Academic motivation of students in the period of digital transformation of the educational environment

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Abstract. The article presents the results of an empirical study of students of one of the leading financial and economic universities in the country, the main goal of which was to identify the features of motivation for educational activities in the higher education system based on an assessment of a number of psychological variables associated with motivation. At the same time, the authors used a number of psychological diagnostic techniques developed by experts in previous studies: life satisfaction, resilience, etc. The central place in the study is to identify the direction of academic motivation: internal, external and motivation in accordance with the theory of self-determination, which is widespread in modern psychological science personalities of E. Desi and R. Ryan. The study-involved students of various courses and areas of training for bachelor's and master's degrees, full-time and part-time studies, as well as those receiving higher education on a budgetary and paid basis. The recommendations developed by the authors to increase the level of motivation of students with low indicators of intrinsic motivation for educational activity are given.

1. Introduction

Academic achievement is one of the most important aspects of the university study process. If a student cannot cope with the volume of the academic load, this leads to various consequences, up to the early termination of the learning process. Recently, a large number of studies have appeared that are devoted to the study of various aspects of the academic performance of students in higher educational institutions [1-3].

For example, some studies investigate the relationship between psychological variables (for example, attitude to risk), academic performance and the likelihood of expulsion [4]. The well-being of students who have problems with academic performance is also studied in detail [1]. Students who have just entered the first year are often studied (how their adaptation process takes place, what characteristics are significant for them, etc.) [5-9]. A number of researchers have devoted their works to the study of academic procrastination.

Separately, it is worth highlighting the studies on various factors of academic motivation. In particular, researchers from Romania assessed how student performance might be related to their involvement in the learning process and the burnout they might experience [10-15].
Quite often, researchers argue that stress can directly affect students' academic performance. For example, scientists from Ghana [12] studied how stress can affect academic performance in medical college students. Statistical processing has shown that how a student reacts to a stressful situation has a significant impact on his academic performance. It has also been found that the amount of time students spend on vacation affects their academic performance. All these factors play a significant role in the process of successful learning and effective assimilation of the curriculum [12].

Researchers also pay quite a lot of attention to situations when a student cannot cope with the academic load at the university. In particular, based on the data obtained from the learning management system (LMS) at the university (Australia), models were built, on the basis of which, with a fairly high degree of probability, it was possible to predict which students might have difficulties in the process. Training in an educational institution. The undoubted advantage of these studies may be the fact that the use of these models can be one of the preventive, but quite effective measures for timely assistance to the student [13].

Other researchers [14] conclude that a limited number of factors affect academic performance. In particular, these include: support from teachers, caring for students, diversity (for example, in teaching methods) and ignorance, which both teachers and students can demonstrate.

Psychologists from Spain [16] surveyed 1170 students who were enrolled in a mathematics course. As a result, it was found that a student who is interested in studying this subject demonstrates better performance in it than a student who is not interested. In addition, it was found that the relationship between student performance and his perception of the course as “interesting and useful” is mediated by his intrinsic motivation. Finally, it is the teacher's emphasis on the fact that this course will be useful to the student in the future, which is associated with the student's high academic performance in this discipline.

As can be seen from the presented review, many researchers have studied the issues of academic motivation. However, according to the authors, in order to develop a complex of organizational and managerial measures that could be used by educational organizations in order to increase the motivation and involvement of students, a certain typology of students is required according to a number of social and psychological criteria.

2. Materials and methods
The theoretical basis of the study of students' motivation to the learning process in this study was the theory of self-determination by E. Desi and R. Ryan [10-11], which has found great application in various psychological studies.

The purpose of this study was to identify the main types of students that were associated with their different individual psychological characteristics. The following well-known methods were used to diagnose the various characteristics of the respondents: the Scale “Alienation from studies”, the Test for resilience, Diagnosis of basic psychological needs and the Test for life satisfaction. Also, in addition to these four methods, the Academic Motivation Scale edited by E.N. Osin.

Let's consider each technique in more detail.

The scale "Alienation from studies" [6] includes 16 statements concerning the attitude of students to educational activities. In particular, this scale included such factors as:

- vegetativeness - a form of alienation in which a person cannot understand what value is for him the activity that he is currently engaged in (example of the statement: “Skillfully using a cheat sheet on a test or exam is much more interesting than learning everything in a row”);
- powerlessness - a form of alienation in which a person loses faith in the fact that he is able to influence situations that are important to him. At the same time, he still has the feeling that these situations are important to him (example of the statement: “Most people learn to get good grades and avoid bad ones, not because they are interested in it”);
• nihilism is a form of alienation in which a person ceases to believe that the activity he is engaged in is really important and takes a destructive position in relation to it (example of the statement: “Students who have difficulty in learning can be pushed around by teachers as they want”);
• adventurism is a form of alienation in which a person finds meaning in activity only in its unusual and extreme situations (example of the statement: “Most of the study time at the institute is spent on all sorts of meaningless activities”).

The respondent's task was to rate these statements on a five-point scale (from 1 - "Strongly disagree" to 5 - "Strongly agree").

Hardiness test (short version) [7]. In this study, a screening version of this test was used, which consists of 12 statements regarding a person's assessment of how much he can cope with various life situations. The respondent had to familiarize himself with them and rate them on a four-point scale (from 1 - "No" to 4 - "Yes").

Methods for diagnosing basic psychological needs "Questionnaire of basic needs" [2], consisting of 15 statements. These statements concerned three basic needs, which were described in detail in the theory of self-determination by E. Desi and R. Ryan. In particular, this technique addresses the following needs:

• the need for autonomy - the feeling that a person himself controls the actions that he performs. Only he can act as the initiator of his activity (example of the statement - “My teachers are always ready to answer my questions”);
• the need for competence - the feeling that the activity that a person performs, he does well and copes with the conditions and tasks, in the environment in which he is (example of the statement - "Teachers note that I show myself well in pairs") ;
• the need for connectedness - the feeling that a person has other people who can always support him, accept and demonstrate understanding in relation to him (example of the statement - “I feel that my teachers understand me”).

E. Huebner's life satisfaction methodology as adapted by E.N. Osin [8]. This methodology was aimed at studying the degree of subjective satisfaction with life among students. It includes 7 statements that relate to various aspects of respondents' satisfaction with their own lives (example of a statement - “Most people like me”).

At the moment, Russian scientists have developed a validated methodology for determining the types of educational motivation of students based on the theory of self-determination - the Academic Motivation Scale (AMS). This technique is designed to measure the severity and type of motivation for learning activities, developed by T.O. Gordeeva, O.A. Sychev and E.N. Osin in 2014 based on the Vallerand Academic Motivation Scale [3] and is a questionnaire consisting of statements grouped by 7 main factors that determine the motivation of students to the learning process, 3 refer to internal motivation (cognitive, achievement motivation and motivation self-development), 3 to external (self-esteem motivation, introjected motivation, for example, “I am ashamed to study badly,” and external motivation associated with avoiding problems in society) and 1 - lack of motivation to learn (amotivation).

This scale consisted of 28 statements. These motivation factors included 4 statements per factor. The respondent had to rate each statement on a 5-point scale (from 1 - "does not correspond at all", to 5 - "quite corresponds").

3. Results
The study involved 1326 full-time students of the Financial University under the Government of the Russian Federation. Tables 1 and 2 show the distribution of respondents by course and form of study (budgetary, paid, and paid with a discount) [17-25].
The distribution of students by course of study and by form of study is discussed in more detail in tables 1 and 2.

**Table 1. The number of respondents in the course of study.**

| Course        | Bachelors | Master |
|---------------|-----------|--------|
|               | 1st course| 2nd course| 3rd course| 4th course| 1st course| 2nd course |
| Amount        | 367       | 317     | 210      | 148       | 142       | 141        |
| In percents   | 27.7      | 23.9    | 15.8     | 11.2      | 10.7      | 10.6       |

**Table 2. Number of respondents by form of education.**

| Form of study | Budget | Paid | Paid, but with a discount |
|---------------|--------|------|---------------------------|
| Amount        | 793    | 424  | 109                       |
| In percents   | 59.8   | 32.0 | 8.2                       |

The method of cluster analysis was chosen as a method that would allow to characterize the multicomponent models of motivational profiles of undergraduate and graduate students.

To begin with, we calculated the standard descriptive statistics for the sample - the mean and the standard deviation. More details are presented in table 3.

Since a preliminary comparison of the means shows the greatest differences between clusters 1 and 3, let us clarify for which indicators the differences are significant.

**Table 3. Descriptive statistics for study variables.**

| For all students | Bachelors | Masters |
|------------------|-----------|---------|
|                  | Average   | Average deviation | Average   | Average deviation | Average   | Average deviation |
| Life satisfaction| 24.52     | 5.293    | 24.44     | 5.295    | 24.82     | 5.282     |
| Autonomy         | 24.36     | 6.129    | 24.17     | 6.066    | 25.05     | 6.319     |
| Competence       | 25.47     | 5.299    | 25.26     | 5.303    | 26.22     | 5.223     |
| Connectedness    | 20.89     | 7.145    | 20.83     | 7.128    | 21.10     | 7.215     |
| Cognitive motivation | 14.46  | 3.697    | 14.43     | 3.704    | 14.56     | 3.675     |
| Achievement motivation | 10.73 | 2.807    | 10.67     | 2.864    | 10.93     | 2.579     |
| Self-development motivation | 14.43 | 3.897    | 14.58     | 3.869    | 13.87     | 3.955     |
| Self-esteem motivation | 13.04 | 4.515    | 13.36     | 4.463    | 11.85     | 4.518     |
| Introjected motivation | 9.4    | 3.168    | 9.61      | 3.122    | 8.64      | 3.223     |
| External motivation | 11.58 | 3.729    | 11.83     | 3.723    | 10.62     | 3.602     |
| Motivation        | 9.72     | 4.537    | 9.58      | 4.484    | 10.23     | 4.699     |
| Vegetative        | 9.31     | 2.597    | 9.41      | 2.622    | 8.93      | 2.472     |
| Impotence         | 8.19     | 2.637    | 8.19      | 2.665    | 8.21      | 2.532     |
| Nihilism          | 7.86     | 2.34     | 7.95      | 2.360    | 7.53      | 2.242     |
| Adventurism       | 8.7      | 2.732    | 8.76      | 2.758    | 8.45      | 2.626     |

To assess the significance of the differences, the T-test was used for independent samples.

It can be concluded that clusters 1 and 3 differ significantly in terms of life satisfaction, autonomy, competence, cognitive motivation, achievement motivation, self-development motivation, self-esteem motivation, amotivation, powerlessness.
Cluster analysis was carried out by the K-means method, the number of clusters, which in this case was selected - 3. Further, a more detailed description of each type, which was obtained as a result of cluster analysis, is presented. The detailed description is based on the mean and standard deviation for each cluster. They are presented in Table 4.

Table 4. Average values and standard deviation (based on the results of cluster analysis).

|                               | Motivated | Motivated | Unmotivated | Unmotivated | Middle class | Middle class | Unmotivated | Unmotivated |
|--------------------------------|-----------|-----------|-------------|-------------|--------------|--------------|-------------|-------------|
|                                | Average   | Average   | Average     | Average     | Average      | Average      | Average     | Average     |
|                                | deviation | deviation | deviation   | deviation   | deviation    | deviation    | deviation   | deviation   |
| Life satisfaction              | 26,51     | 4,867     | 23,27       | 4,931       | 23,84        | 5,752        |
| Autonomy                       | 29,25     | 3,558     | 23,81       | 4,296       | 17,12        | 5,32         |
| Competence                     | 29,23     | 3,598     | 25,02       | 4,041       | 19,97        | 4,995        |
| Connectedness                  | 27,08     | 4,312     | 20,32       | 4,584       | 11,49        | 4,242        |
| Cognitive motivation           | 17,35     | 2,128     | 13,89       | 2,757       | 10,72        | 3,701        |
| Achievement motivation         | 12,59     | 1,87      | 10,34       | 2,349       | 8,36         | 2,952        |
| Self-development motivation    | 17,28     | 2,288     | 14,04       | 3,018       | 10,39        | 3,886        |
| Self-esteem motivation         | 15,8      | 3,605     | 12,73       | 3,845       | 8,99         | 3,969        |
| Introjected motivation         | 10,05     | 3,065     | 9,52        | 3,052       | 8,04         | 3,189        |
| External motivation            | 10,56     | 3,519     | 11,92       | 3,677       | 12,58        | 3,804        |
| Motivation                     | 6,33      | 2,813     | 10,41       | 3,854       | 14,03        | 3,955        |
| Vegetative                     | 7,73      | 2,403     | 9,78        | 2,182       | 11           | 2,271        |
| Impotence                      | 6,43      | 2,031     | 8,71        | 2,266       | 10,08        | 2,519        |
| Nihilism                       | 6,72      | 2,059     | 8,17        | 2,126       | 9,15         | 2,374        |
| Adventurism                    | 6,66      | 2,145     | 9,18        | 2,186       | 11,14        | 2,18         |
| Total                          | 463       | 592       | 269         |             |              |              |

Thus, the conducted cluster analysis made it possible to distinguish three main types of motivational profiles of students of the Financial University: motivated, average motivated and unmotivated. At the same time, among the respondents who took part in the survey, representatives of the second type - 44.7%, occupy the majority. At the same time, there was a tendency to reduce the number of representatives of the first type from course to course. Most of the representatives of the third, unmotivated type in the 2nd year. In this regard, an important measure to improve the system of student motivation will be the implementation of measures for the gradual transfer of students from the third type to the second and further, if possible, to the first.

4. Discussion
It is worth noting that a fifth of the respondents were classified as the third type of unmotivated or low-motivated students to study. This is a fairly large percentage, which should cause some concern. Therefore, it is proposed to build a systemic management algorithm for transforming the motivational type of students and their gradual transfer from type 3 to type 2 and further to type 1 of highly motivated students. This algorithm is shown schematically in figure 1 [17-26].

The organization of constant monitoring of the academic motivation of students at the university is an urgent measure, since each new generation has its own values and priorities. In addition, conducting longitudinal research would reveal larger-scale trends in the student environment in relation to basic needs, motives for obtaining education, reasons for expulsion, as well as satisfaction with the quality of education.
Directly based on the results obtained during the diagnosis, students can be selected from the low-activated type for the purpose of further work with them: assistance in career guidance and building an individual development trajectory in the academic environment for the period of study at the university, providing psychological assistance (if necessary), with a curator of a well-grounded and balanced decision on transfer to another specialty, etc.

![Algorithm for transforming the motivational type of students.](image)

**Figure 1.** Algorithm for transforming the motivational type of students.

5. Conclusion

Because of psychological diagnostics of more than 1300 students studying in various areas and courses in bachelors and masters programs in full-time and part-time at one of the prestigious financial and economic universities in the country, three main motivational profiles of students were formed. At the same time, the analysis showed that the specified profiles of students are not static, but can change depending on the increase or decrease in their level of interest and satisfaction with the educational process. The results obtained indicate a high proportion of motivated and striving for knowledge and self-development of students in the first year and a gradual decrease in their proportion from course to course. In this regard, it is advisable for universities to organize permanent monitoring in order to identify the needs of students, their motivational expectations and values, as well as the current motivational profile and degree of satisfaction with the educational process. Such diagnostics will allow in the future making informed organizational and managerial decisions in the educational organization of higher education.
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