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The Influence of Goal orientations and the other Motivational Variables on Dropouts. Case HAAGA-HELIA UAS, Bite programme.

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Abstract

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The purpose of this study was to learn students' goal orientations and find out the other influences affecting students' intentions to continue their study. The data gathering methods applied in this study was paper-based questionnaire. The questionnaire were based on Niemivirta (2002) students motivational factor study. The KNIME statistical analysis platform and Excel analysis toolbak were employed to study the gathered data and identify correlational patterns.

The results indicates and demonstrates that goal orientations have impact on dropouts. The other motivational variables also have different levels of influences on goal orientations, and variables correlated with each other.

In general, the study supports that the level of goal orientations would influence students' intention to drop out or not. Mastery-intrinsic orientation is the key factor causing academic withdrawal. Thus, suggesting that schools apply the Adaptive Management Platform (Dirin & Laine 2018) to track students' mastery-intrinsic orientation, and stimulate students' mastery-intrinsic orientation together with teachers.

Keywords
Goal orientations, Motivational variables, Dropouts, Data analysis, Concept development,

Table of contents

Terms and Abbreviations

AMS	Adaptive management platform
BITE	Business Information Technology programme
EWS	Early warning systems
Non-STEM	Social/behavioural sciences, humanities, business, education and health sciences
PSE	Postsecondary school
STEM	Science, technology, engineer, mathematics
UAS	University of Applied Sciences

1 Introduction

Students' dropouts and academic withdrawal is the concern of the higher educational institutes. The Bite programme of HAAGA-HELIA UAS has the dropout prevention problem as well. Students apply for University of Applied Sciences for many reasons and intentions, however, as time goes by, some of them quit the course, some of them even drop out of the school. Do they change their goals or lose their motivations at some point? The answer is not simply yes or no. Researches (Skinner et al. 2009; Rumberger & Lim 2008; Mastrorilli 2016) have found out it roots on various individual and contextual factors.

Apart from economic recession, educational financial challenges, national policies, and other objective reasons, this academic research was to research students' goal orientations and explore patterns of five achievement goal orientations (i.e., mastery-intrinsic, mastery-extrinsic, performance-approach, performance-avoidance, and avoidance) and the other three motivational beliefs (i.e. fear of failure, academic withdrawal, and school value). The study conducted with Business Information Technology (BITE) students at HAAGA-HELIA UAS. Yet, it revealed the impact of goal orientations on Bite intentions for persisting their education. The definition of goal orientation varies in the literature, In the present study, it means individual's preferences for particular courses of desired outcomes. (Niemivirta 2002)

The main purpose of this study was to identify factors that influencing students' academic performance in Bite at HAAGA-HELIA UAS. Based on the analysis and results, it identified motivational and de-motivational factors of students. Then, a series of practical approaches recommended to prevent Bite students from dropping out of school and enhance the teaching and learning process.

1.1 Research Questions

The objective of this study is to define the relationship of various motivational factors with dropouts or academic withdrawal. Answer to the following research questions helps to reach the study objectives.

1. How does student with strong goal orientations less likely to drop out from the school?
- Do students with different socio-geographical characteristics have different patterns of motivational beliefs?
- What approach HAAGA-HELIA UAS needs to take to anticipate dropouts?

1.2 Scope of the thesis

As mentioned above, there are various individual and contextual factors causing students dropping out of school. Due to the time restriction, instead of taking external factors into account, the present study regarded students as the starting point to understand their goal orientations and motivational beliefs. The study is limited to students from Bite programme, HAAGA-HELIA UAS. From Bite students' perspective, the study strove to identified motivational and de-motivational factors influencing Bite students' willing to continue their study in HAAGA-HELIA UAS. With these results, this study gave a concept solution for dropout prevention.

2 Theoretical background

The discussion towards discontinuation of education has never been stopped. From different point of views, universities, organisations, Europe commission and U.S National organisations have done considerable studies on dropout issue. Scholars, experts and educators devote to finding out causes and measures.

2.1 Students dropouts status: Europe, USA, and Finland

By 2015, European Commission published a cross-country report. The research placed its emphasis on researching study success policies and their effectiveness. The indicators of study success such as retention, dropout and the average time to complete a degree are also compared. Although the definition of retention rate varies from country to country, the retention rate decreases progressively year by year. In other words, the discontinuation rate of higher education gets higher and higher annually. (European Commission 2015)

From the other side of the world, the National Student Clearinghouse Research Center in U.S. stated (2014,1), “Over the past 20 years, more than 31 million students have enrolled in college and left without receiving a degree or certificate.” According to the statistics by the National Center for Education statistics (2017), only 59 percent students were able to complete their four-year degree at the same institution in six years. Compared to the other developed countries, Finland has very high study success or high study success on the agenda. (European Commission 2015) Nevertheless, from 2004 to 2015 academic years, the dropout rate in Finland stably keeps around 6%. The discontinuation of university education even reached highest 6.9% in 2012, as shown in the bar chart below. (Figure 1)

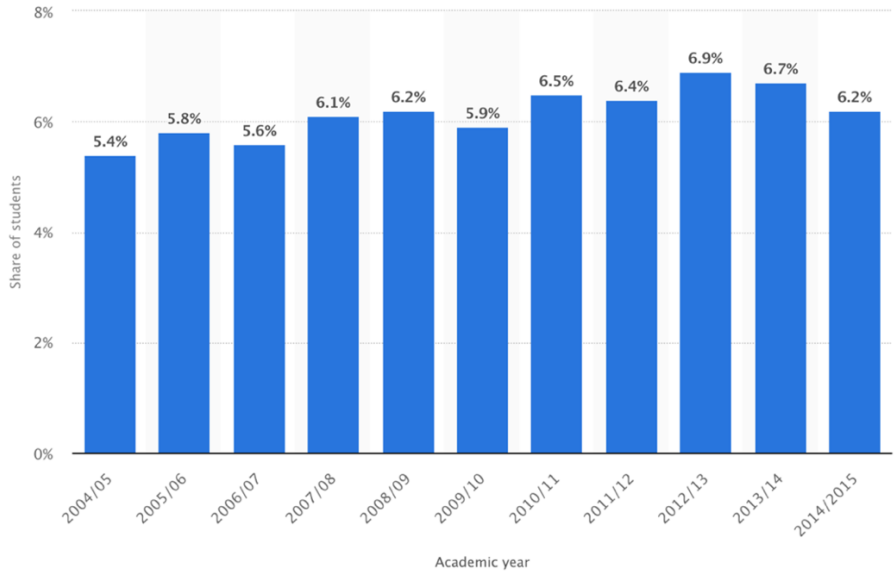

Figure 1 Share of students who discontinued university education in Finland from the academic (Statista FInland 2017)

U.S Department of Education tracked students in STEM fields from 2003 to 2009 academic years and indicated that 48% students eventually left these fields by 2009. 20% out of 48% left without attaining a degree, the rest switches to non-STEM fields. (Chen 2013, 14) Although high attrition rates are not unique to STEM fields, as the bar chart showed below, the proportion of the attrition rate of computer/information sciences is the largest. What's more, 31% students in computer science field drop out of school without earning a degree, which is the highest rate among all fields in beginning bachelor's degree as well. (figure 2) The results also revealed that academic performance was associated with the probability of dropping out of college. Poor academic performance and high-frequency course withdrawal/failure were associated with a higher probability of dropping out of college. The lower grades are, the higher probability students drop out of college. (Chen 2013, 48)

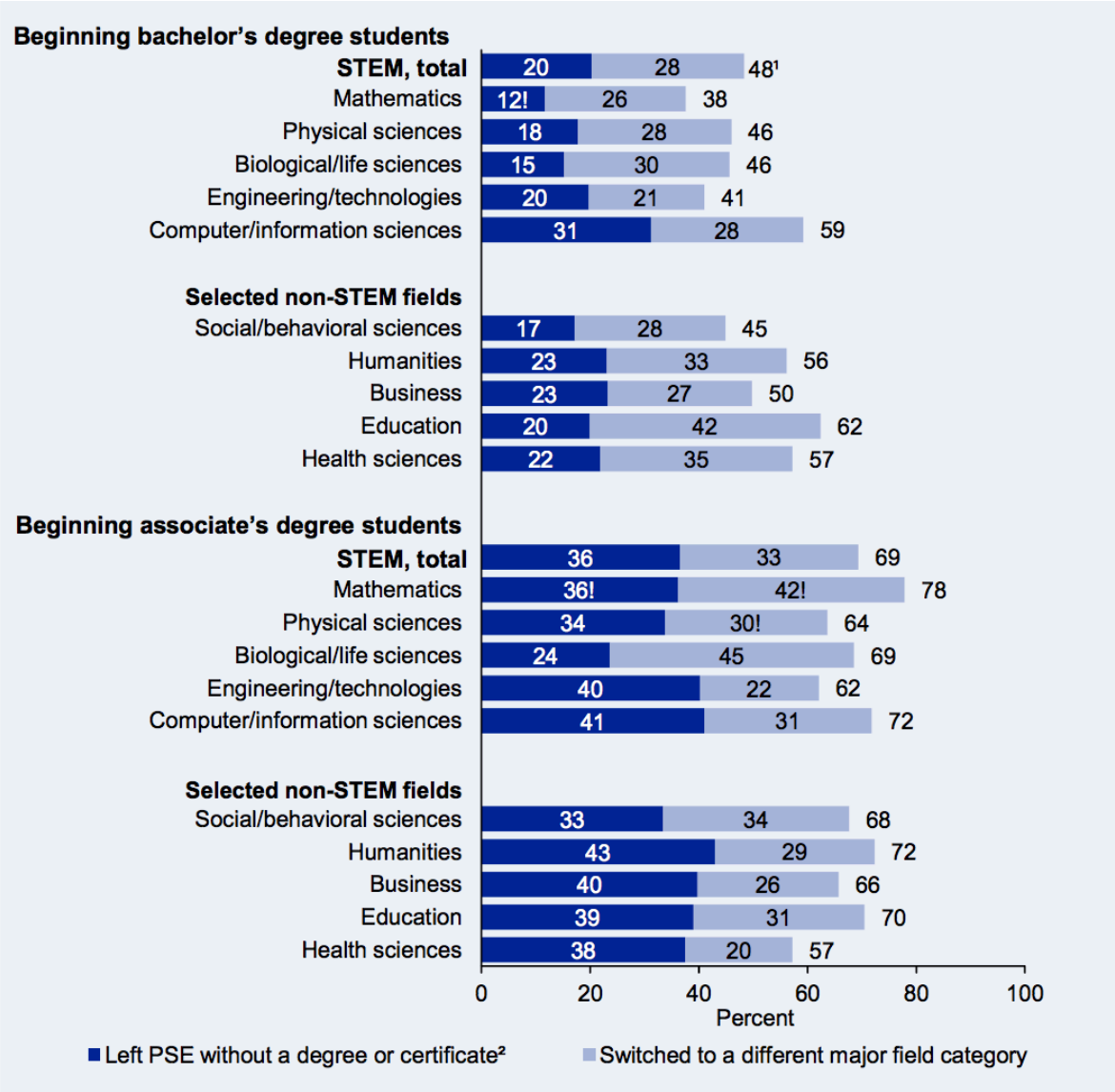

Figure 2 The percentage 2003-04 beginning bachelor's and associate's degree students who left STEM and selected non-STEM fields after their entrance into these fields, by major field entered: 2003-2009 (Chen X 2013,15)

2.2 The influence of goal orientations on academic persistence

As stated by Tuominen-Soini (2012), “Achievement goal orientations describe students’ general orientation towards studying, that is students’ reasons for engaging in academic tasks.” It is one of the most important indicator of students’ achievement-related behaviour. (Tuominen-Soini 2012)

The study of Tuominen-Soini (2012) concluded that the mastery-oriented students had higher level of school value, while they had relatively lower fear of failure and academic withdrawal. These students had great academic performance and made bigger progress towards their learning objective. Further, the mastery-oriented students also tend to be more adaptive and more positive to the academic challenges and school settings. On the contrary, the avoidance-oriented students had lower level of school value. They appeared to passive and maladaptive to academic challenges, thus, they input as little efforts as they can. (Tuominen 2012) It is appeared that the less the avoidance-oriented students study, the more possibility they will quite school. (Tinto 1999) Interestingly, the level of fear of failure between the mastery-oriented students and the avoidance students is similar. It is explained that students either do not care about academic performance at all, or students focus more on achieving learning objectives. (Tuominen 2012) Additionally, performance-approach and performance-avoidance orientations correlated strongly to mastery-extrinsic orientation. Mastery-extrinsic orientation correlated positively with fear of failure, while mastery-intrinsic orientation did not. Moreover, avoidance orientation was positively related to academic withdrawal. Performance-approach orientation had no association with academic withdrawal, but it was positively related to fear of failure. (Niemivirta 2004)

The study conducted by Robeken also indicated that students who hold high goal orientation and performance orientation tend to appreciate educational experience. First-year students have a higher tendency on performance orientation and avoidance orientation, while students in the later study phases tend to have strong goal orientations. (Roebken, 2007)

Therefore, in order to stimulate students’ motivation and increase educational satisfaction, schools should pay more attention particularly on students’ goal orientations. (Roebken, 2007) Likewise, school guides students’ goal orientation and take the responsibility to engage their interests. (Mastrorilli 2016) More specifically, they should stimulate students’ intrinsic motivation, fulfil students’ needs for relatedness, competence, and autonomy, and cultivate a mastery classroom climate.(Skinner & Pitzer 2012)

Accordingly, main hypotheses were made as follows:

- Students with high goal orientations have low academic withdrawal tendency and value school more.
- Students with high performance orientations have higher fear of failure.
- Low goal orientations students have high avoidance orientation.

In consonance with existing researches and practical experience of other colleges, this study analysed student's goal orientations and performance, and revealed correlations among performance, goal orientations and the other factors affecting students' motivation.

2.3 Effective strategies applied for dropout prevention

Dropping out of school is a cumulative process. It is difficult to identify the all potential causes of discontinuation of education. A study reviewed 203 scholarly journals on drop-outs from the past 25 years. Two main factors are identified through the study: Individual characteristics of students, such as their educational performance, behaviours, attitudes, and backgrounds; and institutional characteristics of families, schools, and communities. It turns out that dropping out is associated with considerable conspicuous factors mentioned above. The role of schools is not a solitude factor causing dropouts, but students' experience in school do have the effect on dropouts. (Rumberger and Lim 2008)

Schools are able to play an important role on promoting the retention. (Tinto 1999) There are also supportive evidences implied that school and academic achievement effectively influence student' academic functioning. (Tuominen 2012) Mastery orientation is a critical factor influencing class learning environment. (Ames and Archer 1988) Consequently, suggesting that track students' goal orientation and academic performance, promote students' intrinsic motivation by giving clear educational instruction, show clear pathway of the following study and provide future career guidance. Besides, it is significant to provide schoolwork that match students' competence and experience. (Skinner and Pitzer 2012) It is also less likely to drop out when a school provides instructional support on academic, social, emotional, etc. (Tinto 1999) Along with schools, teachers need to increase own engagement in teaching, improve teaching skills and foster an active learning climate in the classroom. Moreover, teachers need to observe students' performance and behaviours in school and learn how to assist challenging students. (Skinner and Pitzer 2012)

Aside of these, technology could be utilized in the educational context. (Dirin & Laine 2018) An early warning system is regarded as a solution to dropout. To fully implement the system, a criteria or scales for identifying students' motivational variables that have correlational relationships with dropouts. Along with the other available data, the system

tracks students, identifies students' behavior and performance patterns and sends warnings to academic instructors, so schools could conduct immediate interventions for those high-dropout tendency students. (Hoff et al. 2015, 8) According to the concept of early warning system, schools develop and apply them to fit their context. (Hoff et al. 2015, 10) A indicator system designed by Chicago School Research turned out to be a right fit to observe students' study track for five school districts, which is a great example. (Hartman et al 2011) In most circumstances, students are required to do the self-evaluated reports, and check in attendance through the system, but it eases teachers' workload. (Hoff et al. 2015, 8)

With the research findings, this study also aims to optimize institutional settings so as to reach the goal of dropout prevention of Bite students.

3 Research method

In terms of research methods, there are two typical methods: qualitative research and quantitative research. The data gathered by two methods also defined as qualitative data and quantitative data. Quantitative research quantifies opinions, behaviours and other defined variables. The data gathered by quantitative approach is analysed using parametric tests, while qualitative data does not. The distribution of parametric tests is powerful than nonparametric test, however, nonparametric test is much more flexible. (Verma 2013)

The data collection methods applied in this study is questionnaire survey. The aim of the questionnaire is to understand the motivational beliefs of Bite students as nearly as possible as its respondents think of it. The questionnaire survey is an efficient and effect method to collect elementary data. It is simple and organized in a progressive format. Respondents can understand the research purpose in a short time. Without face-to- face contact, respondents tend to give more honest answers.

3.1 Data analysis and data mining tools

As one of the data analysis techniques, data mining is the process to structure the raw data and formulate or recognize the various patterns in the data through the mathematical and computational algorithms. Data mining helps to generate new information and unlock the various insights. In brief, data mining is a discovery process of knowledge from large amounts of data.

It is a misconception that data mining analysis is just about selecting and applying a statistical tool so as to answer the research problem and identify sets of patterns. It is important to realise the research problem and formulate the hypothesis. A clear problem is more important than the data-mining technique. Basically, the process of data mining is: state the problem and make the hypothesis, collect the data, pre-process the data, estimate the model and finally interpret the model and come to conclusions. (Kantardzic 2011)

There are many application fields in data mining, such as computer science, social science, economics, business and bioinformatics. (Wahbeh et al. 2012) The present study had also applied different statistical tools and data-mining techniques in order to develop an appropriate model.

SPSS is one of the most popular software for statistical analysis. With simple instructions, it is able to generate tables, graphs and reports by analysing data. Higher education, researchers and other social science field tend to employ SPSS as their first analytic platform.

Baysialab is a universal analytics platform. Along with the sophisticated graphic user interfaces, it provides a laboratory environment for machine learning, knowledge modelling, diagnosis, simulation and optimization for scientists.

KNIME, stands for Konstanz Information Miner, is an open-source data analytics platform. It is a powerful tool for data analysis, manipulation, visualisation and reporting by integrating machine learning and data mining. Also, the easy-to-use graphic user interfaces allows users to build data flows. With KNIME, it provides deep insights and predicts the future. Over 6,000 professionals in both industry and academia is utilising KNIME for statistic analytics and machine learning. Further, KNIME ranked at third place in a comparison study of four data mining tools in general performance. (Berthold *et al.*, 2009)

Analysis toolpak, as a powerful add-in function in the excel, is able to execute data analysis and data mining. Compared to the other data analytics platforms mentioned above, the learning cost of MS excel is quite low.

In this study, we applied data analysis in the MS excel and KNIME data mining system to identify and analyze the relation among data and their patterns.

4 Design

According to the study conducted by Markku Niemivirta (2002), the questionnaire was designed. On the basis of the existing research on measuring the motivational and de-motivational factors in educational context, a questionnaire was designed, consisting of 30 items. It was meant to find out students' goal orientations and motivational beliefs, so all questions were designed to reveal students' opinion towards their own study lives. The questionnaire used a 7-point likert-scale ranging from 1 (I totally disagree) to 7 (I totally agree) to assess whether all descriptive texts are close to participants' real situation. (Allen 2007)

Eight scales were applied in the present study to evaluate students' motivational beliefs: mastery-intrinsic orientation, mastery-extrinsic orientation, performance-approach orientation, performance-avoidance orientation, avoidance orientation, fear of failure, academic withdrawal and school value. Both mastery-intrinsic orientation and mastery-extrinsic orientation is meant to measure students' goal orientation. Mastery-intrinsic orientation, also known as learning orientation, measures individual's inner interest and motivation to study. Mastery-extrinsic orientation, familiarly called achievement orientation, measures individual's willing to perform good on study. Performance-approach orientation focus on performing better than other students, while performance avoidance orientation focus on avoiding situations in which one may fail or make mistakes. The focus of avoidance orientation is on spending as little effort as possible on study and schoolwork. Academic withdrawal is to show whether students have the intentions to give up or drop out when they meet academic challenges. Fear of failure, just as its name implies, is to examine students' fear towards their performance. School value is the measurement of student emotional engagement to the school. (Niemivirta 2002)

Besides all mentioned above, different socio-demographic characteristics were also included in the survey to examine how motivational beliefs are related to them. All variables were expected to find the correlational relationships in the analysis.

5 Implementation

With cooperation with lecturers, the author delivered self-report questionnaires to their classrooms. It was planned to collect a hundred questionnaires. Considering of the diversity and analysis in the later stage, the survey covered students from 1st semester to 7th semester in the Bite programme. With regard to the size of the class, each class has only round 10 to 15 students. Some students never show up in the class. And, students in the class are fewer and fewer as time goes by. It took more time to collect enough samples than we expected.

In the end, the respondents consisted of 98 students from Bite programme from HAAGA-HELIA UAS: 1st semester (n=53), 2nd semester (n=14), 3rd semester(n=11), 4th semester(n=5), 5th semester (n=4), 6th semester(n=6), 7th semester (n=2), and uncertain semester (n=3). The age ranged from 18 to 42; 49 were female and 38 were male. Approximately 23% of the Bite students were Finnish, 34% were European, 22% were Asian, 4% of the respondents were from South America, and 7% were from North America. 64% of the respondents did not have a Bachelor degree before, and 88% of them entered in this programme as their first-choice.

The collected data were first presented as number in excel. With the add-in Analysis toolpak in excel, mean value, standard deviation and correlation coefficient were computed to study data and identify interesting knowledge in data. Mean value is to examine the average number of each motivational variables, so as to compare different variables with numbers easily. In a way, mean value presents the central tendencies. (Wesstein) Standard deviation shows how a datum close to the mean value. The lower standard deviation is, the closer the datum is to the mean value. The correlation coefficient (a value between -1 and +1) is employed to indicate how these motivational variables are familiar with each other. More importantly, correlations are able to show the predictive relationships among these motivational variables. (Wesstein) When the correlation coefficient is close to +1, it means that there is a positive association between two variables. When the correlation coefficient is close to -1, it means that there is a negative relation between two variables.

6 Results

In general, Bite students with strong goal orientations accounted for a large proportion. More than 50% students rated high scores on goal orientations and school value. Specifically, students who showed strong mastery-intrinsic orientation constitutes 90%, and around 80% students had strong mastery-extrinsic orientation. Apart from this, it is noteworthy that around 20% students had academic withdrawal tendency. Students who had strong avoidance orientation approximately reached 20% as well. Figure 4 presents the overall motivational statistic on the eight clusters presented in chapter 5.

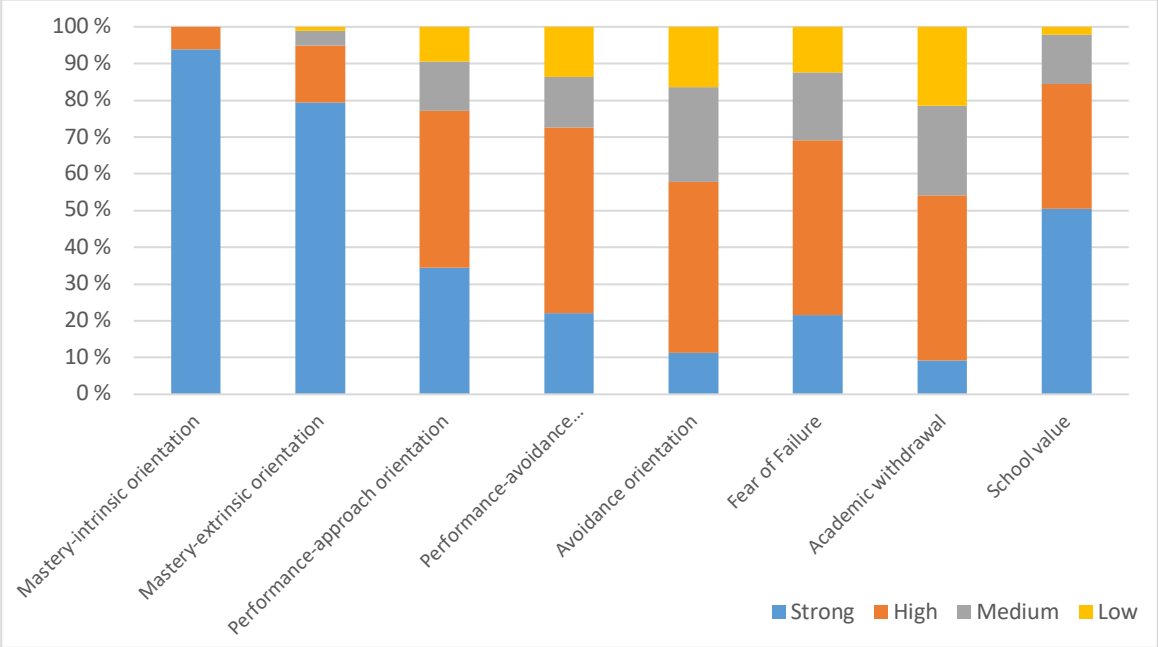

Figure 3 The percentage of Motivational variables

In order to reveal whether and how motivational variables influence each other, means, standard deviations and correlations of all motivational variables were employed in the study, as presented in Table 1. Table 1 presents the means, standard deviations and correlation for motivational variables. The mean value of mastery-intrinsic orientation (m=6,42) is the highest, following is school value (m=6,02). Academic withdrawal (m=3,05) has the lowest mean value, following is avoidance orientation (m=3,16).

The anticipations of correlational relationships between goal orientations and the other generalized motivational beliefs were pretty much expected. Mastery-intrinsic orientation, mastery-extrinsic orientation, and school value were correlated with each other. Performance-approach orientation and performance-avoidance orientation (r=0,32) correlated with each other, and positively associated with mastery-extrinsic orientation (r=0,42). Avoidance orientation was negatively associated with mastery-intrinsic orientation(r=0,2)

and mastery-extrinsic orientation (r=0,34), while it was related positively to performance-avoidance orientation (r=0,29).

Fear of failure (r=0,61) and academic withdrawal (r=0,54) strongly correlated with performance-avoidance orientation. Also, fear of failure and academic withdrawal were correlated with each other. (r=0,5) Academic withdrawal was negatively correlated to mastery-intrinsic orientation (r=-0,28) and mastery-extrinsic orientation (r=-0,1). In contrast, school value was positively related to mastery-intrinsic orientation(r=0,34) and mastery-extrinsic orientation (r=0,35). Finally, performance-approach orientation had no association with avoidance orientation, academic withdrawal and school value.

Table 1 Means, Standard Deviations and Correlations for Motivational Variables

	M	*SD*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*
1. Mastery-intrinsic	6,42	0,80	1							
2. Mastery-extrinsic	5,67	1,20	0,30	1						
3. Performance-approach	3,97	1,38	0,08	0,42	1					
4. Performance-avoidance	3,66	*1,39*	-0,16	0,13	*0,32*	*1*				
5. Avoidance orientation	3,16	1,23	-0,20	-0,34	0,01	0,29	1			
6. Fear of Failure	3,62	1,45	-0,03	0,25	0,23	0,61	0,07	1		
7. Academic withdrawal	3,05	1,32	-0,28	-0,10	0,04	0,54	0,26	0,50	1	
8. School value	6,02	1,00	0,34	0,35	0,13	-0,17	-0,46	-0,09	-0,18	1

Table 2 shows mean value differences between different semesters. According to the meal value, second-semester students had the highest level of mastery-orientation (m=6,76). On the contrary, sixth-semester students had the lowest mastery-orientation (m=5,89), following is the third-semester students (m=5.97). With regard to mastery-extrinsic orientation, the highest value is from first semester (m=6,01), and the lowest value is from sixth semester (m=4,78). When it comes to performance-approach orientation, fifth semester had the lowest score, and seventh semester had the highest score. Fourth-semester students had the lowest mean value on five motivational variables: performance-avoidance orientation (m=2,13), avoidance orientation, fear of failure (m=2,6), academic withdrawal (m=2,13), and school value (m=5,53); while third-semester students had highest score on both performance-avoidance orientation (m=4,27) and academic withdrawal (3,55). The highest level of avoidance orientation came from fifth semester students (m=4,25). Students who are about to graduate had the highest level of fear of failure (m=4,67). Additionally, first-semester students had the highest school value (m=6,30), and seventh-semester student had the second highest school value (m=6,00). The overall score of school value of each semester is very close to each other, as the standard deviation of school value indicates in Table 1.

Table 2 Mean differences between different semesters

		Mastery-intrinsic	*Mastery-extrinsic*	*Performance-approach*	*Performance-avoidance*	*Avoidance orientation*	*Fear of Failure*	*Academic withdrawal*	*School value*
1st	M	6,50	6,01	3,97	3,72	2,96	3,81	3,06	6,30
	SD	0,67	0,97	1,59	1,40	1,23	1,54	1,28	0,92
2nd	M	6,76	5,48	4,21	3,69	3,05	3,43	2,79	5,69
	SD	0,28	1,52	1,20	1,52	0,86	1,19	0,94	1,00
3rd	M	5,97	5,18	3,91	4,27	3,73	3,97	3,55	5,73
	SD	1,11	1,36	0,87	0,93	1,31	1,50	1,28	1,03
4th	M	6,53	5,13	3,53	2,13	2,93	2,60	2,13	5,53
	SD	0,56	1,17	1,30	0,77	0,93	1,19	0,61	1,26
5th	M	6,17	5,50	3,50	3,33	4,25	3,08	2,75	5,67
	SD	1,67	1,38	0,64	1,27	1,42	0,88	1,23	1,80
6th	M	5,89	4,78	3,72	3,89	3,89	3,17	3,44	5,56
	SD	1,15	1,36	1,61	1,17	1,42	1,49	2,47	0,58
7th	M	6,67	5,83	5,17	4,00	3,83	4,67	3,00	6,00
	SD	0,47	0,24	0,24	2,83	0,24	1,89	1,41	0,47

Table 3 shows mean value of each motivational variables of female and male. Accordingly, female students have higher mastery-extrinsic orientation (m=5,71) and performance-approach orientation (m=4,06) than male students, while male students have a more obvious avoidance orientation (m=3,50) tendency than female students. Female student is a bit higher than male students on fear of failure (m=3,79) and school value (m=6,15).

Table 3 Mean differences between female and male

	Female		Male	
	M	SD	M	SD
Mastery-intrinsic	6,44	0,82	6,52	0,62
Mastery-extrinsic	5,71	1,21	5,33	1,31
Performance-approach	4,06	1,30	3,74	1,15
Performance-avoidance	3,59	1,48	3,62	1,18
Avoidance orientation	2,85	1,15	3,50	1,46
Fear of Failure	3,79	1,52	3,60	1,46
Academic withdrawal	2,97	1,25	2,93	1,33
School value	6,15	0,91	5,93	1,04

More interestingly, compared to students from the other continents, more Asian students showed strong mastery-intrinsic orientation. Although the majority of European students had strong mastery-intrinsic orientation, it had most students among the others who had low mastery-intrinsic orientation. The Finnish students who were characterized with strong mastery-intrinsic occupied the third largest proportion, following is African students, then is North American students, and the last one is South American students. Figure 4 presents the Asian strong mastery-intrinsic orientation in comparison with the other students

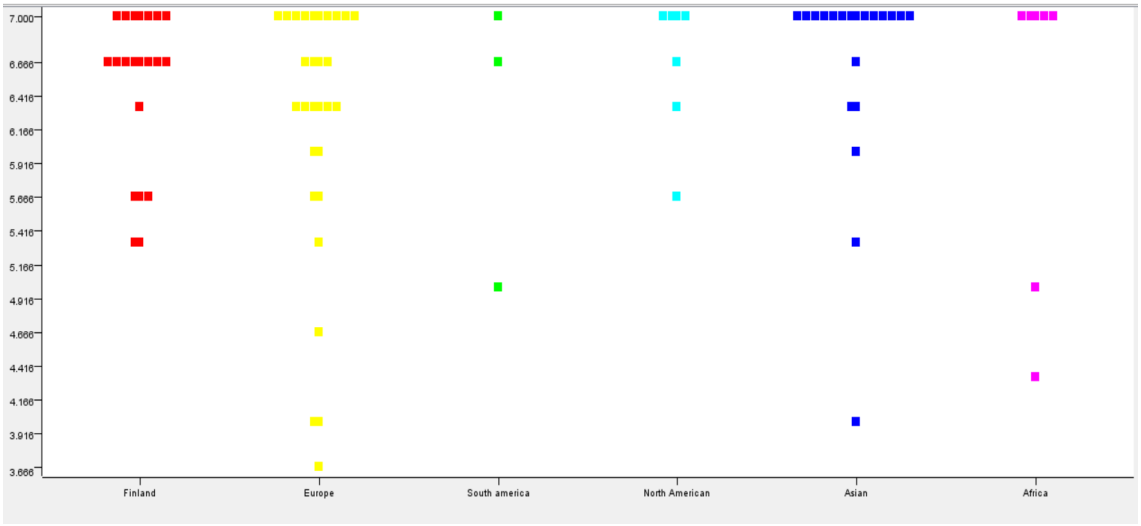

Figure 4 Mastery-intrinsic orientation of students from different continents

As illustrated in figure 5, it is clear that most of freshmen have high mastery-intrinsic orientation, while sophomore, junior and seniors had relatively lower master-intrinsic orientation. In terms of fear of failure, there was no certain pattern found in different study years. All squares are distributed widely and randomly in the graph. Figure 5 presents the comparison between fear of failure and mastery-intrinsic orientation, along with different color of squares, from light red to dark blue symbolise from freshman to senior.

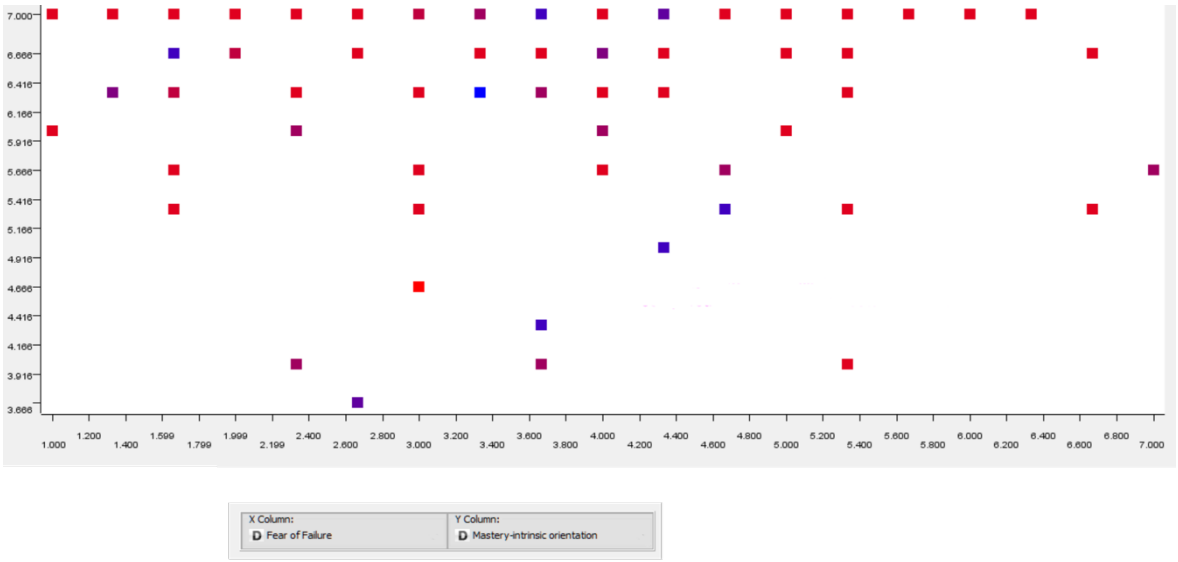

Figure 5 Fear of failure and Mastery-intrinsic orientation(Red and blue gradient color symbolize freshman to senior)

5 Discussion

The purpose of this study was to examine students' goal orientations and disclose its influence on their intentions for persisting higher education. Generally speaking, BITE students had strong goal orientations and held high for school value.

Three hypotheses were made beforehand. First, it was hypothesized that Bite students with high goal orientations tend to have low academic withdrawal and appreciate school more. Second, students with high performance were assumed to have higher fear of failure. Third, it was hypothesized that students who have low goal orientations should have high avoidance orientation.

All given hypotheses were demonstrated by the analysis results. The study found out that students who had higher goal orientation and performance orientations led to lower academic withdrawal and low avoidance orientation. In contrast, low goal orientation students had high avoidance orientation. For those who would like to perform better than others and avoid making mistakes had higher scores on fear of failure, which means they were more likely overwhelmed by fear.

5.1 Answer to the Research

1. *How does student with strong goal orientations less likely to drop out from the school?*

As table 1 illustrates, mastery-intrinsic orientation and mastery-extrinsic orientation correlated negatively with academic withdrawal and avoidance orientation, which means the stronger a student holds mastery-intrinsic orientation and mastery-extrinsic orientation, the weaker a student have academic withdrawal and avoidance orientation. When students perceived themselves as emphasizing learn new knowledge and skills, they were less likely reporting high scores of academic withdrawal and avoidance orientation. Simply, if students have strong goal orientations, they would persist in pursuing education at school and make lots of efforts on academic work. Even though the schoolwork is complicated and challenging, because of the strong mastery-intrinsic orientation, students would not give up or end up in dropout easily. What's more, mastery-intrinsic orientation and mastery-extrinsic were positively related to school value. (Table 1) Goal-oriented students tend to appreciate school. School is useful to them.

On the contrary, students who had low mastery-intrinsic orientation, low mastery-extrinsic orientation, and low school value had a higher possibility of dropping out of school. Particularly, avoidance orientation was related to school value, but negatively. (Table 1) In other words, if students do not complete school work successfully or intentionally ignore assignments, they do not like or appreciate school either. They did not eager to acquire specific knowledge or enhance their competence from schools.

Therefore, students who hold high scores of goal orientations and school value were more likely persisting their education.

2. *Do students with different socio-geographical characteristics have different patterns of motivational beliefs?*

According to the results, students with different socio-geographical characteristics do have a different pattern of motivational beliefs.

Firstly, female students had stronger tendency of mastery-extrinsic orientation and performance-approach orientation than male students. (Table 3) Simply, to succeed at school and to outperform than others are more important to female students. Since fear of failure correlates with mastery-extrinsic orientation and performance-approach orientation, female students also reported higher score of fear of failure.(Table 3) Fear of failure is positively related to academic withdrawal, so female students' academic withdrawal was a bit high. (Table 1) For male students, they had a higher avoidance orientation than female students. (Table 3) Male students prefer to make as little efforts as they can on study, however, their score of mastery-intrinsic orientation was higher than female students. (Table 3) These results reveal that female students are more comfortable with achieving academic excellence, and male students are goal-oriented but they tend to make less efforts.(Table 3)

Second, students from different semesters had their own unique pattern of motivational beliefs.(Table 2) The results of fourth-semester students was relative stable compared to the other semesters. Specifically, fourth-semester students astonishingly had five lowest scores of motivational variables: performance-avoidance orientation, avoidance orientation, fear of failure, academic withdrawal, and school value. (Table 2) On the other hand, the mastery-intrinsic orientation of fourth-semester students remained high. (Table 2) Although the school value was a bit low for fourth-semester students, they had strong learning orientation, and showed the highest willingness to complete schoolwork and participate in class. This is probably that fourth-semester students could manage their own studies well instead of relying on teachers' instructions or school guidance.

Although students in the last semester had highest fear of failure in the light of the results, the sample of seventh semester was too small (n=2) to come to a conclusion. (Table 2) Aside of seventh semester, first-semester students surprisingly had the highest score of fear of failure. (Table 2) Because of the correlational relationship between academic withdrawal and fear of failure, it is worthwhile to note that first-semester students from Bite actually had a relative strong tendency to drop out of school. (Table 2) The reason is probably that students are afraid of unforeseen academically challenges. They are not fully prepared for the college life and worried about failing exams and fail in schoolwork. Apart from this, first-semester students still held a much more positive attitude towards the school than any other semester students, since first-semester students had the highest score of school value. (Table 2)

It is found out also that second-semester students from Bite programme were characterized with high levels of mastery-intrinsic orientation, however, when it comes to third semester, the score of mastery-intrinsic orientations was second lowest and the score of academic withdrawal and performance-avoidance orientation reached the highest. (Table 2) Thus, for those Bite students who just have started their second year at HAAGA-HELIA UAS, they should be paid more attention on. Their intrinsic motivation to study has a great possibility of falling to the lowest, meanwhile, they have a strong tendency to drop out of school. The other motivational variables (i.e., mastery-extrinsic orientation, performance-approach orientation, avoidance orientation) of third semester did not show positive tendency neither. It is noteworthy for HAAGA-HELIA UAS to concern about this situation seriously. It is probably after one-year study at HAAGA-HELIA UAS, students do not learn what they expected or feel this field is not a right track for them.

Third, students from different continents had a different pattern on mastery-intrinsic orientation. Asian students accounted for the largest proportion in mastery-intrinsic orientation, European student is the second, and Finnish student is the third. (Figure 1) The majority of Asian students evaluated themselves as the highest score of mastery-intrinsic orientation, and only a few of them reported low mastery-intrinsic orientation. (Figure 1) While European student took up the second largest proportion in mastery-intrinsic orientation, the lowest score of mastery-intrinsic was from Europe as well. (Figure 1) Finnish students had a relative strong mastery-orientation generally. (Figure 1) There were fewer students from South America, North America and Africa reporting themselves as strong mastery-intrinsic orientation, (Figure 1) However, the sample size of students from South America, North America, and Africa was very small, while the sample size of Finnish students (23%), European students (34%) and Asian students (22%) was enough and relatively

balanced, In terms of the number of students, European students took up the biggest part, but the results showed more Asian students reported strong mastery-intrinsic orientation. (Figure 1) That is to say, students from Asian were more mastery-oriented and less likely dropout. (Table 1) Hence, cultural backgrounds have an effect on students' goal orientations.

3. What approach HAAGA-HELIA UAS needs to take to anticipate dropouts?

The key indicator found in this study is mastery-intrinsic orientation. Remarkably, Bite students in the second semester had the strongest mastery-intrinsic orientation than any other semester, which also means second-semester students had relatively lower academic withdrawal.(Table 2) However, third-semester students had highest score of academic withdrawal. (Table 2) When it comes to the fourth semester, the situation was completely reversed. Students showed the lowest tendency of academic withdrawal. (Table 2)

Based on these findings, HAAGA-HELIA UAS should pay more attention on students when they have the following two indications: students who complete assignments inattentively or even do not complete assignment at all, and students who do not often show up. Responsible teacher or an advanced technological solution (Dirin 2018) can observe and report these two important signs for individual student.

5.2 Validity of the results

The current study was conducted on the basis of the research by Niemivirta. (2002) The patterning of correlations between goal orientations and the other motivational variables found in this study is largely consistent with those obtained by previous studies. (Niemivirta 2002; Tuominen-Soni 2014) It supports that mastery-extrinsic orientation was associated with avoidance orientation, and the correlation between fear of failure and academic withdrawal is the strongest. Also, the correlational relationship of performance avoidance orientation and avoidance orientation is demonstrated as well as the correlational relationship of mastery-intrinsic orientation and avoidance orientation. Additionally, it supports the previous study that students from different socio-geographical backgrounds had unique patterns, especially Asian students had the highest score of mastery-orientation. (Hoff et al. 2015)

To examine the potential relationships among different variables, various data analysis tools were applied for mining data and discovering sets of interesting and relevent patterns. Eventually, the results produced by KNIME and MS Excel were employed in the present study.

The present study has a number of limitations. First, the sample size was limited to the Bite programme students. Diverse and balanced samples are necessary to collect for general conclusion, which due to the lack of insufficient samples in this study the analyses is scattered. Second, the collected data for the present study was static. Dynamic data, such as monitoring the transition of student's motivation variables from their first year to graduation, would help to identify conditions that increase or decrease students' motivational beliefs. To examine how students' motivation variation influences their academic performance, a wider range of cross-sectional research should be applied. Further study should extend the present approach by employing the multidimensional approach. More external factors, such as parent support, school support, teacher competence, etc. should be taken into consideration. A longitudinal dynamic person-oriented research to investigate the change in achievement goal orientations that follow students from first year to graduate is recommended.

5.3 Recommendations

For Bite programme, an Adaptive Management System (AMS) platform is conceptualized on the basis of Dirin (2018) article. The AMS platform will extract data directly from school systems such as HHmoodle, Winhawille, etc. and embed with data mining algorithms to understand each students' academic profile. It is an individualized learning assistant, and an academic progress-tracking tool. Specifically, the platform provides students with self-reported evaluations at the beginning and the end of each semester, which observes students' motivational transitions. Attendance rate and assignment completion rate of each student will be followed by AMS when students start studying at HAAGA-HELIA UAS. Every student is required to check in their attendance of each class through the system, meanwhile the system will evaluate how much effort students make on their school work by teachers' grading. The platform will notify academic coordinators of students who has dropout tendency. The typical dropout signals are: low goal orientations, high avoidance orientation, and high academic withdrawal, so the platform tacks three variables: mastery-intrinsic orientation by self-evaluated reports, schoolwork grading by teachers, and class attendance. Besides, the platform is meant to assist students' competency development and achieve better academic performance by analyzing and understanding each individual preferences and competences.

Apart from what mentioned all above, to distinguish whether a student has the drop out tendency, lecturers could pay more attention on students' performance. When a student has low interest in performing tasks and try to get off assignments with little effort, accord-

ing to the results concluded in this study, they have a high tendency of academic withdrawal. Teachers play a much more important role on engaging students, their reaction to students would make a difference on the consequences. Bite programme should make more efforts on stimulate third-semester students' mastery-intrinsic orientation. Teachers and instructors need to interfere with the students who complete assignments inattentively or ignore school work completely, and students who do not often attend class. More importantly, third-semester students have a particular concern about school dropouts since they had the strongest academic withdrawal tendency, which requires more attentions from teachers and instructors. Yet, it is suggested that teaching in a more interesting way to make sure every student understands; accepting and encouraging various expressions of opinions; structure course contents, etc. (Veiga 2014) Last but not least, Bite programme should evaluate the curriculum of third semester, course structure, and classroom atmosphere through the platform survey, and make improvements correspondingly.

All in all, the platform aims to guide students on their study path, ease teachers' workloads on assessing students' performance, and assist teachers and administrators to follow up students and dropouts. The goal of this platform to increase graduation rates by personalizing study management and providing analysis services, such as dropout prediction.

6 Conclusion

The objective of this study was to figure out factors that influencing students' academic performance in Business Information Technology (Bite) at HAAGA-HELIA UAS.

The results underscore the importance of goal orientations towards discontinuation of education and reveal the other motivational variables affecting Bite students' intentions for continuing study. As the correlation patterns implied, goal orientations were related to academic withdrawal. Performance orientations correlated to fear of failure and academic withdrawal. It is obvious that goal orientations and performance orientations played a much more important role in preventing students from dropping out of school. Students with strong goal orientations had lower possibility to drop out of school. To prevent Bite students from dropping out of school, HAAGA-HELIA UAS should make more efforts on third-year students. The critical point is the third semester, and two warning indications are given: students who complete assignments inattentively or even do not complete assignment at all, and students who do not often show up in classrooms. Besides, a concept solution is given – Adaptive management platform, which could assist students' study and track students' academic progress so as to decrease the dropout rate.

All in all, results found in the present study, carried out with Bite students, are consistent with those previous studies conducted by Niemivirta (2002) and Tuominen-Soni (2012). Believing that the results are valuable for Bite programme of HAAGA-HELIA UAS to increase retention.

For future study, Bayesian machine learning algorithm will be applied to predict the future trends in BITE degree program, and also define how to impact avoidance orientation and academic withdrawal based on deep learning analysis

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Appendices

Appendix 1. Questionnaire

Achievement goal orientations and motivational beliefs

Basic information								
1. Gender: Female/Male								
2. Age:								
3. Nationality:								
4. Which study semester are you in Haaga-Helia?								
5. Do you already have a higher education degree?	Yes/No							
6. This is your first-choice programme.	Yes/No							
How much do you agree on the statement?								
		1= Not true at all – 7 =Very true						
7. An important goal for me in school is to do better than the other students.		1	2	3	4	5	6	7
8. I always feel very nervous and uncertain, when I should concentrate on a demanding or difficult school task.		1	2	3	4	5	6	7
9. An important goal for me is to do well in my studies.		1	2	3	4	5	6	7
10. In classes I often worry that I don't understand or that I don't know the right answers.		1	2	3	4	5	6	7
11. I try to avoid situations in which I may appear dumb or incompetent.		1	2	3	4	5	6	7
12. I study in order to learn new things.		1	2	3	4	5	6	7
13. I am particularly satisfied if I don't have to work much for my studies.		1	2	3	4	5	6	7
14. During classes or tests, I often worry that I do worse than the other students.		1	2	3	4	5	6	7
15. I try to avoid situations in which I may fail or make mistakes.		1	2	3	4	5	6	7
16. Studying is boring.		1	2	3	4	5	6	7
17. I have realized that I give up easily, if school tasks are difficult.		1	2	3	4	5	6	7

18. I try to get away with as little effort as possible in my schoolwork.	1	2	3	4	5	6	7
19. I feel I have attained my goal if I get better results or grades than many other students.	1	2	3	4	5	6	7
20. I have realized that it's very hard for me to fully concentrate when I should work on a demanding school task.	1	2	3	4	5	6	7
21. It is important to me that I don't fall in front of other students.	1	2	3	4	5	6	7
22. An important goal for me in my studies is to learn as much as possible.	1	2	3	4	5	6	7
23. It is important to me that I get good grades.	1	2	3	4	5	6	7
24. It is important t me that others think I am able and competent.	1	2	3	4	5	6	7
25. I feel that studying and going to schools is useless.	1	2	3	4	5	6	7
26. I always try to do nothing more than just the required schoolwork.	1	2	3	4	5	6	7
27. My goal is to succeed in school.	1	2	3	4	5	6	7
28. To acquire new knowledge is an important goal for me in school.	1	2	3	4	5	6	7
29. I think going to school is a waste of time.	1	2	3	4	5	6	7
30. I always worry about failing in tests and exams.	1	2	3	4	5	6	7