Predictive Factors of Student Dropout Intention in Technical and Technological Courses

Fatores Preditivos de Intenção de Evasão Discente em Cursos Técnicos e Tecnólogos

Douglas Filenga
Adriano Maniçoba da Silva
Nalbert Seiji Kikuti Moura

ABSTRACT

Student dropout is a multifaceted topic that requires attention to its predictive factors for mitigation. The review of the available literature on the subject allowed the condensation of these aspects into academic, institutional, and personal factors in a variance model, tested through Structural Equation Modeling. A non-probabilistic sample consisting of 214 individuals was used for this purpose. The results indicated that about 38% of dropout intention could be explained by three constructs. Academic aspects: difficulty of the courses (0.392; p<0.001), Personal aspects: Preference for the institution (-0.211; p<0.05), and Financial situation (0.274; p<0.01). The theoretical contribution from the results of this study lies in two aspects: identifying which factors predict dropout intention and offering an instrument capable of measuring the influence of these factors. Regarding the empirical contribution, the study allows the generalization of the results to strengthen the causes of the identified factors, such as academic leveling or support, institutional identity, and career acceleration programs, respectively. Limitations and contributions for future studies were highlighted in the final considerations.

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RESUMO

A evasão discente é um tema multifacetado e requer atenção a quais são seus fatores preditivos para sua mitigação. A revisão da literatura disponível sobre o tema permitiu condensar tais aspectos em acadêmicos, institucionais e pessoais em um modelo de variância, testado por meio de Equação Estrutural. Uma amostra não probabilística composta por 214 indivíduos foi utilizada para este fim. Os resultados indicaram que cerca de 38% da intenção de evasão pode ser explicada por três construtos. Aspectos acadêmicos: dificuldade das disciplinas (0,392; p<0,001), Aspectos pessoais: Preferência pela instituição (-0,211; p<0,05) e Situação financeira (0,274; p<0,01). A contribuição teórica a partir dos resultados deste estudo consiste em dois aspectos: a identificação de quais são os fatores

Douglas Filenga
filenga@ifsp.edu.br
PhD in management
Federal Institute of São Paulo
Suzano / SP – Brazil

Adriano Maniçoba da Silva
eletrônico: adrianoms@ifsp.edu.br
PhD in management
Federal Institute of São Paulo
Suzano / SP – Brazil

Nalbert Seiji Kikuti Moura
seijinalbert@gmail.com
Graduating in Production Engineering
USP
Suzano / SP – Brazil

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que predizem a intenção de evasão e o oferecimento de um instrumento capaz de medir a influência destes fatores. Quanto à contribuição empírica, o estudo permite generalizar os resultados para fortalecer as causas dos fatores identificados, tais como nivelamento ou suporte acadêmico, identidade institucional e programas de aceleração da carreira, respectivamente. As limitações e contribuições para novos estudos foram apontadas nas considerações finais.

Introduction

Studying the intention to drop out of school is part of the subjects related to education and psychology. The development of this intention stems from the perception on what happens around school life and in the socio-economic and political context. This study sought to shed light on the factors that predict the intention to drop out, assuming that there are multiple determinants. We also observed a gap in the literature regarding their identification and relevance, and noticed the lack of an instrument to measure their impact. Therefore, presenting the instrument is, in itself, a contribution for the development of teaching and learning in Administration more effectively; in other words, by developing and applying the instrument, the problem of student dropout can be managed before it takes place. In short, the signs of those who intend to drop out can be captured and mitigated, aiming to face dropout in a planned and systemic way.

Bearing in mind that the concern with staying in courses is essential for the development of individuals, organizations, and the country, this article addresses an analysis of the intention to drop out of technical courses, as we believe that this level of education provides plenty of material for analysis, since, in most cases, it comprises a younger, maturing population, but essentially students who want to get in faster, compared to bachelor's degree courses. But if the decision to study at a technical level is to enter the job market, why is there the intention to drop out? This is the essence of this research: a paradox between what students want and what they must do to achieve their goal. This scenario is even more relevant if we consider the current figures of dropout in Brazilian education, at various levels, presented in this study.

In addition to helping identify the factors that predict the intention to leave school, and providing a validated instrument capable of measuring these factors, the article brings significant knowledge about the research method that uses Structural Equations, which is very effective for multifactorial analyses, as is the case here.

First, we designed a conceptual model named 'complete', where we placed nine variables and their correlations with the intention to drop out, developed from the literature review. Next, a questionnaire was distributed to a non-probabilistic sample, followed by data analysis through the Structural Equation Least Squares method.

This process resulted in a summarized model, which contributes to studies on the subject. In the literature review, we identified a gap regarding aspects associated with student dropout using structural equations, which are studies that investigate the aspects together and not individually, as done in Multiple Regression models. We also saw the opportunity to make this analysis by means of variance models and not procedural models; hence, we analyzed whether and how much one variable affects another, and not as a function of time 1 or time 2, as is common in procedural model studies. In the following section, the literature review provides theoretical support to the mentioned gaps, as well as for building the scales used in the study.

Literature Review

Studies on student dropout began in the 1970s in the United States, laying the foundations for building and proposing theoretical models to identify the predictive factors of this dropout. These bases are found in articles by Tinto (1975, 1987), and were adapted in the 1980s by Bean (1980, 1983). Obviously, as is characteristic of any model, there is the issue of regionality, and this detail requires attention from researchers, since it is influenced by culture. If, for Tinto, the causes relate to social integration, in the Brazilian case this integration occurs in a different way from the North American case, even considering that there are Hispanic individuals there, but already acculturated.

The need to contextualize the research in terms of culture was identified by Cabrera et al. (1992), and in more detail by Moehlecke (2007), who highlights the

difference between typologies and enables the typology related to aspects to also include the data analysis methodology, given the range and number of variables mentioned. That gap was filled by reviewing the available literature.

Ristoff (2005) associates aspects of student dropout intention with the labor market. However, this association should be viewed with caution, as the Brazilian job market has undergone major changes in terms of pension reforms and remote working, among others, like the limitations for self-realization at work. Or minimally defining what is work and what is income generation, which deviates from the traditional global pattern.

Another important issue is the bias towards identifying the notorious dropout rates. Although important for management purposes, they lack appropriate treatment and are not consistent with the proposition of theoretical models and their respective tests, as we suggest in this study. Catani (1999) and Ribeiro et al. (2003) highlight the inappropriate use of management techniques to address these rates.

In a quantitative study, Andriola (2009) highlights problems with working and studying hours, family influence, and institutional aspects, like physical structure, in addition to academic aspects such as curricular (in)adequacy. Presenting different views on the subject, the author also mentions elements related to the teachers, their time availability for preparing activities, as well as the lack of commitment of those involved, according to process coordinators. In general, it is interesting to note that "the majority of coordinators (87%) and teachers (74%) interviewed are in favor of rescuing the role of the teacher supervisor", and "the preparation of the teaching staff, the availability of time for carrying out this activity, and the existence of adequate material resources are indispensable". This finding provides theoretical support to our study, both in proposing the scales and interpreting the data obtained through the collection instrument.

Still on the gap found in the literature review, focusing on intention rather than dropout, there is a lack of studies on this feature of the process that leads to student dropout. There are several studies that address dropout, but there is plenty of space to study dropout intention. There are also several papers that approach the motivating aspects of dropout in higher education, and there is room for research into technical and technological courses. According to Costa (2009), "the challenge

is to create and manage instruments capable of ensuring student permanence in higher education, whether through curricular reform, the adoption of quotas, funding programs, scholarships, etc.", including the proposal of a hierarchical scale to prioritize instruments for that purpose. In this study, the goal was not to identify the causes that lead to dropout, but to list hierarchically means of encouraging students to remain at the university, such as university restaurant, First Job Grant, Research Grant, Work Grant, and Housing.

In more recent studies, it is still recommended to separate by culture, but this is important only for specific analyses, while for the general analysis it is relevant to examine where a dropout occurs, and then analyze the correlation that leads to this dropout. In most countries there is a growing wave of evasion, as in the European Union, which gathers the countries with the greatest investment in education and yet faces a serious social problem as a result of high school dropouts. Each country tries to solve the problem individually, with a local, regional, and national approach (Araújo et al., 2020).

Issues related to school dropout are long-standing, dating back to colonization. Pedagogy in Brazil is still developing, as educational legislation is still very recent, and access to education is largely related to political factors. The lack of investment in quality education affects society as a whole, where students who drop out become marginalized (Silveira, 2020). Society seems to care about young people, but does nothing to break this abandonment, and there is no effective action by public authorities to guarantee their rights and reduce social inequalities (Arruda, 2019). A 'basic' action, like going to school, is difficult for those who live far away and are not supported by the State, which should provide school transportation, which ends up being a decisive factor for withdrawal (Coutinho, 2020).

Another complicating factor is the need for early working among young people, who need to balance their studies and their professional lives. According to the Brazilian Institute of Geography and Statistics [IBGE], in 2022, 79.9% of young people, aged between 15 and 17, still of compulsory school age, were only studying, and 13% were studying and working, making the latter the most vulnerable to school evasion. Therefore, this fact must also be considered, and this effort, necessary to make up family income, results in lower school efficiency. As a result, they are more likely to fail, as well as to drop out (Arruda, 2019).

Evasion is not a characteristic of the current decade, but a symbol of the education system in Brazil and around the world, and occurs in different education modes and levels (Feitosa, 2020). Dropout occurs not only in the period of compulsory education in Brazil (from 4 to 17 years old), but also in higher education, where it is the result of multiple factors, making the education system increasingly complex, and therefore relevant as a topic of analysis (Casiraghi, 2022). Higher education is made up of a growing heterogeneous community, requiring institutions to respond in different ways. When starting undergraduate studies, students face new academic and personal challenges, such as dealing with distance from friends and family, and having to manage their time and resources, among other things. There is also a direct relationship between low income and keeping students at college, which can lead them to abandon the institution (Casanova, 2020; Amorim, 2023).

Children and young people's attendance at school is essential for their full development in modern society and in political and social life (García et al., 2019). Therefore, dropout is not just a problem for the student, but for society, and it takes place for many reasons, both internal and external to the school. Hence, it is necessary to know how it emerges, in order to define the dynamics of the teacher and the school; both can reformulate their didactics, by innovating and differentiating, and validating the principles of learning, building a foundation for students (Silveira, 2020; Branco, 2020). It is also necessary to create public policies that change teaching methodology, especially in technical education, to include young people and adults who did not have access to school at the right age, and who have the right to study and ensure professional training, in order to access the job market (Arruda, 2019).

Another topic that should be mentioned is the family; when well structured, it provides a good basis to the student, so it is not up to the state or school/society alone to solve the dropout problem (Floriano, 2022).

According to IBGE's data, in 2022, of the 52 million young Brazilians aged between 14 and 29, 18.3% (9.5 million) did not finish high school, either because they dropped out or because they never went to school. When asked about the main reason, 40.2% said they had to work, and 26.9% were not interested in studying. Considering only women, 24.0% said they needed to work, 22.45%

mentioned pregnancy, and 21.5% lacked interest in studying. In addition, 10.3% indicated housework or looking after people as the main reason for dropping out or never attending school, while an insignificant number of men mentioned the same factors (0.6%).

Given this data, it is clear that young people have a long journey, which results in different factors that lead them to drop out of school, and it is difficult to establish a cause and effect relationship and a link between the social or local levels where they occur (Gómez, 2020). Therefore, schools, as social institutions, should promote the development of children and young people, serving as a social environment for evolution (Andrada, 2019). However, considering the scope of dropout in Federal Institutes, the acceptability and provision of technical courses also interfere in the process of students leaving school, since they affect the way and the moment when dropout occurs (Alvarez, 2021).

Therefore, there are multiple causes for dropout, and not just one (Floriano, 2022). Temp et al. (2020) pointed to three main issues for school dropout: the students' lack of interest and prospects in education; emotional factors, where self-esteem is affected by inadequate age or low school performance; and the difficulty of persevering in studies and work. This results in young people who will become cheap labor, who will enter the job market, or already participate in it, with low wages, precisely because of professional deficiency, showing our harsh educational reality, in addition to personal, institutional, and social impacts (Floriano, 2022; Carvalho, 2022).

Different administrations and government bodies predict changes to this situation in three ways: preventive, where the focus is to encourage the majority of students' interest in learning and their development within the education system; intervention, in the case of students at risk of dropping out, thus avoiding interrupting the training process; and remuneration, aimed at facilitating and encouraging the return of students that left school before achieving the desired qualification (Gómez, 2020). These potential changes are the result of public authorities' work, who have tried ineffectively to reduce the country's dropout rate.

Finally, it is important to mention that there are no plausible solutions to dropout yet. Many studies and guidelines on the subject still have to be completed and implemented. There are policies to address this topic, and the State has

made efforts to implement a consistent and effective agenda, although ineffective. Therefore, serious discussions on solutions to these problems are still needed (Floriano, 2022).

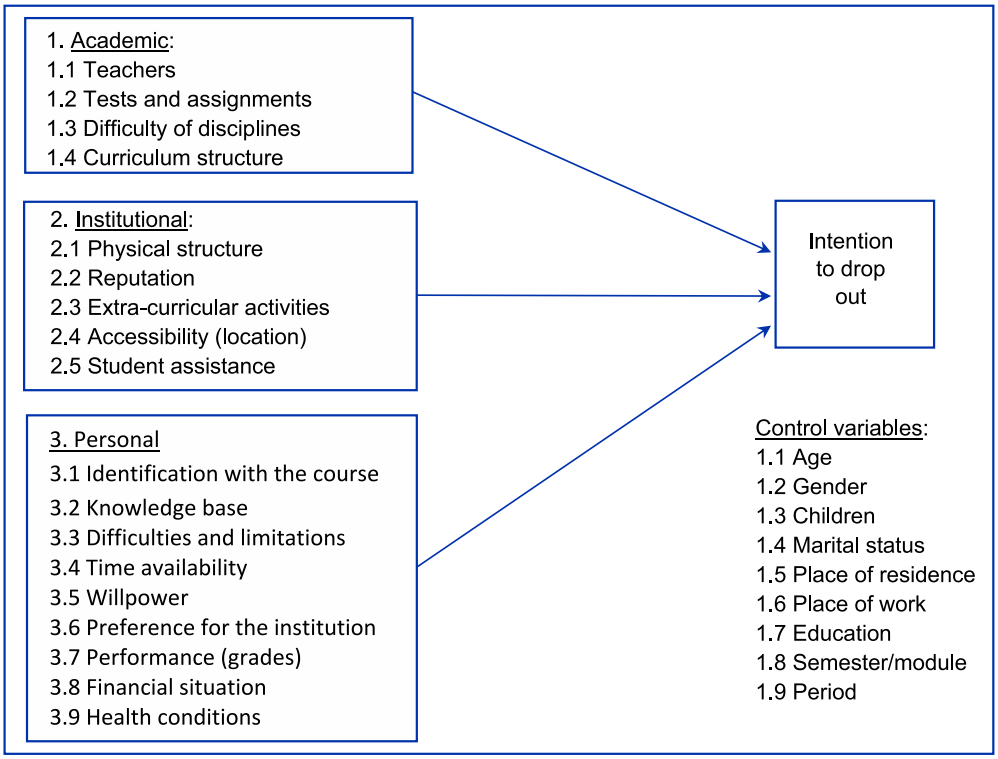
RESEARCH MODEL

This section presents the research model used. The decision to apply this analysis to a public technical education institution in the interior of São Paulo was due to the fact that the teaching and learning model in Administration is standardized for the other *campuses* of this network. The process, analysis, and results can serve as a basis for better understanding the intention of students to drop out in other scenarios.

The study was carried out in stages. Briefly, there were the formal phases of research and validation of an instrument, such as a focus group, pre-test, and validation. Data were obtained by applying an electronic questionnaire to students, over a period considered satisfactory for statistical analysis, around two months. The hypotheses were designed based on the correlation of the variables studied, following what we found in the literature review on the factors already identified; however, the differential was investigating the intention, rather than the actual dropout.

Figure 1 shows the model, with the predictive factors of student intention to drop out during the course. To build this model, besides reviewing the literature, we carried out a preliminary survey with several teachers, students, and administrative staff, writing down their perceptions of the possible and probable factors. After face and content analysis, we designed a model including various causes that could be present in the investigation. Three groups of factors were identified: academic, institutional, and personal.

Figure 1. MComplete research model on the intention to take the course.



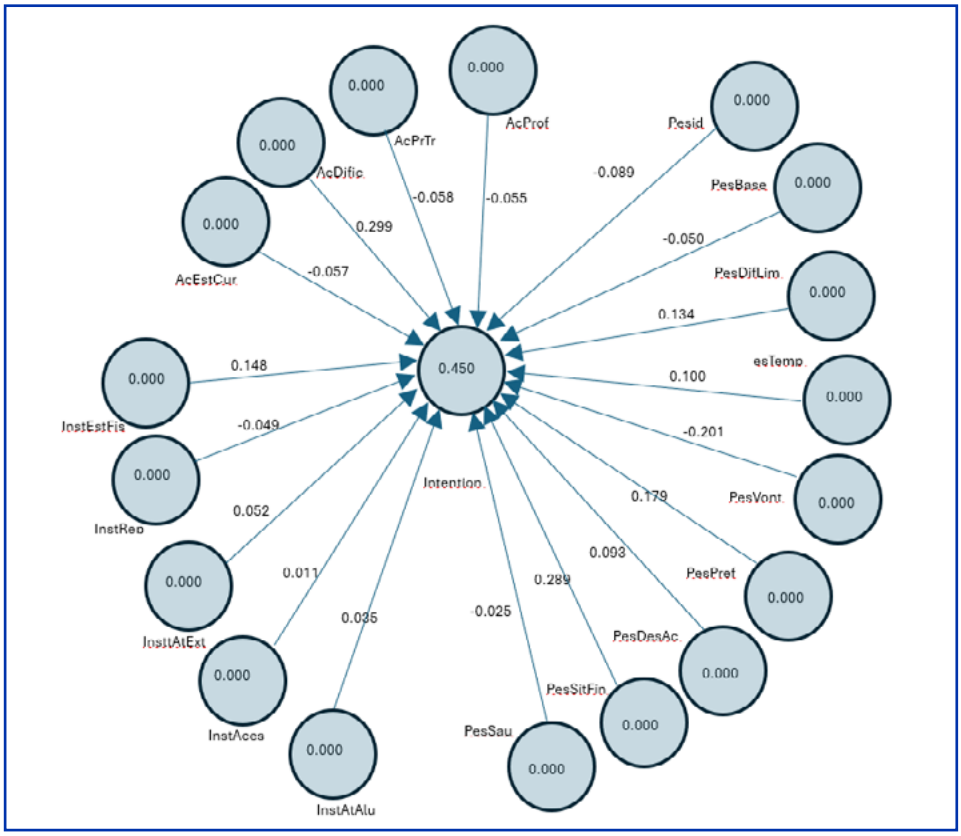
Source: The authors.

In order to achieve the most complete research model for using in the study, we moved on to stage 2, testing the model with the students, as shown in Figure 2. The explanation value obtained for this complete model, as shown in Figure 1, was 45%. This value was not sufficiently high to be considered valid in terms of statistical model testing. We had to carry out other tests, such as Student's t test by p-value, as shown in Figure 3.

This analysis shows the fragility of the model. Few indicators for each of the three factors presented statistically satisfying results, that is, greater than or equal to 1.96 (Hair, 2005). In addition, the number of cases required depends on the complexity of the model, and between 200 and 300 cases are suggested for each model (Grimm, 1995; Maruyama, 1997). For Hair et al. (1998), there should be between 5 and 10 respondents per parameter in the model. Specifically, for this model, there

are 9 parameters for Personal Factors, 4 for Academic Factors, and 5 for Institutional Factors, a total of 18, which would require a larger sample than we got, besides the possibility of the model itself failing the tests.

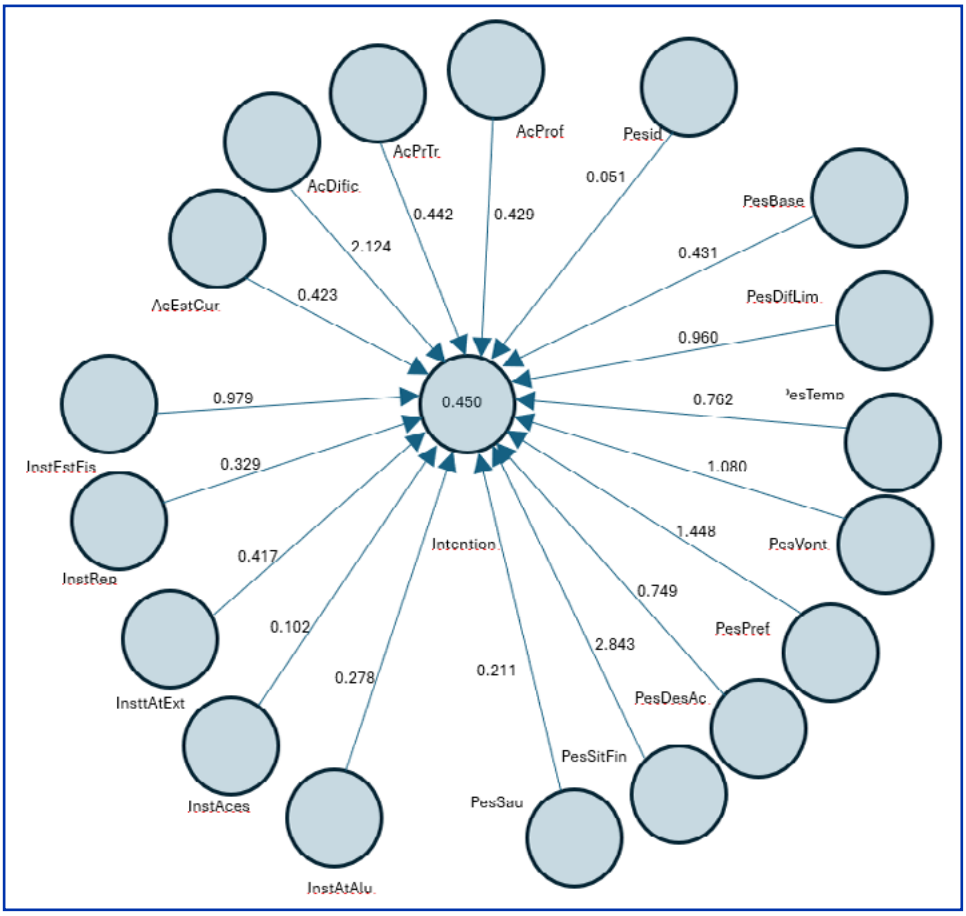
Figure 2. Model on the intention to take the course.



Source: SmartPLS.

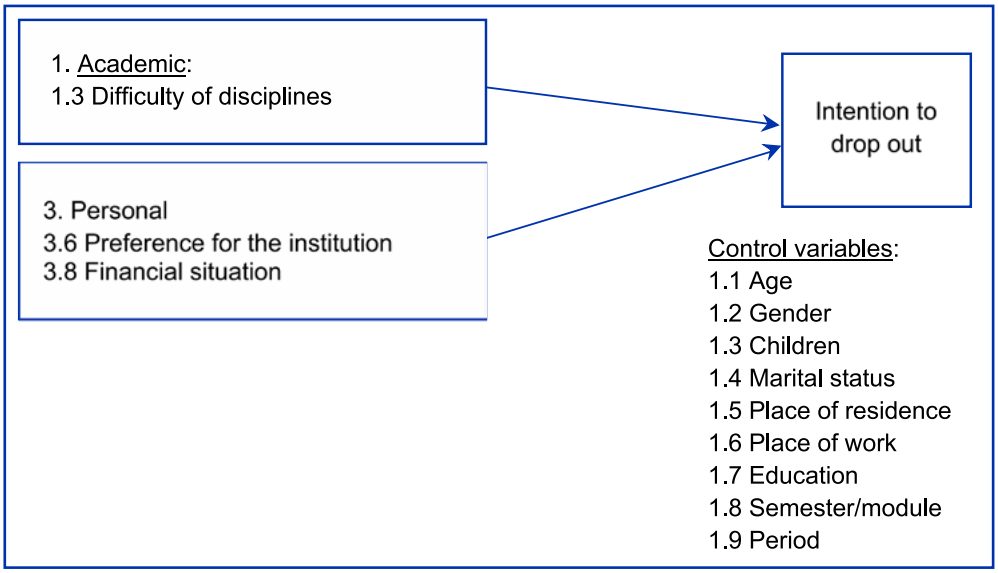
In this complete model, only AcDific (2.124) and PesSitFin (2.843) met the minimum value of 1.96. However, we noted that PesPref (1.448) could have a better result when excluding the other parameters. Thus, a new analysis was done and a more accurate model was achieved, with few variables and high predictive power. The final model is shown in Figure 4. This model was adopted in this study to carry out the analysis in detail.

Figure 3. Complete research model on the intention to take the course with Student's t value.



Source: SmartPLS.

Figure 4. Summary research model on the intention to take the course.



Source: Own development.

Here we placed 3 latent variables, considered as independent. These are Academic aspects: difficulty of the disciplines, Personal aspects: preference for the institution and financial situation. The variable 'Intention to drop out' was the dependent variable. We sought to investigate how much of the intention to evade could be explained by academic and personal factors. Academic aspects comprise the attributes related to providing the course, among them the teachers and their characteristics, tests and assignments, difficulty of the disciplines, and curriculum structure.

The definition of three hypotheses, typical of quantitative research, first assumes a correlation between the Academic Aspects 'difficulty of the disciplines' and 'intention to drop out'. This correlation should be positive and statistically significant. Hence, the more the student perceives the difficulty, the greater the intention to drop out.

H1: There is a positive and significant association between the difficulty of the disciplines and the intention to drop out.

For the second hypothesis, in view of the possibility of p-value increasing due to the exclusion of other constructs, as already explained, an opposite effect was expected. Hence, the higher the level of preference for the school chosen for the course, the lower the intention to drop out. This hypothesis stems from understanding that students who indicate the school where they study as their first choice, compared to the others, tend to behave favorably to remaining and not leaving the course in which they are enrolled.

H2: There is a negative and significant association between preference for the institution and the intention to drop out.

Finally, the third hypothesis considers the relationship between financial situation and intention to drop out. The more students disagree with the statements on the prevalence of employment over studies, the lower their intention to drop out, as shown in Table 1.

H3: There is a positive and significant association between financial situation and the intention to drop out.

The next section describes the adopted methodology.

Methodology

For the study development, we used a quantitative method to investigate a model that could explain the predictive factors of Student Dropout Intention. This methodology was adopted after carrying out an exploratory qualitative study at the same institution, which proved successful and encouraged extending the study to a larger number of individuals. The same data collection instrument was also applied in another institution with very good results, although preliminary. It was a longitudinal survey at two different periods, and showed the feasibility of the instrument and the technique used. The previous results are an integral part of this study, but we do not describe them here, since our main objective was to test the instrument and not its results; this comparison will be done in a future stage.

Data were collected through a questionnaire containing four scales, referring to their respective latent variables. To achieve a more robust model, we carried out the process described in section 2.1 Research model.

The variables are: Academic Aspects – 'Difficulty of the disciplines'; Personal Aspects – 'Preference for the institution' and 'Financial situation'. These are the independent variables tested in their relation to the dependent variable 'Intention to drop out'. Each scale comprised a group of questions, as detailed in Table 1. All the scales were Likert-type, with five points of agreement (1 = totally disagree; 5 = totally agree). The sentences that make up the instrument, that is, what was measured, were based on the literature review on the subject. We emphasized these factors as antecedents to dropout, and not after its occurrence.

Table 1. Development of scales and their theoretical bases.

Latent variable and its indicators	Theoretical basis
Academic Aspects: Difficulty of the Disciplines Composed by 4 items, with 0.89 reliability (Cronbach's alpha). Respondents indicate their level of agreement with each assertion on the level of difficulty of the disciplines.	Tinto (1975, 1987); Bean (1980,1983); Andriola (2009); Costa (2009)
1. The level of difficulty of the disciplines is too high for me 2. The level of difficulty of the disciplines is impossible to meet 3. The level of difficulty of the disciplines is far beyond my reach 4. The level of difficulty of the disciplines exceeds my ability	
Latent variable and its indicators	**Theoretical basis**
Personal Aspects: Preference for the institution Composed by 5 items, with 0.86 reliability (Cronbach's Alpha). Respondents indicate their level of agreement with each assertion on the current learning institution being their first option when compared to others.	Catani (1999); Ribeiro et al. (2003) Andriola (2009); Costa (2009)

1. My first option was to study at IFSP Boituva
2. IFSP Boituva was my first choice among the other schools
3. I chose to study at IFSP Boituva
4. I prefer IFSP Boituva compared to other schools
5. I would recommend IFSP Boituva to a friend

Latent variable and its indicators	Theoretical basis
Personal Aspects: Financial situation Composed by 3 items, with 0.79 reliability (Cronbach's alpha). Respondents indicate their level of agreement with each assertion on continuing with the course depending on his/her financial situation.	Tinto (1975, 1987); Bean (1980,1983); Andriola (2009); Costa (2009)
1. My financial situation requires prioritizing my job over my studies	
2. If I had to choose today between studying and working, I would choose working	
3. I would interrupt my studies if necessary for my job	

Latent variable and its indicators	Theoretical basis
IIntention to drop out Composed by 4 items, with 0.91 reliability (Cronbach's alpha). Respondents indicate their level of agreement with each assertion on his/her intention to drop out the course in progress.	Cabrera et al. (1992); Moehlecke (2007); Ristoff (2005)
1. I have the intention to interrupt my studies at IFSP Boituva	
2. I intend to abandon my studies at IFSP Boituva	
3. I know that I will not finish my studies at IFSP Boituva	
4. It's likely that I will drop out of IFSP Boituva	

The study sample was non-probabilistic, by convenience, and included 214 students from the Federal Institute of São Paulo (IFSP), Boituva Campus, which began its activities in 2009. Among the students, 58% are men, 80% are under 25 years old, 16% have at least one child, 15% are married, 32% have not completed high school, 35% have finished high school, 74% live in Boituva, 32% already work - 62% in Boituva and 15% in Sorocaba. 60% of the students are in the first and second semesters, of a total of six, 16% are in the full-time mode, and 66% study at night.

For data collection, we disclosed and made available a link to access the questionnaire for around 60 days, between October and November 2016. This link was created from students' own personal networks, and also through collective email of each class, which is a common practice among the students. Due to the configuration of the electronic questionnaire, all questions should be answered, in order to be valid. If we consider the frequent difficulty for getting answers, there was no missing data and the return rate was satisfactory, around 43% of the total number of students on campus. The data, converted into a spreadsheet, were processed according to the guidelines of Hair et al. (2005, p. 261), where we used the Filter function to make the necessary substitutions with due control, with rare cases of treatment. There were no outliers, as the questionnaire was designed with forced responses.

We used a quantitative method, Structural Equation Modeling with Partial Least Squares (SEMPLS), using the SmartPLS 2.0 program, since this algorithm is less demanding in terms of multicollinearity and multivariate normality assumptions. According to Hair et al. (2005), this technique is suitable for the model proposed for the study. The advantage of this technique over SPSS Multiple Regression Analysis is that it allows simultaneous analysis of the relationships (paths) between the variables. The "Path Weighting Scheme" path analysis programs were adopted because PLS results are comparable to other statistical techniques (Tenenhaus et al., 2005, p. 203). When the measurable variables have few indicators, the PLS-PM program is more appropriate (Chin & Newsted, 1999, p. 333). In addition to reliability, convergent validity, and discriminant validity, the model underwent a bootstrapping test of 500 re-samples in SmartPLS with the "Individual Changes" option, which displays Student's t-values for each standardized coefficient (path coefficients). When t-values are greater than 1.96, there is a less than 5% probability of error that the coefficient is not significant, but the p-value statement for each of the relationships studied details the levels of statistical significance for each case, their origin, and how they support the statements about the hypotheses tested.

Result Analysis

This section presents three statistical tests on the validity of the model. This is an empirical study on what the predictive powers are and how they act on the intention to take a course.

Table 2 identifies the first test, the model's Convergent Validity, the second test, the Discriminant Validity, and the third - internal consistency reliability test, and presents the total effects of the model. Considering the postulates of Hair *et al.* (2005), that researchers should improve the validity and reliability of a model by reducing measurement error and aiming for greater truth of the analyzed variables, we carried out this procedure by changing a complete model with 18 independent variables and one dependent variable into a second model, named 'summarized', with only three independent variables, for the same dependent variable. Although the reduction in the number of independent variables was around 83%, the loss of predictive power was low, around 7%; that is, the full model explained 45% and the summarized one 38%, besides the fact that the full model did not show statistical significance for the 18 variables. According to the data, this lack of significance was not due to the size of the sample, since it was non-probabilistic and had more than 100 cases, which is the minimum required by the computer program chosen for the tests. Therefore, the instrument used should be reviewed for the necessary adjustments, as we mention in the suggestions for future studies.

There was no need to remove the factor loadings for each construct, as all the values were high and satisfying. The result of these procedures was a robust model with strong predictive power.

Convergent validity confirmed how much each statement in the scale used in the model was aligned with the others in the same construct (Hair et al., 2005). The criterion for assessing convergent validity is AVE (*Average Variance Extracted*) value, which must be greater than 0.5 for each latent variable in the model. The result obtained was high, well above 0.5 (Chin, 2001), for each variable in the data collection instrument, as shown in Table 2, and derives from a careful scale building process, which included face and content validity carried out by experts and developed by the researchers. The complete model was also tested at another educational institution with satisfying results, although not published. Our results show that the indicators (phrases in the questionnaire) that measure the latent variables Academic

Aspects - Difficulty of the disciplines, and Personal Aspects - Preference for the institution and Financial situation, converge to the same latent variable. In short, the statements related to the latent variable Difficulty of the disciplines really measure what they were supposed to (AcDific 0.76), Preference for the institution (PesPref 0.64), Financial situation (PesSitFin 0.70), and Intention to drop out (Intention 0.79).

The second statistical test was model's Discriminant Validity, which shows how the measured concepts are unmistakable (Hair *et al.*, 2005), and was developed using the Fornell and Larcker (1981) criterion, where the square root of AVE must be higher than the correlations between the other constructs. Table 1 shows that the diagonal values (AVE Root) are higher than the other correlations, both in the rows and columns. This indicates that the latent variables do not get confused with each other; i.e., for the latent variable AcDific the value achieved was 0.87; for Intention, 0.89; for PesPref, 0.80, and for PesSitFin, 0.84. All values are greater than 0.51; -0.13; 0.34; -0.30; 0.43; and -0.13 in the Correlation Matrix shown in Table 2.

Given the proximity of the values obtained for the mean and the median, we can say that the distribution of data is approximately symmetrical, i.e., they are within what is considered a "normal" distribution, without outliers.

Table 2. Convergent and Discriminant Validity and Reliability tests; descriptive statistics of the model.

Latent Variable	1	2	3	4
1-AcDific	**0,87**			
2-Intention	0,51	**0,89**		
3-PesPref	-0,13	-0,30	**0,80**	
4-PesSitFin	0,34	0,43	-0,13	**0,84**
AVE	**0,76**	**0,79**	**0,64**	**0,70**
Composite Reliability	**0,93**	**0,94**	**0,90**	**0,88**
R^2				0,38
Cronbach's alpha	0,89	0,91	0,86	0,79
Mean	2,16	1,65	3,97	2,60
Median	2,00	1,00	4,00	3,00
Std. Deviation	1,19	1,12	1,25	1,38
Variation Coeff.	55%	68%	31%	53%

Note: AcDific: Academic aspects – Difficulty of the disciplines; Intention – Intention to drop out; PesPref: Personal aspects - Preference for the institution; PesSitFin: Personal aspects – Financial situation.

Internal consistency reliability was obtained by Cronbach's alpha, whose lower limit accepted is generally 0.7, but can decrease to 0.60 in exploratory research, as in our case (Hair *et al*. 2009:126). This value indicates that all questions in each variable converge to measure the construct for which they were intended. Greater accuracy regarding this value can be found in another parameter by Hair *et al.* (2005), to assess the confirmation of internal consistency as a measure of the reliability and stability between the constructs of a multiple variable. Hence, indicators of each construct should measure and correspond to the construct to which they relate. For this parameter, this value is sufficient for research when above 0.80. All values found were satisfactory, i.e., AcDific 0.89; Intention, 0.91, PesPref, 0.86, and PesSitFin, 0.79, as shown in Table 2.

The reliability of a model is measured by the factor loadings of each indicator, which must be greater than 0.7 (Fornell & Larcker, 1981). In Table 3, the loadings of the indicators are above 0.7. As for the procedure recommended by Hair et al. (2005), of seeking to improve the validity and reliability of the model by eliminating indicators with values below 0.70, among other aspects, there is an exception in PesSitFin1 (0.68); given the small difference from the minimum value required (0.70), and considering that, in terms of rounding, according to mathematical criteria, its value can be considered valid, we decided to keep the construct with this indicator, as its removal would have little effect on the predictive power of the model, i.e., from 38.2% to 38.7%, without losing statistical significance. Another reason for keeping it was to allow this study to be replicated, with a greater chance of data being equivalent.

Table 3. Model reliability.

	AcDific	Intention	PesPref	PesSitFin
AcDific1	**0,78**	0,37	-0,02	0,23
AcDific2	**0,88**	0,43	-0,09	0,35
AcDific3	**0,91**	0,46	-0,12	0,32
AcDific4	**0,90**	0,50	-0,19	0,27
Intention1	0,44	**0,92**	-0,29	0,39
Intention2	0,47	**0,94**	-0,33	0,42

Intention3	0,45	**0,74**	-0,09	0,27
Intention4	0,47	**0,93**	-0,31	0,43
PesPref1	-0,07	-0,19	**0,77**	-0,02
PesPref2	-0,04	-0,22	**0,82**	-0,12
PesPref3	-0,18	-0,26	**0,83**	-0,13
PesPref4	-0,10	-0,28	**0,81**	-0,18
PesPref5	-0,10	-0,23	**0,76**	-0,06
PesSitFin1	0,26	0,25	-0,06	**0,68**
PesSitFin2	0,30	0,40	-0,14	**0,91**
PesSitFin3	0,29	0,42	-0,12	**0,90**

Source: Own development.

The quality of the model was confirmed by the high R^2 value achieved. In other words, the model is capable to explain around 38% (0.382) of 'Intention to drop out', which, as explained before, represents the possibility of interrupting studies. Through path analysis, this explanation can be seen in the positive association between AcDific and Intention (0.392; p<0.001), and also PesSitFin and Intention (0.274; p<0.01), while the relationship between PEsPref and Intention (-0.211; p<0.05) is negative, as expected. Figure 5 and Table 4 provide visual support to this analysis.

Figure 5. Path analysis (PLS) for the intention to take the course, with Student t values after applying the Bootstrapping technique and p-value.

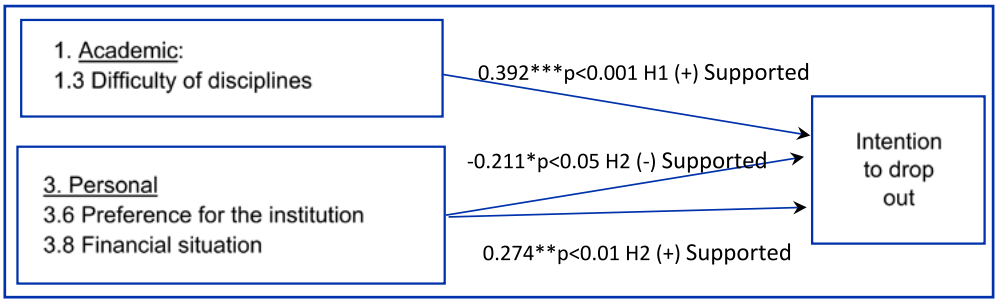


Table 4. Statistical significance of the model.

Relation	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	Standard Error (STERR)	T Statistics (O/STERR)	P Value
AcDific -> Intention	0,39	0,39	0,10	0,10	4,06	0,0000
PesPref -> Intention	-0,21	-0,23	0,09	0,09	2,28	0,0226
PesSitFin -> Intention	0,27	0,27	0,08	0,08	3,30	0,0010

The size of the effects is represented by the coefficients and their statistical significance. The coefficients were obtained using the PLS (Partial Least Squares) algorithm, and are shown in Figure 5 and also in Table 4. The arrows linking one construct to another show the standardized path coefficients (Betas). Within the Intention construct is the total effect - R^2. The path relationships found were already described when addressing the quality of the model.

Data in Table 4 show Student 's t values obtained from the Bootstrapping analysis for factor loadings and standardized coefficients (Betas). The highest path value found was for the relationship between AcDific and Intention (0.39), as this is the strongest association in the model. As it is positive, in a variance model and not a procedural one, it shows that the higher the level of perceived difficulty of the disciplines, the higher will be the level of students' intention to drop out. Thus, before the possibility of having to face the problems and challenges of difficult subjects, they would be predisposed to abandon their courses. This finding is very worrying, as the level of difficulty of the disciplines should not be lowered in order to avoid students from dropping out, since the quality of the course and students' training would be seriously compromised. Perhaps changing the teaching methodology could be the case, or innovating in the way of transmitting the content, without overloading the teacher with the responsibility of giving a show class or something similar.

There must be interest and, above all, energy expenditure in the effort to learn; without this minimum, there is no class, technique, or teacher that can work miracles. If there is a decrease in the perceived level of difficulty of the disciplines, whether through more adequate preparation of lessons, or by associating various teaching-learning techniques, with efforts on both sides, the results can be satis-

factory, but it is necessary to find out how to encourage students who cannot see sense and meaning in their work or studies, as reported by Kuenzer (1998) and Antunes (1999). This is another indication of the importance of multidisciplinary activities contributing to this process. The difficulty of the disciplines is not an isolated cause of the intention to drop out; education is not the only solution to serious social problems, but is a part of the process of training students.

The negative association between PesPref and Intention (-0.21) shows that the higher the level of assurance that the educational institution is the right choice, in terms of preference, the lower will be the intention to drop out. This finding indicates that students also value their courses based on institutional aspects. At this point, personal aspects merge with institutional ones, because for an institution to be preferred by students, or potential students, several factors are needed, such as history, location, and other positive management indicators. Therefore, institutions interested in controlling student dropout rates should be aware of the attributes that influence their preference. From the complete model, presented in Figures 1, 2, and 3, to the reduced model (Figure 4), we left out Institutional Aspects, as they did not show satisfying values. Looking at this finding now, it may indicate that those aspects are personal and are within the Preferences construct, which we can infer from the results achieved.

The third relationship studied was between PesSitFin and Intention (0.27), which revealed that the individuals surveyed tend to value study more than their jobs, since the higher the level of agreement with the statements related to the decision to choose one or the other, the greater the indication that their priorities were studying. We should consider that our sample was made up of young people who did not have much experience in the world of work. They are potential workers or, at least, a portion of them (32%), who apparently would not have much to lose if they continued studying and had to prioritize their studies over their professional activity. We should also consider that only 32% of them already work, although we have not yet identified these activities in detail. They may be entrepreneurs, workers in private companies or civil servants, not to mention the size of organizations and other issues.

This information confirms Ristoff (2005), when considering the process of students' professional choice. Another fact is that, being young (80% of the sample

is under 25), they probably still have links with their families, on whom they may depend. In other words, they are supported by their families and do not need to work as much as those who are already independent of their families. But it is interesting to know that they notice the importance of studying over working - even if they are not working, they indicated the preference for studying. This allows us to interpret this result as a belief that studying is associated with having a future job or a good prospect; or even that professional activity is painful and unsatisfying, not to mention salaries and benefits. But this consideration requires a change in research direction, demanding more data before making superficial, and perhaps, mistaken conclusions.

Final Remarks

Educational management techniques must be combined with administrative management ones. Students' intention to drop out is influenced by these two factors, together with their personal attributes, as described throughout this study.

Among the academic aspects investigated, the difficulty of the disciplines showed the highest correlation. This indicates that there is an important gap to be filled by managers (administrative staff) and professionals directly related to the core activity (teaching staff), as both are necessary to the teaching-learning process. The administrative staff should provide support to educational demands in order to achieve the defined goals - working with targets may be part of the measures adopted, but it is not the only, nor the best one. Faculty's perception that there is support from the administrative staff can act as a predisposition for innovation, for the adoption of new techniques, or other measures that are part of the joint effort to minimize student dropout. This issue is so complex that, even if the dropout rate is reduced, there are other major goals in view, like improving the teaching-learning process. So, the objective is not just reducing dropout rates, but improving student education. Or, to further demonstrate the complexity of this issue, even expanding the role of schools in society as trainers of individuals and not just of workforce.

However, the study showed that the literature on the subject is scarce, given the lack of specific identification of the factors or signs that will result in students

dropping out. Students who drop out do it after certain stages or experiences. This article assumed that there are signs that will result in student dropout and they can be identified. Its theoretical contribution is twofold: identifying factors that predict the intention to drop out, and providing an instrument that measures the influence of these factors. Regarding the empirical contribution, the study enables generalizing the results in order to strengthen the causes of the factors identified, like leveling or academic support, institutional identity, and programs for career acceleration.

Comparing our results, there is consistency with the scarce literature, especially in terms of identifying and measuring factors, both objectives of this study. Nunes and Silvano (2024), in a study on student dropout in technical courses, also identified many elements that influence this phenomenon: "pedagogical practices and their relationship with students' learning and motivation stand out". They also noted that these factors provide "greater involvement with the educational institution". In other words, the factors identified in our study are in line with those identified by these authors, which are diversity, teaching practices, and relationship with the institution. Clearly, the factors we found, academic and personal aspects, comprise the set of predictors or signs of dropout intention from technical courses in Administration.

Regarding other papers on the topic of dropout, the personal difficulties of students about studying and working stand out. Working provides immediate financial returns, while studying only means the probability of a better future. When making this choice, students calculate not only the effort and sacrifice for a better future, but also their immediate need for support. Deficiencies in the teaching and learning process are also factors present in student dropout. Although there is a relative coherence between the available studies and ours, we noticed that the gap explored here emphasizes such factors as being predictive, and not present in those who dropped out. In other words, the literature shows a strong similarity with our results, but sees them in students who, for the most part, have already dropped out. We state that such factors are already present before dropout. This finding allows managers to act preventively and avoid the predicted evasion from actually occurring (Bastos & Gomes, 2016; Chagas & Oliveira, 2020; Feitosa, 2020).

Another contribution is to seek a better and broader understanding of the apparent overlapping of personal and institutional factors present in the "Preferences" construct. As can be inferred from our findings, preferences are conditioned by the

personal aspects of the tested model, but it seems that preference for a particular school necessarily involves institutional aspects, which are linked to location and reputation, for example. And these aspects were measured and tested in different ways. Would it be possible to merge them into a revised model and measure, evaluate, and compare the results? We believe so, and it would be very useful for new researchers, in addition to the literature already available on the subject.

Finally, there are clear indications that the intention to drop out of school is another multifaceted issue, like those present in different areas of knowledge, and requires broader and deeper studies, such as longitudinal ones and case studies. Longitudinal studies should be periodic, never occasional. In other words, the influence of the factors present in the model should be measured on a regular basis, in the light of the socio-economic and political conditions of the society where the institution operates. And case studies should not report occurrences that were already diagnosed, but rather bring something unique that deserves investigation in depth, thus increasing the available literature on the subject.

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