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RESEARCH ARTICLE

Absenteeism, Presentism and Academic Performance in Students from Peruvian Universities

Ausentismo, presentismo y rendimiento académico en estudiantes de universidades peruanas

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Summary

The objective of this research was to determine the effect of absenteeism and presenteeism on the academic performance of undergraduate students from the Business and Engineering Schools in Peruvian Universities. The study is based on a self-report survey of 8,203 students from the business and engineering schools of Peruvian universities. Scales were used to analyze absenteeism, presenteeism and academic performance that showed suitable psychometric properties. The results showed that presenteeism has a higher impact on the academic performance of students (β = 0.628) compared to absenteeism (β = 0.101). Absenteeism has a greater effect on courses and disapproved terms (Beta = 0.163) and presenteeism, on the evolution of academic performance (β = -0.145). Finally, by means of a model of structural equations, the causal structure of the academic performance decrease from absenteeism and presenteeism is proven.

Keywords: Academic absenteeism, academic presenteeism, academic performance, Peru

Resumen

El objetivo de la presente investigación fue determinar el efecto del ausentismo y presentismo sobre el rendimiento académico en los estudiantes de pregrado de las Escuelas de Negocios e Ingenierías en las Universidades Peruanas. El estudio se sustenta en una encuesta de autoreporte a 8,203 estudiantes de las escuelas de negocios e ingenierías de las universidades peruanas. Se emplearon escalas para analizar el ausentismo, presentismo y rendimiento académico que mostraron adecuadas propiedades psicométricas. Los resultados evidenciaron que el presentismo tiene un mayor impacto sobre el rendimiento académico disminuido de los estudiantes (β = 0.628) en comparación al ausentismo (β = 0.101). El ausentismo tiene un mayor efecto sobre los cursos y ciclos desaprobados (β = 0.163) y el presentismo sobre la evolución del rendimiento académico (β = -0.145). Finalmente,

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mediante un modelo de ecuaciones estructurales se demuestra la estructura causal de la disminución del rendimiento académico a partir del ausentismo y presentismo.

Palabras clave: Ausentismo universitario, presentismo académico, rendimiento académico, Perú

Introduction

From 2005 to 2014, the enrollment rate of university students aged between 20 and 24 increased from 29% to 33% globally. Also, with respect to full-time undergraduate students, only 41% graduated in the period established by the career curriculum (OECD, 2016). One of the problems which influences students' non-completion of university studies in this period is absenteeism, which constitutes an increasing problem in different countries (Wadesango & Machingambi, 2011). There is evidence indicating the causes, effects and implications of student absenteeism, which is understood as the voluntary or involuntary absence from the physical environment of the classroom, class, or learning session, and which is determined by academic and extra-academic factors (Chilca, 2017; Triado, Aparicio-Chueca, Guárdia-Olmos, Jaría-Chacón, Cebollero & Ejjaberi, 2013).

The study carried out by Gul et al. (2016) in a sample of medicine school undergraduate students of a public university showed that the prevalence of absenteeism was 87.4%. Also, Alghamdi et al. (2016) analyzed the prevalence of absenteeism in 450 students in two moments of the term. Their findings indicated that the prevalence before midterm exams was 77.6%, while the prevalence at the end of the term was 70.2%.

Student absenteeism has been associated with academic performance. Different studies have found the inverse relation among these variables. Strand & Granlund (2014) discovered that students who started to be absent from classes found the math subject difficult to understand, and their academic performance in this subject dropped. Also, the study carried out by Hidayat, Vansal, Kim, Sullivan, & Salbu, (2012) indicates that there is a negative association between students' academic performance and hours of absence in their courses. The study also indicated that students with poor performance reported more absences than those students with high performance. Likewise, Alghamdi et al. (2016) carried out a study using the average of lost hours

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and students' average academic performance, and found that students' absent hours had had a negative impact on their academic performance.

The first studies regarding the concept of presenteeism considered it a favorable alternative to reduce absenteeism in companies as workers attended work (Uris, 1955; Canfield & Soash, 1955). However, presenteeism has recently been considered as antonym to absenteeism (Janssens, Clays, De Clercq, De Bacquer & Braeckman, 2013). Other research studies on presenteeism associate the concept with the productivity loss resulting from workers attending work even though they do not feel well (Braakman-Jansen, Taal, Kuper & Van de Laar, 2011; Lerner et al., 2012).

The above-mentioned studies are based on studies carried out in the work sector. However there are studies which have analyzed how presenteeism manifests itself in students (Matsushita et al., 2011; Ferrito, 2016). Few studies have conceptualized academic presenteeism. The studies carried out to date measure and relate this variable to health issues (Deroma, Leach & Leverett, 2009; Mikami et al., 2013; Matsushita, Yamamura & Ikeda, 2015) and the student's perception of his/her academic environment (Ferritto, 2016).

Hysenbegasi, Hass & Rowland (2005) studied the effect of depression on academic performance. In this study, academic performance was conceptualized using presenteeism related to depression and subjective perception of absenteeism related to depression, as well as GPA and evaluation results. Similarly, Mikami et al. (2013) found that sense of coherence (dealing with stress situations) had a negative association with presenteeism, thus indicating that sense of coherence decreased the negative impact of health problems on students' performance. Likewise, Ferritto (2016) studied university students' presenteeism based on students' behavior (paying attention, participation, attendance, lateness and note-taking). The study provides qualitative information demonstrating the relation between presenteeism and academic performance.

The explanation and study of the factors related to academic performance are matters of great importance in higher education (Ruban & McCoach, 2005). In this context, studies have been carried out, which are aimed at analyzing the factors associated with students' academic performance, and also seek to establish the relation of personal, motivational, sociocultural, attitudinal and academic variables (Mckenzie & Schweitzer, 2001; Feldman et al., 2008; Butcher & Visher, 2013; Busch et al., 2014). In this sense, the academy seeks not only to associate factors with academic performance, but also to identify the factors with greater predictive value.

One of the factors which has been significantly associated with academic performance is absenteeism, (Alghamdi et al., 2016; Fayombo, Ogunkola & Olaleye, 2012; Sahim, Arseven & Kiliç, 2016; Teixeira, 2016). Most of the research studying absenteeism and presenteeism as factors associated with the reduction of academic performance at university, however, have been analyzed individually (López-Bonilla & López-Bonilla, 2015; Alghamdi et al., 2016; Teixeira, 2016; Ferritto, 2016). The research studying the factors associated with the reduction of academic performance has used small samples for study (Barlow & Fleischer, 2011; Fayombo et al., 2012; López-Bonilla & López-Bonilla, 2015; Alghamdi et al., 2016; Sahim et al., 2016). There are still no national samples showing the magnitude of the problem as a whole. Variables like type of university (public or private), school (business and engineering) and time of permanence of the professional career are even not considered.

The research conducted has not yet studied absenteeism and presenteeism as a factor associated with the reduction of academic performance. However, when absenteeism has been associated with academic performance, the negative relation among these variables has been demonstrated (López-Bonilla & López-Bonilla, 2015). The same happens with the association of presenteeism with academic performance. Unlike absenteeism, presenteeism at university is a new subject that is addressed by the academic literature.

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Facing this information gap, the aim of the study is to examining absenteeism and academic presenteeism as factors associated with and determining of the reduction of academic performance in a national representative sample of business and engineering specialty students of 34 Peruvian universities.

The knowledge generated through this study will allow to establish the predictive value of absenteeism and presenteeism in relation to academic performance, and to gain a better understanding of the academic implications of both factors in the Peruvian university context. From the produced evidenced, it will be possible to urge academic process and professional training managers to implement student guidance, mentoring and follow-up to reduce the rates of absenteeism, presenteeism, poor academic performance, and failed courses and terms.

Method

Research Design

The used research study design was exploratory and non-experimental.

Participants

In this study, 8,203 students of 34 public and private universities from 23 (92.8%) regions of Peru participated: 4,173 women (50.8%) with an average age of 20.43 years old (D.E. =1.79) and 4,030 men (49.2 %) with an average age of 20.68 years old (D.E. =1.92). The surveyed students belonged to business and engineering schools, from term 1 to 10. The period of the study was during the academic semester 2015-2. Table 1 shows the demographical, academic and job characteristics of the surveyed students.

Table 1.

Demographical, academic and job characteristics of the sample (percentages).

Women (4,173)	Men (4,030)
Year of entry to university	**Year of entry to university**
Average = 2012 (D.E.=1.59)	Average = 2012 (D.E.=1.72)
Range: 2001 – 2015	Range: 2000 - 2015
Area of knowledge	**Area of knowledge**
Business = 81.5%	Business = 76.4%
Engineering = 18.5%	Engineering = 23.6%
University term	**University term**
Average= 5.47 terms (D.E.=2.67)	Average= 5.18 terms (D.E.=2.74)
Range: 1 – 10 term	Range: 1 – 10 term
Occupation	**Occupation**
Only studies = 64.0%	Only studies = 52.9%
Studies and works = 36.0%	Studies and works = 47.1%
Have a partner?	**Have a partner?**
Yes = 48.0%	Yes = 42.9%
No = 52.0%	No = 57.1%

Instruments

The study used a structured self-report questionnaire with questions regarding demographical, academic and job information, as well as absenteeism and presenteeism scales.

Absenteeism scale: Five items of the scale used by Reeves & O`Leary-Kelly (2007) were included. The scale is divided into two dimensions that measure the number of absent days due to health and other reasons. The items have ordinal answer choices with interval interpretation values: never

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(0); 1 day (1); 2 days (2); From 3 to 5 days (4); From 6 to 10 days (8); More than 10 days (15).

Presenteeism scale: It is based on the work distraction items of Stewart, Ricci, Chee, Hann & Morganstein (2003). The items indicate a decreased academic productivity due to distraction and exhaustion. The items have ordinal answer choices with interval interpretation values: never (0), 1 day (1), between 2 and 5 days (4), between 6 and 10 days (8), almost every day (15).

Reduced academic performance: The items allow to measure the perceived reduction of academic performance. The items have ordinal answer choices with interval interpretation values: never (0), 1 day (1), between 2 and 5 days (4), between 6 and 10 days (8), almost every day (15). This scale was based on the work distraction items (Stewart et al., 2003).

Failed courses and terms: Two items indicating the number of failed terms and courses during their studies were used.

Evolution of academic performance: An item asking the student how he/she rated his/her current academic performance as compared to his/her academic performance in the previous semester. It has 7 answer choices "Completely worse", "Much worse", "Somewhat worse", "About the same", "Somewhat better", "Much better" and "Completely better".

Statistical Analysis

The data obtained were analyzed by using the statistical programs SPSS (version 23) and Smart PLS (version 3.2.). Contingency tables, averages, and percentages were used to obtain the descriptive statistics in order to summarize the quantitative data, and to estimate the prevalence estimates of the variables studied. The causal relation of the variables was found by using the partial least squares structural equation modeling (PLS - SEM), and the causal relation between the scales was analyzed. The SmartPLS statistical program was used to calculate the significance of the relations between

constructs (Ringle, Wende & Becker, 2015). The algorithms described in each scale were used to calculate the impact of absenteeism and presenteeism on the academic performance.

Validity and Reliability

The Cronbach's Alpha Reliability Coefficient was used to analyze the reliability of each scale. The absenteeism scale ($\alpha = 0.692$) obtained an Alpha lower than the expected minimum ($\alpha = 0.706$). This is because the scale presents excluding data, but this is not an indication of a problem since the reasons for university absenteeism are different, and this can exclude the other. The presenteeism scale ($\alpha = 0.794$) obtained an Alpha value higher than the expected minimum, while the scale of academic performance decreased ($\alpha = 0.606$).

The Principal Component Analysis (PCA) with Varimax rotation was used to analyze the construct validity. The 13 items under study (5 of the absenteeism scale, 4 of the presenteeism scale, 2 of reduced academic performance and 2 of failed courses and terms) provided a factorial solution of 3 components with a total variance of 57.2% of the original data (see Table 2).

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Table 2.

Factorial validity of items of absenteeism, presenteeism and academic performance scales using Varimax-rotated PCA.

Items	Factors			Communalities
	1	2	3	
Had difficulties to concentrate, was distracted in class or while studying.	.828			.692
Studied slower than usual	.803			.649
Was tired, worn out or exhausted while in class	.790			.630
Had personal concerns outside of the study	.707			.529
Made mistakes in his/her exams or work presentation because he/she was worried or he/she was concerned by something	.842			.707
Had an academic performance far below his/her abilities	.847			.717
To take care of his/her physical or mental health		.750		.568
To look after other relatives' or close people's health or care		.710		.506
Due to illness or indisposition		.704		.513
To address personal, legal or financial issues		.644		.426
For other reasons		.502		.288
Repeated courses throughout his/her university studies			.863	.749
Failed courses throughout his/her university studies			.851	.742

The scale of presenteeism and reduced academic performance totally saturated the first factor with factorial weighs between 0.707 and 0.847. The 6 items met the assumptions for validation as the factorial weights exceeded the expected minimum. Also, the absenteeism scale saturated the second factor with its 5 items, but 2 factorial weights are below the expected minimum ($\alpha = 0.706$) and communalities lower than 50%. Finally, the items

of failed courses and terms exceeded the assumptions for validation, with weights of 0.863 and 0.851.

Structural Model

Using partial least squares variance-based structural equation modeling (PLS-SEM), construct validity and composite reliability were analyzed. All factorial weights of the three scales' items exceeded the expected minimum (0.706). Presenteeism, absenteeism and academic performance scales obtained high levels of composite reliability of 0.865, 0.838 and 0.784, respectively, with an average variance extracted for scale between 0.569 and 0.712.

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Table 3.

Construct validity of items of absenteeism, presenteeism and academic performance scales using partial least squares variance-based structural equations.

Items	Factorial Weight	Composite Reliability	Variance Extracted
Had difficulties to concentrate, was distracted in class or while studying.	0.810	0.865	0.421
Studied slower than usual	0.800		
Was tired, worn out or exhausted while in class	0.787		
Had personal concerns outside of the study	0.740		
Made mistakes in his/her exams or work presentation because he/she was worried or he/she was concerned by something	0.714	0.784	0.616
Had an academic performance far below his/her abilities	0.682		
To take care of his/her physical or mental health	0.604		
To look after other relatives' or close people's health or care	0.632		
Due to illness or indisposition	0.606		
To address personal, legal or financial issues	0.841	0.838	0.722
For other reasons	0.858		
Repeated courses throughout his/her university studies	0.814	0.850	0.739
Failed courses throughout his/her university studies	0.904		
Perception of the evolution of academic performance	1.000	1.000	1.000

The Fornell – Larcker criterion was used to examine the discriminant validity, in which the average variance extracted (AVE) should be higher than correlation with other dimensions. Table 4 shows that this criterion is met in all subscales (diagonal between parentheses), demonstrating discriminant validity.

Table 4.

Discriminant validity of absenteeism, presenteeism and academic performance scales.

	Absenteeism	Failed courses and terms	Evolution of academic performance	Presenteeism	Reduced academic performance
Absenteeism	**(0.649)**				
Failed courses and terms	0.180	**(0.860)**			
Evolution of academic performance	-0.104	0.025	**(1.000)**		
Presenteeism	0.231	0.082	-0.274	**(0.785)**	
Reduced academic performance	0.246	0.113	-0.290	0.651	**(0.849)**

Procedure

The questionnaire was administered and assisted in person by qualified professionals. Students were informed of the aim and scope of the study. Confidentiality and anonymity were guaranteed. Students gave oral consent prior to data collection. Likewise, consent questions were asked in the final part of the questionnaire. They participated voluntarily without any type of academic, economic or other incentives. Students completed the questionnaire during class hours. The average time was 25 minutes.

Results

Seventy eight point eight percent of students were absent from class at least one day in the last month. Students indicated that absence was due to illness or indisposition (53%), other reasons (45.5%), looking after other relatives' or close people's health or care (36.9%), addressing personal, legal or financial issues (35.8%) and taking care of their physical or mental health

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(34.6%). The average number of days of absenteeism per year for any of these reasons was 44.89 days (D.E. = 48.23).

With respect to students who reported presenteeism, 95.7% of students found it difficult to concentrate during class hours. Eighty two point three percent of students were distracted. They also indicated that they were tired (87.2%), studied slower (77.4%) and had personal concerns outside of the study (76.3%).

Eighty two point five percent of students stated that their academic performance was below their abilities over the last month, while 71% mentioned that they made mistakes in their exams or works.

Fifty three point six percent of students indicated that they have failed at least one course, and 23% has repeated at least one term in the course of the studied academic cycles. Differentiated by gender, 51.8% of female students failed at least one course, with an average number of failed courses of 2.64 (D.E.=1.97), while 55.4% of male students failed at least one course, with an average number of failed courses of 3.13 (D.E.=2.28). With respect to student repeated terms, differentiated by gender, 18.2% of female students have repeated an academic term, with an average number of repeated terms of 1.7 (D.E. = 1.01), ranging from 1 to 6 repeated terms. Also, 23.8% of male students have repeated at least one academic term, with an average number of repeated terms of 1.76 (D.E. =1.05), ranging from 1 to 7 repeated terms.

Structural Model

The association of absenteeism and academic presenteeism with reduced academic performance was analyzed. It was found that the variables have a direct effect on the reduced academic performance, accounting for 43.4%. In Figure 1, it is also noticed that absenteeism accounts for 5.3% of academic presenteeism. Simultaneously, absenteeism accounts for 3.7 % of failed courses and terms. Also, absenteeism and academic presenteeism account

for 9.7% of students' limitations to improve the evolution of their academic performance.

In order to correct the attenuation of correlations between scales and make it comparable to a covariance model, the Consistent PLS (PLSc) algorithm is used as more stable results can be obtained using this method (Dijkstra & Henseler, 2012).

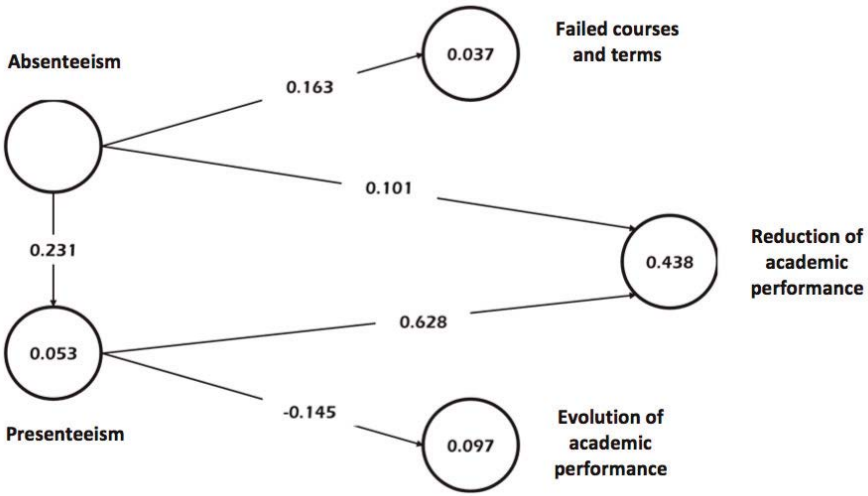

Figure 1. Causal Diagram of the Impact of Absenteeism and Presenteeism on academic performance.

Measurement Model

Table 5 shows the significance of the path coefficients of the model. In general, all relations are stable and very similar to the ones for population parameters since, in evaluating the significance of the hypothetical relation, t-value was significant for all proposed relations. However, the relation between absenteeism and evolution of academic performance is not significant. This is also the case for the relation between presenteeism and failed courses and terms.

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Table 5.

Significance of path coefficients (beta) between absenteeism, academic presenteeism and academic performance variables.

Relations between dimensions (Beta values)	Original sample (O)	Sample average (M)	Standard error (STERR)	T Statistics (O/STERR)	P
Absenteeism→ Failed courses and terms	0.163	0.163	0.014	11.931	0.000
Absenteeism → Evolution of academic performance	-0.024	-0.024	0.012	1.942	0.052
Absenteeism → Presenteeism	0.231	0.231	0.012	19.195	0.000
Absenteeism → Reduction of academic performance	0.101	0.102	0.012	8.743	0.000
Presenteeism → Failed courses and terms	-0.005	-0.006	0.015	0.376	0.707
Presenteeism → Evolution of academic performance	-0.145	-0.145	0.015	9.979	0.000
Presenteeism → Reduction of academic performance	0.628	0.628	0.010	63.138	0.000

Note: Simulation using Bootstrapping. Resampling (5000 times). Significant, $p<0.01$

Even though beta path coefficients have been significant, it is necessary to determine the effect size of each relation. As shown in Table 6, the relation with a greater effect size is the relation between presenteeism and reduced academic performance. Although there are relations with a tiny effect size, they are significant as their confidence intervals range from 0.01 to 0.07. As is the case with path coefficients, the effect size on the relations Absenteeism → Evolution of academic performance and Presenteeism → Failed courses and terms, is insignificant.

Table 6.

Size of the effect of beta coefficients between absenteeism, academic presenteeism and academic performance variables.

Relations among dimensions (Beta values)	F^2 (O)	F^2 (M)	Standard error (STERR)	T Statistics (|O/STERR|)	P
Absenteeism → Failed courses and terms	0.026	0.026	0.004	5.767	0.000
Absenteeism → Evolution of academic performance	0.001	0.001	0.001	0.900	0.368
Absenteeism → Presenteeism	0.056	0.057	0.006	9.028	0.000
Absenteeism → Reduction of academic performance	0.017	0.018	0.004	4.337	0.000
Presenteeism → Failed courses and terms	0.000	0.000	0.000	0.091	0.928
Presenteeism → Evolution of academic performance	0.013	0.014	0.003	4.920	0.000
Presenteeism → Reduction of academic performance	0.659	0.660	0.034	19.577	0.000

Note: Simulation using Bootstrapping. Resampling (5000 times). Significant, $p<0.01$.

Hypothesis Testing

In order to test the hypothesis showing that absenteeism and academic presenteeism as factors associated with reduced academic performance, a model was developed which suggests that absenteeism and presenteeism influence the perception of students' reduced academic performance. Likewise, it is assumed that absenteeism has a direct effect on presenteeism, and both affect the evolution of academic performance. Finally, it is suggested that absenteeism has a greater effect on failed courses and terms.

Discussion

The reduction of academic performance in universities is a latent concern due to consequences on the student and the society in general. This study examines absenteeism and presenteeism as factors associated with the reduction of

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academic performance in business and engineering school undergraduate students of the Peruvian universities. Based on the results obtained, it is demonstrated that absenteeism and presenteeism are associated factors accounting for 43.8% of the reduction of students' academic performance. This result is supported in different academic studies which have found that academic performance is multi-causal and complex, and that the interaction of multiple social, personal and institutional factors can vary according to the sample (Garbanzo, 2013).

The absenteeism reported in the study is 78.8%, lower than that reported by Wadesango & Machingabi (2011). The researchers indicated that 100% of the sample had been absent many times during the academic semester. The sample used by the authors was composed of 42 participants. It can be deducted that the size of their sample can determine the incidence of absenteeism. The sample used in this study is a national random sample. Likewise, this study analyzes the absenteeism for the current month before the month data was collected. According to students' information, the main reasons for absenteeism were illness or indisposition and for other reasons. These results are similar to those in previous studies (Barlow & Fleischer, 2011; Fayombo et al., 2012).

Likewise, students' academic presenteeism was 95.7%, finding that presenteeism occurs in women more frequently than in men. This study shows quantitative results never found before in a national representative sample. However, these results are in line with those of the study conducted by Matsushita et al. (2011), evidencing that student presenteeism occurs frequently. The study also indicates presenteeism occurs in female students more frequently than in male students. University students' presenteeism can occur more frequently in the classroom because the student wants to attend class to avoid being absent. However, the student with presenteeism will not be able to fully concentrate.

This study used Partial Least Squares Variance-based Structural Equations (PLS-SEM), to find the association between absenteeism and presenteeism

with the reduction of academic performance. Previous studies have found the inverse relation between absenteeism and academic performance. The same happens when analyzing the presenteeism variable (Alghamdi et al., 2016; Ferritto, 2016). In spite of the studies carried out, the academy has not yet conducted a study to analyze absenteeism and academic presenteeism as factors associated to the reduction of academic performance in Peruvian universities, using the PLS-SEM. In the proposed model, it is corroborated that absenteeism generates a direct impact on the failed courses and terms. This relation is evidenced with the path coefficients (greater than 1.0) and R^2, explained variance (greater than 1.0).

Moreover, the model also shows us that absenteeism and presenteeism influence the evolution of academic performance, where the causal relation is accounted for as follows: students who were absent sometime in the month due to health or other reasons have caused presenteeism in students by distracting them or affecting their lack of concentration during class hours. This caused limitations in the students, negatively affecting the evolution of academic performance. In this relation, it is noticed a greater effect of absenteeism and presenteeism on the evolution of academic performance. If absenteeism is directly related to the evolution of academic performance, insignificant effect sizes are obtained.

The technique used to explain the correlation of the variables is an analytical one that can be used to account for the cause-effect relation to the conceptual models developed in the research studies. It has a comprehensive approach that goes beyond ANOVA or the linear regression-based analysis. Given the main importance of this social problem, it is demonstrated using the PLS-SEM that absenteeism and academic presenteeism reduces academic performance.

The main contributions of this study are the statistical results of university absenteeism, academic presenteeism and reduced academic performance in a national sample. It also provides qualitative information on academic presenteeism, an item that has recently been applied to the academic

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environment. Finally, it explains the association between absenteeism and presenteeism using the PLS-SEM, and how both variables are associated with the reduction of academic performance.

It is important to conduct more research studies considering presenteeism as a factor associated with the reduction of academic performance since it is a factor that encompasses diverse characteristics that have been studied individually, either as health characteristics or emotional characteristics. Also, it is recommended to continue to include national samples and conduct longitudinal studies for future research studies.

Finally, the evidence found enables public and private entities of the education sector to take the necessary measures to create government policies to reduce absenteeism and presenteeism nationwide. It is necessary for governments, universities and students work together to reduce a latent problem that, if allowed to persist on the long term, will cause student dropout.

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