

Students' Success

A Study About How Academic and Personal Background of the Students Can Affect Their Success in the First Year Bachelor of the International Business Bachelor

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Abstract

The continuous dropout of students has been a problem within the academic sector for a long time. The reason behind these dropouts has been attributed to different factors. The main factors have always been pre-bachelor grades and pre-bachelor education level. This study examines data to find correlations between students' academic and/or personal factors and the success in the first year of the International Business study bachelor. By academic factors, we mean pre-bachelor English grades, math grades and pre-bachelor education level. While personal factors are limited to gender and parents' education level. The methodology of this study is based on correlation analysis with the goal to explore whether different factors influence a student's success in the first year of the International Business bachelor. Findings indicate that students from international business studies with a higher pre-bachelor math grade in their pre-bachelor phase have a higher chance of success compared to their counterparts that have a lower grade. However, pre-bachelor English grade does not seem to have an impact on a students' success. A logistical regression test on the variables for pre-bachelor math grades and completion of the first-year results in a prediction rate of 61.5%. This means that with the pre-bachelor math grade a confident prediction can be made. Although literature review shows that the parents' education levels have an impact on students' success in the first year, our findings indicate a low correlation. Meanwhile, gender shows a weak correlation, but it is low and favors females.

Keywords: first year success, math grades, English grades, International Business, pre-bachelor.

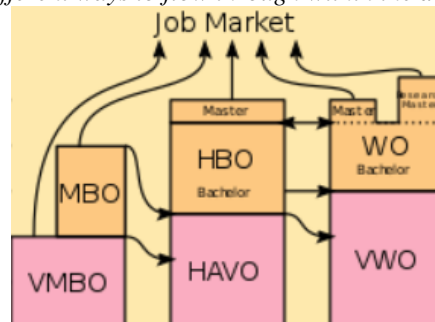
1. Introduction

This article research students' success in the first year of International Business bachelor at The Hague University of Applied Science which is a HBO level study in the Netherlands. The Dutch

education system differs from any other system. Therefore, it is very important to know how the Dutch education system really works before we go into this study.

The Dutch high school consists of three levels VMBO, HAVO and VWO with VMBO the lowest and VWO the highest. The higher education system is divided into three levels: MBO, which prepares the student to a profession, consists of 4 levels; HBO which is a bachelor level with a practice profile; and WO which is also bachelor level but with a theoretical science profile. A student can get into the HBO via different routes. First, the student can go from VMBO to MBO and when the student passes the level 4 of MBO, he can continue to HBO. HAVO is the second route to HBO, so the students who pass this level can directly get admitted to HBO. Via VWO, the students can choose either to go to HBO or to WO, because VWO is the highest level in high school in which the student can graduate. In the HBO, students can get a 'Propedeuse' diploma if they successfully finish all the assessments and exams in the first year. VWO is the highest education level in high school, which allows students to enter HBO or the higher academic education WO. The following table shows the routes to HBO.

Figure 1: Different ways to flow through within the dutch education



The literature shows that 17% of MBO students fail or quit HBO and do not return to a bachelor study. In comparison with other pre-bachelor educations, this percentage is 6% for HAVO students and 3% for VWO students in the first year. Another study suggests that MBO students score lower on cognitive skills, especially when it comes to school skills compared to HAVO students. [2] Hypotheses 2 (H2) The direct relationship between previous education and study success remains strong, after taking into consideration the indirect effects of skills, learning styles, motivation, and study choice. [2] H2

One study investigates the level of engagement which concludes the following: students' engagement is influenced by the interactions between student factors and institutional factors. From a cultural perspective, it represents the place that these interactions occur as the educational interface. This representation aligns with an increasing emphasis on higher education being a partnership between students and their institution. [5] Other studies, however, suggest that students are not prepared for taking part in higher education, because they still lack skills like cooperation and independence. [6] Hypotheses 4

As students often struggle in the higher education systems, there are different factors that play a part in dropping out. The focus of this research is to find out specific factors or connections

that can be related to dropouts. Literature research suggests that there is a difference between personal factors and academic factors, which influence students' performance. Academic factors can be described as factors of the institution, like location, culture, hierarchy, etc. This article investigates *how personal and academic factors influence students' performance in their first year of international business studies*.

One study even went a step further by researching the higher education preparatory courses. They came up with the following: GPA in math, English, chemistry courses were among the strongest individual predictors of student dropouts. [7] Year of enrollment and birth year were also included, thus highlighting time effects in the data.

One reason for looking at different factors is that there is a higher chance of failure when coming from a lower form of education. [4] *Hypotheses 1 (H1)* Grades can be one of the main indicators for dropouts since they give an indication of the exam taken. Literature shows that this is correct. High-school grades in college-preparatory subjects are consistently the best indicator of how students are likely to perform in college. [4] *H1*

2. Methodology

For this study, we decided to use secondary analysis as a methodology to analyze the secondary data which we will describe later in this chapter. Also, to test our assumptions on this study, we decided to form these assumptions into hypotheses and use a hypothesis testing method to validate or reject these assumptions. From the literature on the topic, the following hypotheses are proposed:

- **Hypothesis 1:** Students' Math and English grades in the first-year bachelor and in the pre-bachelor, education have a significant impact on a student's performance in their first study year in the International Business study.
- **Hypothesis 2:** Intake test grades before enrollment do not have an impact on a student's performance.
- **Hypothesis 3:** Pre-bachelor education level does have a significant impact on a student's performance.
- **Hypothesis 4:** External factors have a great impact on a student's performance in the first year of IB.

The data that has been used in this study is secondary data. This data is descriptive and gathered without any intervention by The Hague University of Applied Science (THAUS). The data consists of two data sets containing, in total, information about pre-education and first year bachelor of 3798 students who applied to the international business bachelor program between the years 2010 and 2019 at THAUS. The first data set "IB Students 2010-2019" contains information about the pre-education and first year Bachelor of International Business students

t THAUS. The second data set contains information about the intake test in Math and English of students from 2017-2018 study year.

The first data set (IB Students 2010-2019) contains the information: cohort, first year credits (PR credits), first year GPA (PR GPA), complete the first year (PR complete), first year Math grade, study advice, the year in which the student got first year credits (Propedeuse), year of graduation (afgestudeerd), year of dropout (uitval), birthday, country, gender, 1st nationality, ethnicity, type of pre-bachelor education level (Type vooropleiding), name of pre-bachelor education level, date of last exams (Eindexamen) and high school subjects' grades (vakken).

The second data set is in the form of a survey which was conducted on IB students in 2017-2018 study year. It contains questions about different topics. However, the only information that has been used in this study was: students' parents education level, English intake grade, Math intake grade, High school Math and English grades of foreign students.

Before analyzing the data, the names and the numbers of the students were anonymized due to privacy reasons. According to our literature research, Math and English were crucial indicators to this research. Therefore, the subject's section in the "IB students 2010-2019" data set was minimized to only two subjects: Math and English. In the second datasheet "Intake tests 2017-2018" a matching data was conducted with the first "IB students 2010-2019" datasheet to check if there are any common students between the two data sets. There were 323 matching students between the two sheets which helped us to use the data from the first one with the second.

The tests that are conducted on this data were divided per hypothesis. First, it should be determined which pairs of variables are related to which hypothesis. The next step was to define the types of these variables to assign the right test to each pair which in turn led to three different tests: Cramer's V, Spearman, and logistic regression. The first two tests were used to check the correlation between the variables and to show if the correlation was significant, while the latter (logistic regression) was used to model the probability of a certain class or event existing such as pass/fail.

3. Analysis & results

The primary purpose of this study was to develop a reliable measure of student success in the first year of their bachelor study. We then tested different factors and their correlation and relationship to student success. Overall, our results support the use of giving extra attention to students from a lower education/lower average math grade in their previous education. Our results also indicated that beyond the contribution of important grades and social aspects, like parents' education and a lower scale, gender contributes to student success. Currently a lot of the interventions are aimed at the study choice and the intake process with steps like an intake test as an indicator. [2] But the intake test is not taken into consideration when accepting students into a bachelor program. The findings of this study support this decision. An intake test, when taking into consideration a student's previous education, is not a good indicator of student success.

Our findings agree with a previous study done on the subject [3]: MBO students have a higher chance of dropping out and a lower chance of success in the first year. In the study it is suggested that student dropouts cannot be reliably predicted based on motivation.

Many factors play a role in student success in their first year, within this study many of these factors were tested but not without limitations. With a logistic regression test and math as the major indicator we found out that student dropout can accurately be predicted by 61.5 %.

However, this is only one indicator. For future research, the grades of foreign students would be an addition that could play a role. One of the limitations of this study was that it did not acquire foreign students' previous education grades because The Hague University currently does not collect this type of data.

Finally, many of the previous studies done on the subject suggest that socio-economic factors play a big role in student ability to succeed in the first year. [7] This study could not validate the socio-economic factor because of the lack of this kind of data.

The table below represents a summary of the conducted tests. It shows the different conducted tests which are divided per hypothesis. It also shows which variables have been used for each test and to which data set these variables belong. To distinguish between the results for each test, we used a coloring code. Green means that the test result is significant while orange means the result is not significant.

Table 1: Cor stands for correlation and sig stands for significance. Math stands for math grade, eng stands for English grade. Color code green means a significant result, Orange means no significance.

Hypothesis	Variables	Test	Dataset	Result	
Hypothesis 1	Pre-bachelor Math and English grade vs PR Complete	Cramer's V	Dataset 1	Math: Cor.=,189 Sig.= ,000 < .005 Eng: Cor.=,064 Sig.=,234 > .005	Valid for math
	Pre-bachelor Math and English grades vs graduating	Spearman	Dataset 1	Math: Cor.=,095 Sig.=,000 < .005 Eng: Cor.=,064 Sig.=,234	
	Pre-bachelor Math and English grades vs dropout	Spearman	Dataset 1	Math: Cor.=0.095 Sig.=,073 Eng: Cor.=,064 Sig.=,234 > ,005	
	Pre-bachelor Math and English pre-bachelor vs Prepedeuse	Spearman	Dataset 1	Math: Cor.=,074 Sig.=,045 Eng: Cor.=,087 Sig.=,020	
	First year Math grade vs PR Complete	Cramer's V	Dataset 1	PR Math: Cor.=,597 Sig.=p< ,005	
	Pre-bachelor Math and English of foreign student's vs PR Complete	Cramer's V	Dataset 1	Math: Cor.=,486 Sig.=,405 > ,005 Eng: Cor.=,408 Sig.=,692 > ,005	
	Pre-bachelor math and PR complete	logistic regression	Dataset 1	Percentage correct: 61.5%	



Hypothesis 2	Intake English grade vs PR Complete	Cramer's V	Dataset 2	Eng: Cor.=,517 Sig.=,007 >,005		Not valid
	Intake Math grade vs PR Complete	Cramer's V	Dataset 2	Math: Cor.=,435 Sig.=,098 >,005		
Hypothesis 3	Pre-bachelor education level vs PR Complete	Cramer's V	Dataset 1	Cor.=,166 Sig.=,000 <,005	Total Dropouts: MBO:75.7%, HAVO:54.4%, VWO:26.7%	Valid
Hypothesis 4	Student's parents' education vs PR Complete	Cramer's V	Dataset 1	Cor.=,094 Sig.=,000 <,005		Valid with a small correlation
	students' gender vs PR Complete	Cramer's V	Dataset 1	Cor.=,065 Sig.=,000 <,005		

4. Conclusions and recommendations

In this paper we examined the possibility of a wide range of variables that in part could account for students' success in their first year of bachelor. The analysis focused on the main question: what factors impact a student's first year success in the International Business study. The answer to this question was a multi-leveled one. First, the factors which are the best indicators of student success are Math grade, English grade, and their previous education. Second, the factors that play a smaller role are parents' education and gender. Gender favors the females more, but the correlation is so small that it is statistically insignificant.

Despite the importance of the intake tests, these tests do not have a significant impact on student success. The contribution of this paper is to suggest that the current approach of predicting student success is not working out with literature confirming the percentage of students dropping out after their first year being an upwards trend. Past research associated the socio-economic factor as a major impacting factor for student success. The present study has not found this to be the norm. While playing a role, the most consistent indicator of predicting student success remains the major grades of their previous education.

Further research is needed to get a reliable overview on how to predict student success with a higher accuracy. Future research should investigate the socio-economic impact on student success and to a greater extent student's overall success. This could account for the unexplained variation in student success. It should also be taken into consideration that this research was conducted on one part of an HBO study (International Business). The results may therefore not reflect other educational contexts.

One of the indicators for student success was VWO which is the best indicator for student success. This speaks for itself but is worthy of mention for taking into consideration.

By testing the correlation between student success and educational and social factors, this study has achieved its goal of collaborating a small piece of the student success puzzle. There are many empty spots left that must be researched to be able to resolve and to map student success.



References

- [1] Biemans, H. J., Harbers, J., Mariën, H., Fleur, E., & Beliaeva, T. (2019, June). Ervaringen van studenten met verschillende routes naar het hoger beroepsonderwijs. In *Onderwijs research dagen 2019* Heerlen.
- [2] Vervoort, M., & Elffers, L. (2018). Het achterblijvende studiesucces van mbo-instromers in het eerste jaar van het hbo: de rol van vaardigheden, leerstijl, studiekeuze en motivatie. *TvHO*, 36(1), 23-37.
- [3] Sneyers, E & de Witte, K (2016) MBO-HBO, N. O. D. DOORSTROOM MBO-HBO EN UITVAL IN HET HBO. EVIDENCE-BASED.
- [4] Geiser, S., & Santelices, M. V. (2007). Validity of High-School Grades in Predicting Student Success beyond the Freshman Year: High-School Record vs. Standardized Tests as Indicators of Four-Year College Outcomes. *Research & Occasional Paper Series: CSHE*. 6.07. Center for studies in higher education.
- [5] Kahu, E. R., & Nelson, K. (2018). Student engagement in the educational interface: understanding the mechanisms of student success. *Higher Education Research & Development*, 37(1), 58-71.
- [6] Glastra, F., Daniel, Middelkoop, D., V. (2018) Study success in higher professional education: the importance of a chain approach.
- [7] Aulck, L., Velagapudi, N., Blumenstock, J., & West, J. (2016). Predicting student dropout in higher education. arXiv preprint arXiv:1606.06364.
- [8] Cheawjindakarn, B., Suwannatthachote, P., & Theeraroungchaisri, A. (2013). Critical success factors for online distance learning in higher education: A review of the literature. *Creative Education*, 3(08), 61.
- [9] Majaski, C. (z.d.). How Hypothesis Testing Works. Investopedia. Geraadpleegd 5 november 2020, van <https://www.investopedia.com/terms/h/hypothesistesting.asp>