups of students who work and those who only study.

2) The proportion of students who obtain an average average is higher in the group of students who work, compared to those who only study.

3) The proportion of students with a high average is higher, statistically speaking, in the group of students who do not work compared to those who do.

Work and the number of subjects failed

The results obtained from the sample revealed that 40.53% of working students experience failure in their subjects, in contrast to 27.83% of those who dedicate themselves exclusively to studying. Furthermore, it is observed that the average number of failed subjects among working students is 1.07, while for those who only focus on their studies it is 0.67.

However, when focusing specifically on students who fail subjects, it is observed that the average number of failed subjects is similar in both groups. Students who work have an average of 2.49 failed subjects per student, while those who only study have an average of 2.41 failed subjects.

Student 's T hypothesis tests were carried out with a significance level of 0.05. The first test was carried out considering all students, regardless of whether or not they had failed subjects. In the second test, only students who stated that they had failed subjects were included. The statistical formulas used for both tests were the following:

$$t = \frac{(\overline{x}_{te} - \overline{x}_e) - D_0}{\sqrt{\frac{s_{te}^2}{n_{te}} + \frac{s_e^2}{n_e}}}$$

Where

$\overline{x}_{te}$:Average number of subjects failed by students who work and study.

$\overline{x}_e$:Average number of subjects failed by students who only study.

n_{te}:Sample size of students who work and study.

n_e:Sample size of students who only study.

s_{te}^2:Variance in the number of subjects failed by students who work and study.

s_e^2:Variance in the number of subjects failed by students who only study.

D_0:Value of the difference of the means contemplated in the null hypothesis of the test.

Table 2. Student 's t of average number of failed subjects between students who work and study

and students who only study

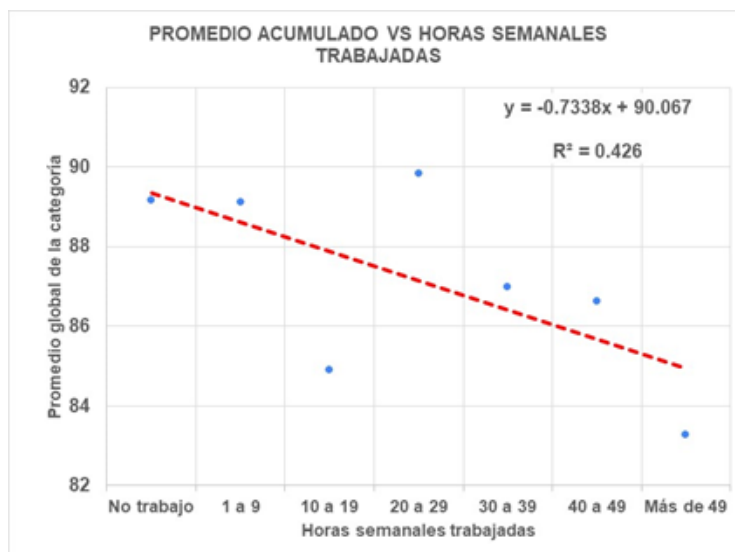| Hypothesis test of all students (with and without failed subjects)	Hypothesis test of students who stated that they had failed at least one subject
H_0: There is no difference in the average number of failed subjects between students who work and those who only study. H_1: The average number of subjects failed by students who work and study is higher than the average number of subjects failed by students who only study.	
Right end test.	
Significance: 0.05	
critical value of $t = 1.65$	critical value of $t = 1.67$
Calculated t value: $t = 2.35$	Calculated t value: $t = 0.27$
Decision: The null hypothesis must be rejected	Decision: The null hypothesis must be accepted
Conclusion: The average number of subjects failed by students who work and study is higher than the average number of subjects failed by students who only study.	Conclusion: There is no difference in the average number of failed subjects between students who work and those who only study.

Source: self made

In summary, the results presented in Table 2 indicate that the hypothesis tests carried out with a significance level of 0.05 confirm that the average number of subjects failed by the total group of students who work and study is statistically higher than the average number of subjects failed by those who only dedicate themselves to studying. Furthermore, the corresponding test for the average number of failed subjects applied exclusively to students who admitted to having failed at least one subject showed that there is no significant difference between both groups in terms of the average number of failed subjects.

The work day and academic performance

Using a simple linear regression with the support of Excel as a statistic, a correlation was identified between the number of weekly hours dedicated to work by students (classified into seven categories that include those who only study) and the average of the averages of grades obtained in each category. The coefficient of determination of the regression obtained between these two variables was 0.426, which represents a correlation coefficient of -0.648. This result indicates a strong correlation between the two variables (Figure 3).

Figure 3. Cumulative average vs. weekly hours worked

Source: self made

Based on this finding, we can establish that for every 10 hours of work the average decreases by 0.7338, which shows a significant correlation between the grade average and the hours worked weekly.

Additionally, the correlation between the number of weekly hours worked and the average number of subjects failed by the students was investigated, which can be seen in Table 3. For this, the regression function of the data analysis complement of Excel (simple linear regression) to identify the existence of a linear correlation between the variables. In this sense, the categories related to the duration of the weekly work day were considered as an independent variable and the average number of subjects failed by students, including those who only study.

Table 3. Weekly hours worked and average number of subjects failed.

Weekly hours worked	Category	Average number of subjects failed
0 (Not working)	1	0.7
1 to 9	2	0.8
10 to 19	3	0.9
20 to 29	4	0.6
30 to 39	5	1.3
40 to 49	6	1.2
More than 49	7	1.7

Source: self made

The result obtained was a coefficient of determination r^2 equal to 0.6783 and a correlation coefficient of 0.8236, also providing the coefficients for the following simple linear regression equation:
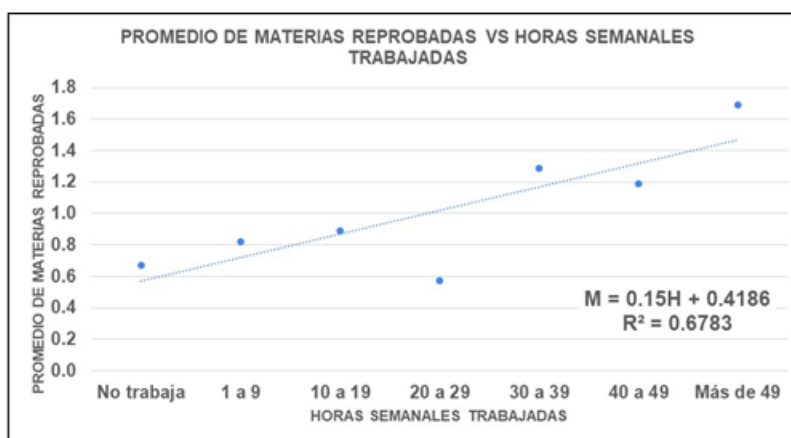
$$M = 0.15\,H + 0.4186$$

Where M is the estimate of subjects failed by a student and H the number of weekly hours allocated to work. Consequently, a student who works 8 hours a day would have a high probability of failing at least one subject.

$$M = 0.15\,(8) + 0.4186 = 1.61$$

The scatter plot, as well as the corresponding trend line, can be seen in Figure 4:

Figure 4. Average number of subjects failed vs. weekly hours worked

Source: self made

An extract from the report presented by Excel on the regression carried out shows the commented results, which can be seen in table 4.
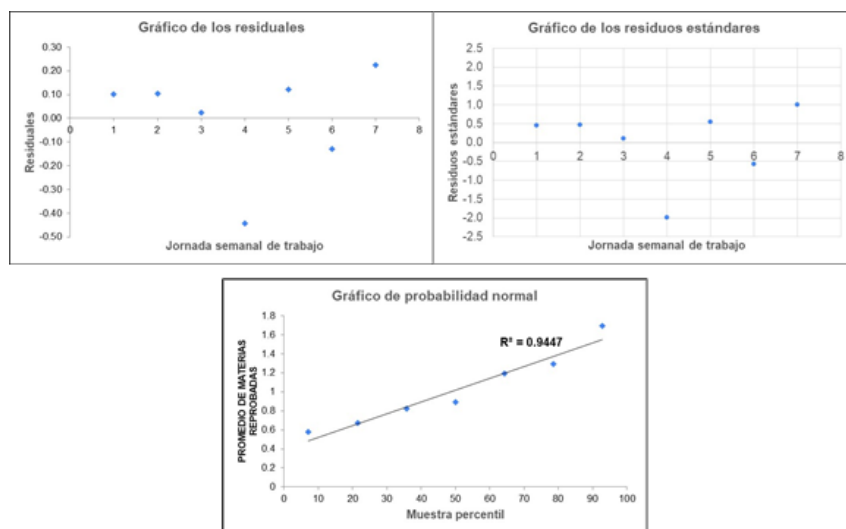
Table 4 . Regression statistics

Correlation coefficient	0.8236
Determination coefficient R^2	0.6783
Typical error	0.2445
Observations (categories)	7
Coefficients:	
Interception	0.4186
Earring	0.1500

Source: self made

The residual analyzes shown by Excel also support the relevance of the equation obtained, as well as the absence of atypical values, as can be seen in Figure 5.

Figure 5: Residuals

Source: self made

Due to the above, we can consider that it is possible to predict the number of subjects that a working student could fail through the aforementioned regression equation, according to the category of weekly hours worked.

Anova tests were carried out with a significance level of 0.05 to determine if the averages of the different categories were different from each other. In the first, students who do not work were included and in the second, only those who reported working and studying were included. In both cases the result was the same: there is no significant difference between the averages achieved by the students, regardless of whether they work or not and the number of weekly hours worked. Below are the Anova tables obtained with the Excel data analysis add-in, including students who do not work (table 5).

Table 5. Variance of a factor of students who work and do not work

Variance of a factor				
Groups	Account	Addition	Average	Variance
Doesn't work	115	10254.46	89.17	80.23
From 1 to 9	28	2494.97	89.11	20.67
From 10 to 19	28	2377.63	84.92	384.32
From 20 to 29	33	2964.84	89.84	22.12
From 30 to 39	38	3305.32	86.98	108.53
From 40 to 49	37	3204.99	86.62	63.36
More than 49	26	2165.49	83.29	160.19
Variance analysis				
Origin of variations	Sum of squares	Degrees of freedom	F	Critical value for F
Between groups	1239.85	6	1.98	2.13
Within the groups	31090.49	298		
Total	32330.34	304		

Source: self made

As can be seen in the summary, the value of F calculated for the test is less than the critical value for F, so it can be concluded that the grade averages for each category of number of weekly hours worked, including that of those who they do not work, for a significance of 0.05, they are statistically equal.

In the second Anova test , we sought to determine if there is a difference between the averages of the different categories of number of weekly hours of work, considering only working students. The results are summarized in Table 6.

Table 6 . Variance of a factor of working students

Variance of a factor				
Groups	Account	Addition	Average	Variance
From 1 to 9	28	2494.97	89.11	20.67
From 10 to 19	28	2377.63	84.92	384.32
From 20 to 29	33	2964.84	89.84	22.12
From 30 to 39	38	3305.32	86.98	108.53
From 40 to 49	37	3204.99	86.62	63.36
More than 49	26	2165.49	83.29	160.19
Variance analysis				
Origin of variations	Sum of squares	Degrees of freedom	F	Critical value for F
Between groups	874.78	5	1.47	2.26
Within the groups	21,943.78	184		
Total	22818.56	189		

Source: self made

As in the previous case, given that the value of F calculated for the test is less than the critical value of F, it is established that the overall grade averages for the different categories of number of weekly hours worked are not statistically different, with a significance of 0.05.

Discussion

In the comparison of the results obtained in this study with other investigations, it was observed that the percentage of students working at the ITJMMPyH was 62.3% (considering men and women), a figure that exceeds the study carried out at the University of Guadalajara by Carrillo and Ríos (2013), who reported 43%. It was also a higher percentage compared to the national average documented by the 2017 National Graduate Survey (Universidad del Valle de México, 2017), which was 42% in public universities.

The variation in the data on the percentage of students who work in relation to other studies and the national average could be attributed to the dynamics and flexibility of the labor market in a tourist city like Puerto Vallarta, with mobility facilities in a medium-sized city. , where the research was carried out.

Regarding the *academic performance variable, in the low performance* category no significant differences were identified between the groups (only studying and working and studying), which indicates that, in this research, working and studying is not associated with low

performance. academic. In the *medium performance category* , a statistically significant proportion was observed in favor of working students, results that could not be corroborated with other studies. On the other hand, in the *high performance category* , the proportion favored students who dedicate themselves exclusively to school, in line with the study by Enkvist (2018), which suggests that exclusive dedication to school contributes to better academic results.

Likewise, a greater number of failed subjects was identified in students who work and study, which was statistically significant compared to students dedicated only to school (although the percentage of failures did not present differences between the groups). These results agree with the conclusions of other studies that document negative effects of work on academic performance, as pointed out by Porto and Di Gresia (2001), Cabrera *et al* . (2006) and Carrillo and Ríos (2013).

In relation to the hours dedicated to work and academic performance, no differences were identified in the grade averages between the groups dedicated exclusively to study and those who work and study. On the contrary, Ruesga *et al* . (2014) mention that a work day of more than 15 hours is negative for academic performance, which could not be confirmed considering the grade average. Furthermore, Nonis and Hudson (2006) document an impact on students' grades that increases in magnitude as the weekly hours dedicated to work increase, an effect that could not be corroborated either.

On the other hand, a strong linear correlation was identified between the number of subjects failed and the hours dedicated to work, which coincides with other studies that indicate that the hours dedicated to work are related to an impact on academic performance (Darolia , 2014 ; DeSimone , 2008; Kalenkoski and Pabilonia , 2010; Ruesga *et al* ., 2014). Although this impact is evident only in the number of subjects failed (not in the grades obtained), it is suggested that, as the weekly hours dedicated to employment increase, the probabilities of failing a greater number of subjects increase.

Conclusions

This research has found an increase in the proportion of students who combine work and studies globally, which is mainly due to the need to finance their studies or contribute to the family's financial support. In this sense, the results obtained indicate that exclusive dedication to studies confers academic advantages to students, especially in terms of the possibility of obtaining high averages and reducing the probability of failing subjects.

In the particular case of the ITJMMPyH for the question *: What percentage of students combine work and school?* , it was determined that more than 60% of the students, predominantly

male, are in the situation of combining work and school. When addressing the question , *is there any difference in academic performance and failure in university students who work compared to those who only study?* , different patterns were observed. For example, in the *low performance group* , no significant differences were identified in the percentage between those who study and work and those who only study. However, in the *medium performance group* , a statistically significant increase was evident in the number of students who work and study. On the other hand, in the *high performance group* , a clear difference was highlighted in favor of those who only dedicate themselves to studying, since a significant percentage was found in the comparison of both groups.

On the other hand, when addressing the question *: To what extent can the number of hours dedicated to work affect academic performance and failure in university students?* , although no significant differences were found in the grade averages, a strong correlation was identified between the number of hours worked and the number of subjects failed. This finding suggests that as weekly working hours increase, the probability of failing a greater number of subjects increases.

In summary, it is concluded that a considerable percentage of students combine work and studies, the majority being male. Students who dedicate themselves exclusively to studying have superior academic performance, obtaining higher averages, while those who work and study tend to fail more subjects.

Based on the conclusions of this study, some recommendations are made for higher education institutions with the purpose of facilitating the academic training of students who combine work and studies. In this sense, it is suggested to design an efficient student job bank that facilitates the placement of students in jobs compatible with their studies and preferably linked to their area of training. Likewise, the implementation of information technologies and social networks can facilitate interaction between companies and students for this purpose.

Another recommendation is to identify students with greater economic vulnerability to offer scholarships or financial support. Since some students are financially independent and work to finance their studies or contribute to family expenses, support programs can make a significant difference in their ability to complete a professional degree.

In addition, it is proposed to offer flexible study modalities that adapt to the needs of working students. While traditional education can present challenges for those seeking to combine work and study, information technologies have enabled the development of flexible educational models that allow greater independence in study time. This measure would not only benefit

working students, but could also attract other sectors of the population who, due to their work responsibilities, find it difficult to pursue a professional career due to lack of time.

Finally, the importance of raising awareness in government agencies about the high percentage of students who work with the objective of proposing specific policies and support for this segment of the population is highlighted. Despite the existence of support programs such as scholarships, it is suggested to consider the implementation of policies focused on student work or the expansion of existing supports, given the magnitude of students who face this situation.

Future lines of research

Studies on employment in university students become relevant by evidencing the presence of impacts on various aspects of academic performance when work responsibilities are combined with study, compared to those who dedicate themselves exclusively to academic training. This relevance is even more accentuated in contexts with a high percentage of university students participating in work activities, a trend that, according to statistics, suggests a continuous increase.

Therefore, it is considered imperative to carry out more comprehensive research in order to more comprehensively understand the employment-related factors that could have a significant impact on academic results, such as the number of working hours, the nature of the work, the connection with the area of study, travel times and work flexibility, among others. Detailed exploration of these elements could serve to formulate support strategies specifically designed for this segment of the student population.

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