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# Identifying predictors of student satisfaction with distance learning during the covid-19 pandemic

**Abstract:** Identifying the predictors of student satisfaction with a learning programme can help faculty improve it and offer insights into programme implementation and student needs according to the students' individual characteristics. The latter characteristics came to the fore more than ever during the Covid-19 pandemic, when life situations changed, and contributed to the determination of student learning characteristics and satisfaction. This research focused on student satisfaction under these conditions of the pandemic and aimed to determine how student satisfaction is related to other study factors and how much of it can be explained by individual factors. Student satisfaction, it was found, was statistically significantly related to other study factors. Moreover, according to the regression analysis, after controlling for gender, dealing with mental distress, and frequency of contact with other students during distance learning, student satisfaction was most strongly predicted by academic efficiency. Student satisfaction, these findings indicate, is statistically significantly predicted by both study and other individual characteristics and circumstances faced by students. It can be concluded that, while assessing student satisfaction, the orientation to study factors from the perspective of teaching performance must be complemented by an emphasis on the role of students in learning.

**Keywords:** satisfaction with distance learning, Covid-19 pandemic, study factors, programme performance, student characteristics.

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Scientific article

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## Introduction

Examining student satisfaction with learning programmes provides information on how students evaluate their study experience relative to their previous expectations of studying (Alquarashi 2019; Alves and Raposo 2007; Elliott and Healy 2001; Gopal et al. 2021; Zamri 2021). Since student satisfaction influences other factors of study—motivation and retention (Elliott and Shin 2002), study effectiveness (Aristovnik et al. 2020; Gibson 2010; Gopal et al. 2021; Su and Guo 2021), and learning (Alquarashi 2019; Gibson 2010)—it is a key factor for improving students' learning (Zamri et al. 2021). Moreover, faculty gives special attention to student satisfaction, as it is considered key for evaluating the quality of study programmes (Parahoo et al. 2016; Li et al. 2016). It helps in not only identifying a programme's strengths and weaknesses (ibid.; Richardson 2005) but also in selecting the appropriate faculty members for a programme (Burgess et al. 2016). Satisfied students are loyal and committed to the faculty; they spread good word of mouth about them and remain in contact with them even after the programme ends (Alves and Raposo 2007; Li et al. 2016; Santini et al. 2017).

## Variety of factors for student satisfaction

Over the past three decades, interest in research on student satisfaction has increased as faculty have become aware of the influence of student satisfaction on study programme assessment. Research foci and approaches are changing and deepening. With the increase in course offerings and interest, the humanistic approach to student satisfaction research (Denson et al. 2010) has been reinforced by the student-centred marketing model (Parahoo et al. 2016). This model focuses on the students' perspective of the teacher's teaching and is based on the non-confirmation of the students' expectations compared to their actual learning experience. Higher education institutions typically rely on students' evaluation of the teacher and their teaching, the curriculum, and the faculty services to improve learning programmes (Denson et al. 2010; Burgess et al. 2018). Although

both students and teachers accept that student feedback on their satisfaction with teacher performance and the curriculum is important and informative, there have also been recognised reservations about it (Richardson 2005). A purely teacher-focused assessment of student satisfaction may take into account students' personal opinions about the teacher instead of the teacher's skills and attributes in delivering the course and may thus neglect the students' role in learning. The common features of the questionnaires developed to assess study programmes with a teacher-focused approach include assessing the students' overall satisfaction with the study programme with only one question, anonymity, written comments about the teacher and the course, and conducting the assessment in the absence of the teacher (Sproule 2000; Richardson 2005). This approach does not encourage teachers to improve their performance or students to reflect on their approach towards studying. Although it is now recognised that how students approach their own learning contributes to their experience—which, from the perspective of student needs and characteristics, can guide faculty and teachers in planning programme improvements—this remains overlooked in student satisfaction research. The questionnaires always ask the students to evaluate the teacher and their teaching—the students are rarely asked to evaluate their own approach to learning. These questionnaires are much more teacher-focused, focusing only on what the teacher does (Richardson 2005) and not on what the students do, how they engage with learning, and how they approach learning (Zerihun et al. 2012). When implementing and making instructional changes to support student effectiveness, these overlooked characteristics can be considered.

To measuring overall student satisfaction, Elliott and Shin (2002)—based on the results of an earlier study on the complexity of the student satisfaction phenomenon (Elliott and Healy 2001) —proposed an alternative approach using multiple parameters, an approach that offers a more accurate and objective assessment than the traditional approach which uses a simple rating scale. The traditional approach is usually limited to a single question that may not provide any insight into the qualitative characteristics of a student's experience; it does not offer information about why a student is satisfied or dissatisfied; it does not provide indicators of satisfaction or dissatisfaction; and it does not indicate the student's level of satisfaction according to the various factors. The subtlety and complexity of the student satisfaction phenomenon suggests that there exists an interplay between academic and other factors. This demands a research approach that considers this interplay and examines student satisfaction in more depth than the traditional approach. For example, Elliott and Shin (2002) suggest considering the differences in the ratings of expectations and the actual experiences in each area of study that can be measured in different settings. In addition, considering the importance attached to each study dimension can generate insights into the key indicators of student satisfaction. They (ibid) also point to the importance of time and longitudinal research on student satisfaction. Satisfaction can be measured in extremely different situations where the outcome can be significantly different. Moreover, longitudinal studies of student satisfaction can be used to observe improvements or deteriorations in student satisfaction.

Gibson (2010), in a meta-analysis of 12 studies on the predictors of student satisfaction, found that the predictors vary according to certain study and faculty characteristics, such as the type of programme and faculty size. Gibson (2010) also highlighted the importance of other non-study factors—sense of belonging, social connectedness, faculty support, and responsiveness—and revealed an interesting finding: the positive ratings of other non-study factors are not as important as the study factors for students' overall satisfaction; in contrast, the negative ratings of other non-study factors may be a reason for students' dissatisfaction. Moreover, based on a meta-analysis of 83 studies, Santini et al. (2017) developed a model that revealed the heterogeneity of correlations and influences on student satisfaction and the importance of taking this into account through no less than 51 identified predictors and consequences of student satisfaction. This is because the consequences of student satisfaction are manifested in student interactions and behaviours. The research shows that these are manifested through the students' positive attitudes toward the faculty, their commitment to the faculty with willingness to maintain a long-term relationship through active participation, showing loyalty and trust towards them, recommending them for studying, and spreading the good word of mouth about them. Santini et al. (2017) divided the predictors of student satisfaction into six groups. The first group includes the set of values that influence students' perceptions of their studies —reliability, empathy, social values, and so on—and that students recognise in faculty activities. The second group includes the sources of support provided to students, such as access to technology, materials, library, information, flexibility of course design, appropriateness of teaching methods and didactic approaches, skill development, and employability. The third group includes students' perceptions of the quality of certain aspects of the course, such as teachers, administrative staff, and technical support. The fourth group includes the marketing orientation of the faculty and their strategies to respond to the demands of the labour market. The fifth group includes factors that contribute to the development of faculty identification, such as reputation, visibility, faculty responsiveness, and student attitudes towards faculty (such as loyalty and expectations regarding to course design). The final, and sixth, group relates to the factors that support learning, such as the faculty environment (the classroom, for example), and the atmosphere among students.

## Factors of student satisfaction during the Covid-19 pandemic

Learning during the Covid-19 pandemic was different. Distance learning emerged, and there was a shift from traditional classrooms to online lecture rooms. However, this cannot be equated with what was meant by distance learning before; during Covid-19, distance learning was not an elective option, unlike before; it was emergency distance learning (Baber 2020), with the aim of conducting the study process during an unfamiliar crisis situation. This situation, in turn, provides information about the students' situation and confronts them not only with a new situation but also with their existing personal, non-academic situation.

Feedback on the implementation of the study programme and student satisfaction during the pandemic also provided insights into the perspectives of the study that were previously overlooked or not given sufficient attention, such as student personal situation, housing, materials, and interpersonal relations. It is the characteristics of distance learning during Covid-19 and the unfamiliar, uncertain situation for students that changed both students' academic and daily lives (Aristovnik et al. 2020; Baber 2020; Gopal et al. 2021; Su and Guo 2021; Zamri et al. 2021) and that make the issue of student satisfaction a topic worthy of research.

The results of the Covid-19 studies that aimed to determine the predictors of student satisfaction with distance learning (Gopal et al. 2021; Zamri et al. 2021) confirmed the predictors as in the traditional study design but in a different order of importance. The most important predictors were teacher quality, student expectations, teacher prompt feedback to student, and study methods. Student satisfaction was also found to significantly impact students' learning performance (Gopal et al. 2021). However, a large study (Aristovnik et al. 2020) of the perceived impact of Covid-19 on students' lives, which attempted to gain insights into various study-related areas from a sample of 30,383 students from 62 countries, found that various academic, mental, and sociodemographic factors influenced students' satisfaction with distance learning. The study identified students' satisfaction with teachers and other support staff, information about online channels, and information about exams as the most important predictors of student satisfaction. These were followed by factors like hope, study of social sciences, and a better standard of living due to the ability to pay tuition and receive scholarships.

In research on student satisfaction with distance learning, there has been a clear focus on student interactions, both with teachers and other students, as well as with learning content, even before and especially during Covid-19 (Alquarashi 2019; Baber 2020; Bervell et al. 2020; Parahoo 2016; Su and Guo 2021). The results of many researches reveal the importance of students having diverse interactions, and this indicates the complexity of students' circumstances and needs during distance learning, which happened when face-to-face social interactions had to be largely curtailed. Other indirect influences on student satisfaction with distance learning that influenced student success were also found during Covid-19 (Baber 2020), suggesting that a successful student is a satisfied student. The key factors in student success were found to be the interaction factor and the motivation to study, followed by the way the course was delivered and the quality of the teacher.

## Research purpose

During the Covid-19 pandemic, students' individual circumstances correlated with their study situation, study characteristics and student satisfaction gained importance more than ever (Aristovnik et al. 2020; Doolan et al. 2021). Previous studies (Baber 2020; Su and Guo 2021) have reported the importance of student interactions in the study process. During the pandemic, the students were

confronted with new circumstances, which affected their study and satisfaction with distance learning. The present research sought to determine how student satisfaction with distance learning at the University of Ljubljana (UL) during Covid-19 was related to other factors, such as demographic, individual characteristics and other individual circumstances, study characteristics; the research was particularly interested in the correlations with individual study characteristics. It focused on which students were more satisfied and which students were less satisfied with distance learning according to these statistically significant correlations. In addition, based on these correlations, the research focused on finding the predictors that could explain student satisfaction. The research aimed to determine the extent to which student satisfaction with distance learning during Covid-19 was explained by the study characteristics and which characteristic, while controlling for other individual characteristics, played the strongest role in predicting student satisfaction. The research included both students' perspectives on programme delivery and students' perspectives on the characteristics of their study approach. By examining the students' study characteristics, the research sought to move beyond focusing on study factors solely from the perspective of the teacher's implementation of the programme and also highlight the role of students in learning (Denson 2010). Based on the research purpose, the results of previous research, and the analysis of the results of statistically significant differences and correlations between students' satisfaction with distance learning and their demographic and individual characteristics and other individual circumstances, two basic research questions and two hypotheses were formulated:

- RQ1: How is student satisfaction with distance learning during Covid-19 related to study characteristics?
- RQ2: To what extent does student satisfaction with distance learning during Covid-19 explain the developed predictive model?
- H1: There are statistically significant correlations between student satisfaction with distance learning during Covid-19 and study characteristics.
- H2: The study characteristics statistically significantly predict student satisfaction with distance learning during Covid-19.

## Methodology

### *Research sample*

The purposive sample consisted of 1424 University of Ljubljana students from all regions of Slovenia. The research included 1167 students who answered the study topic partially or completely. Of them, 79.4% were female and 20.6% were male. Exactly half of them had an urban background; the other a rural background. Social science and humanities students dominated (77.6%), with most of them (90%) enrolled in first-level programmes.

*Procedure and instrument*

The data were collected as part of a cross-sectional research entitled *The position of the students of the University of Ljubljana in the situation of Covid-19*, conducted at the end of the academic year 2020/2021 at the Department of Social Pedagogy of the Faculty of Education of the University of Ljubljana. The research, which followed the quantitative method of data collection and used a descriptive and causal non-experimental research method, aimed to qualitatively and quantitatively define the basic characteristics of the topic and determine the possible existence of a difference or correlation between two or more phenomena and define them causally. The data were collected using the online survey tool 1ka.si between June and September 2021.

The questionnaire included demographic questions and several topics related to the situation of students during Covid-19: housing and materials, interpersonal relations, interests and leisure, dealing with adversity, and studying. Before the investigation, the questionnaire was tested, and based on the feedback from students in different courses and levels, the shortcomings were eliminated. For the present research, the relevant part of the data was from the subject area of the study. To assess their overall satisfaction with distance learning, the students rated how satisfied they were with distance learning on a four-point scale (1 - Very Dissatisfied, 2 - Dissatisfied, 3 - Satisfied, 4 - Very Satisfied). To assess the other aspects of distance learning, six more questions were asked, two of which contained multiple questions. For these two questions, the students indicated on a four-point scale (1 - Never, 2 - Rarely, 3 - Frequently, 4 - Regularly) how often the questions applied to them (e.g. »I participate in discussions in my distance learning classes«). For one question, they indicated on a four-point scale (1 – Not True, 2 – Mostly Not True, 3 – Mostly True, 4 - Absolutely True) the extent to which they thought the item applied to them ( »I receive clear and consistent information about my studies«). For three questions, they indicated which answer applied to them (e.g. »I am more/equally/less present with distance learning compared to learning at my faculty before the pandemic«).

*Data analysis*

The collected data were analysed using the statistical programme IBM Statistics SPSS 26.0, and the descriptive statistics (the percentages of each response, the mean, and the standard deviation) were calculated. The t-test was used to test the differences between the groups and to test the correlations between the variables, depending on the level of measurement of the variables used: Pearson's r coefficient (comparison of two interval variables), Spearman's rho coefficient (comparison between ordinal or between ordinal and interval variables) and Kendall's tau coefficient (comparison with binary variables). Moreover, hierarchical linear regression with the method of inclusion was used to test the explained variance of the predictors of student satisfaction. To test the first hypothesis, Spearman's rho coefficient was used to determine the statistically significant correlations between

student satisfaction with distance learning and the individual study characteristics. To test the second hypothesis and determine the statistical significance of the predictors of student satisfaction with distance learning, hierarchical linear regression with the inclusion method was used.

## Results and discussion

This section presents what the analysis of the results revealed about the differences and correlations between student satisfaction and their demographic and individual characteristics and other individual circumstances. The results are then presented for each research question and hypothesis tested. The correlations between student satisfaction and study characteristics are then discussed, followed by the results of the hierarchical linear regression.

According to the results ($N = 1167$), the participants' responses were split about halfway between satisfied and dissatisfied with distance learning. Slightly more than half (53.3%) of the participants indicated that they were satisfied (40.7%) or very satisfied (12.6%) with distance learning, whereas slightly less than half (46.7%) indicated that they were dissatisfied (29.6%) or very dissatisfied (17.1%). There was a statistically significant gender difference in satisfaction with distance learning, $t(1143) = 2.56$, $p = 0.011$, with females ($M = 2.52$; $SD = 0.89$) being, on average, more satisfied than males ($M = 2.35$; $SD = 1.01$). No other statistically significant differences were found when the demographic characteristics were analysed. Regarding other individual characteristics, those who did not experience mental distress during distance learning were more satisfied ($M = 2.88$; $SD = 0.87$) than those who did ($M = 2.37$; $SD = 0.90$). In terms of the presence of mental distress, the results showed highly statistically significant differences in satisfaction with distance learning, $t(1162) = -8.21$, $p = 0.001$. Statistically significant correlations were also found between the level of satisfaction with distance learning and the following individual characteristics: the frequency being optimistic and confident about the future ($rho = 0.23$; $p < 0.01$), and the students' connectedness with other students ($rho = 0.40$; $p < 0.01$). A highly statistically significant correlation was also found between the level of satisfaction with distance learning and participation in leisure activities without a screen or online ($r = 0.33$; $p < 0.001$). The analysis of the results revealed statistically significant correlations between the level of satisfaction with distance learning and the following individual circumstances: the level of satisfaction with their living conditions during distance learning ($r = 0.37$; $p < 0.01$), the amount of monthly financial burden during distance learning ($r = 0.19$; $p < 0.01$), whether they had their own room during distance learning ($\tau = 0.06$; $p < 0.01$), the presence of a good internet connection ($\tau = 0.21$; $p < 0.01$), and the presence of poor digital literacy ($rho = -0.14$; $p < 0.001$).

*Satisfaction with distance learning during the Covid-19 pandemic according to students' views on the study characteristics*

Next, the research was interested in how student satisfaction correlated with other study characteristics. To this end, an analysis was conducted to determine how the students, on average, rated each study element and how these correlated with their satisfaction (Table 1). First, the descriptive statistics were calculated for the variables included and the correlations between them.

| Study variables | *N* | *M* | *SD* | *rho* |
|---|---|---|---|---|
| Satisfaction with distance learning (DL) | 1167 | 2.49 | 0.92 | -- |
| Student effectiveness during DL is worse than before | 1112 | 2.95 | 1.07 | –0.595** |
| Motivation to study is lower at DL than before | 1113 | 3.13 | 1.02 | –0.569** |
| Takes an active approach to DL[1] | 1164 | 1.66 | 0.78 | 0.523* |
| Takes an in-depth approach to DL[1] | 1164 | 1.66 | 0.76 | 0.490* |
| Less present on the DL than before[1] | 1150 | 2.19 | 0.74 | –0.457** |
| Less literature read during DL than before | 1108 | 2.40 | 1.05 | –0.451** |
| DLC[2] activities and methods are not diverse enough for them | 1113 | 2.37 | 0.88 | –0.449** |
| Independent learning activities do not suit them | 1122 | 2.09 | 0.89 | –0.396** |
| Get clear and consistent information on the DL | 1111 | 2.87 | 0.80 | 0.377** |
| For them, there is not enough case- and problem-based learning in DLC | 1106 | 2.47 | 0.92 | –0.350** |
| Taking notes at DLC | 1154 | 2.79 | 0.99 | 0.340* |
| Participates in activities at DLC | 1152 | 2.39 | 0.95 | 0.317* |
| Participates in discussions at DLC | 1153 | 2.24 | 0.91 | 0.288* |
| The student only logs in to DLC, they do not listen, they do other things | 1153 | 2.12 | 0.80 | –0.264* |
| In DLC and distance learning tasks, individual work is less suitable for them than group work | 1108 | 1.91 | 0.88 | –0.203** |
| In DLC there is a camera on | 1155 | 2.14 | 0.90 | 0.162* |
| In DLC they listen but does not speak | 1150 | 3.11 | 0.83 | 0.024 |

*Table 1: The descriptive statistics of the study variables and the statistically significant correlation between satisfaction with distance learning, and each distance learning variable in order from strongest to weakest*

*Notes: N: numerus, M: mean, SD: standard deviation, and rho: Spearman's rho coefficient. [1]The minimum and maximum expression values for the item were 1 and 3; for the other items, they were 1 and 4. [2]DLC: distance learning classes. *Statistically significant at the 0.01 level. **Statistically significant at the 0.001 level.*

The first hypothesis was tested by calculating the Spearman's rho coefficients between student satisfaction and study characteristics. The results, shown in Table 1, confirm H1: there are, indeed, statistically significant correlations be-

tween student satisfaction and study characteristics. As can be seen from Table 1, the results show statistically significant or highly significant correlations between student satisfaction and the individual study variables. There is no statistically significant correlation between only one study variable and student satisfaction. Analysing the results, we find more statistically significant correlations between student satisfaction and study factors than between student satisfaction and demographic and individual characteristics and circumstances. Depending on the correlations with each study characteristic, students reported higher or lower levels of satisfaction with distance learning. The strongest highly statistically significant negative correlation with student satisfaction, of medium strength, was found in how often a student experienced poorer study effectiveness and lower study motivation concerning distance learning during the pandemic than before. The weakest statistically significant positive correlation was between student satisfaction and how often a student had a camera on during distance learning classes. The strength of the statistically significant correlations between student satisfaction and other study variables is medium to weak, suggesting that a variety of study and other factors influenced student satisfaction. The analysis of the results in terms of statistically significant correlations between the individual study characteristics and student satisfaction revealed that students' learning approach and teachers' implementation were statistically significantly correlated with student satisfaction.

*Predicting student satisfaction with distance learning during the Covid-19 pandemic*

In addition, hierarchical linear regression with the inclusion method was employed to determine the model's predictive power and determine how much of the variance in the ratings of student satisfaction could be explained by the predictive model and each of the included explanatory variables. The model was adjusted based on the previous theory and analysis of the results obtained, as student satisfaction revealed statistically significant differences between groups, and statistically significant correlations was found to exist between student satisfaction and other study variables.

| Independent variables | [1]Satisfaction with distance learning | | | |
|---|---|---|---|---|
| | $R^2$ | B | SEB | β |
| Step 1 | 0,070*** | | | |
| Gender | | –0.282 | 0.069 | –0.123*** |
| Experiencing mental distress during DL: no | | 0.570 | 0.066 | 0.257*** |
| Step 2 | 0,204*** | | | |
| Gender | | –0.201 | 0.064 | –0.087** |
| Experiencing mental distress during DL: no | | 0.349 | 0.064 | 0.158*** |
| Frequency of experiencing connectedness with other students during DL | | 0.379 | 0.028 | 0.380*** |
| Step 3 | 0,485*** | | | |
| Gender | | –0.171 | 0.052 | –0.075*** |
| Experiencing mental distress during DL: no | | 0.116 | 0.053 | 0.052* |
| Frequency of experiencing connectedness with other students during DL | | 0.164 | 0.025 | 0.165*** |
| Student effectiveness during DL is worse than before | | –0.226 | 0.027 | –0.262*** |
| DLC activities and methods are not diverse enough for the student | | –0.206 | 0.027 | –0.196*** |
| Less present on the DL than before | | –0.175 | 0.033 | –0.141*** |
| Takes an active approach to the DL | | 0.153 | 0.034 | 0.129*** |
| Independent learning activities do not suit the student | | –0.081 | 0.027 | –0.078** |

*Table 2: Results of hierarchical linear regression analysis using the inclusion method to predict student satisfaction with distance learning during the Covid-19 pandemic.*
*Notes: [1]Dependent variable. *Statistically significant at the 0.05 level. **Statistically significant at the 0.01 level. ***Statistically significant at the 0.001 level. Values for gender: 0 = female, 1 = male. Values for presence of mental distress: 0 = experiencing mental distress: yes, 1 = experiencing mental distress: no. DL: distance learning; DLC: distance learning classes.*

In the first step, the model included gender and experiencing mental distress during distance learning as independent variables in the regression model; in the second step, it included the frequency of experiencing connectedness with other students during distance learning as independent variables; and in the third step, it included the study characteristics from the students' perspective, both in terms of their approach to learning and the teachers' implementation, as independent variables. In total, there were ten variables. Each step significantly improved the model's predictive power. In addition, four statistically insignificant study predictors were removed; study motivation was also removed due to its high correlation with study effectiveness.

The results show that, among the study characteristics, there are both statistically significant and statistically nonsignificant predictors of student satisfaction, partially confirming H2: that study characteristics statistically significantly predicted student satisfaction with distance learning during the pandemic. Of the 10 variables included, six were statistically significant. The independent contribution of each variable in predicting student satisfaction is shown in Table 2.

Controlling for gender, experiencing mental distress, and frequency of experiencing connectedness with other students during distance learning, the model ex-

plained 49% (adjusted $R^2 = 0.485$; $F(5,1053) = 116.595$; $p < 0.000$) of the variance in study satisfaction by including the ratings of the student aspect of study characteristics, both in terms of their approach to learning and the teacher's implementation of the study programme. The addition of the study variables improved the prediction of student satisfaction to a highly statistically significant degree. Gender, experiencing mental distress during distance learning, and frequency of experiencing connectedness with other students remained statistically significant predictors; however, experiencing mental distress during distance learning increased the risk level ($p < 0.05$) in this model. Gender was found to have a negative impact on satisfaction, while not experiencing mental distress had a positive impact. That is, being male predicted lower satisfaction, and not experiencing mental distress during distance learning predicted higher satisfaction. Moreover, the results showed that, among the study variables, student satisfaction was most strongly predicted by study effectiveness, which negatively predicted it, meaning that the frequency with which students experienced lower study effectiveness predicted lower satisfaction. Similarly, lower student satisfaction was predicted by less frequent exposure to diverse activities and methods and independent learning activities from the perspective of teacher implementation and lower participation in distance learning classes from the perspective of the student learning approach. Higher student satisfaction was predicted by students' active approach towards distance learning. The predictive model was statistically significant. By including three groups of predictors, the model explained half of the variability in the ratings of student satisfaction with distance learning (Table 2).

## Conclusion

Identifying the predictors of student satisfaction from different perspectives can, in addition to providing information about the teacher's implementation of a study programme, provide insights into a student's study needs in terms of the characteristics of their learning approach and how the lessons are implemented for them. These characteristics, in turn, can offer insights into the instructive approaches and changes needed to support study effectiveness, which has been found to be the strongest predictor of student satisfaction with distance learning during the pandemic. Previous research (Baber 2020; Gopal et al. 2021) found learning effectiveness to be the most statistically significant positive predictor of student satisfaction with learning. Most often, study factors are the focus of student satisfaction research (Elliot and Healy 2001; Elliott and Shin 2002; Gibson 2010; Li et al. 2016), and the characteristics of faculty and programme implementation are the most frequently identified statistically significant predictors of student satisfaction. In this research, these were also statistically significant predictors of student satisfaction. Moreover, this research found that a lack of variety in activities and methods in distance education courses and independent study activities predict lower student satisfaction. Regarding the implementation aspect and the question of which teaching method best suited the students who partic-

ipated in the research, lower satisfaction with distance learning was reported by those students who felt that distance learning did not include enough case- and problem-based learning, and by those who felt that individual work was less appropriate than group work. In contrast, higher satisfaction was reported by those students who received clear and consistent information about distance learning.

Considering the other study characteristics of distance learning during the pandemic, this research complemented its focus on the teacher and their teaching by paying attention to student characteristics (Denson 2010). Higher levels of study satisfaction were reported by those students who were less likely to have poorer study efficiency and study motivation than before the pandemic. Higher levels of satisfaction were also found among those who were active and thorough learners, who were more present in their distance learning classes, who were more likely to take notes in distance learning classes, who participated in activities and discussions, and who had their cameras on. In contrast, lower levels of satisfaction were reported by those who read less literature during distance learning than before the pandemic and those who were more likely to only log into their distance learning classes but not listen and instead do other things during that time. Lower student participation in distance learning was thus found to predict lower student satisfaction. However, higher satisfaction was predicted by an active learning approach, which was found to be a statistically significant positive predictor of student satisfaction with distance learning. As the results indicate, there is a statistically significant correlation between students' level of satisfaction with distance learning during the pandemic and study factors, both in terms of how the students approached their learning and how the study programme was implemented under the circumstances of the pandemic.

When considering student characteristics, a statistically significant correlation with other non-student factors (Aristovnik et al. 2020; Denson 2010; Gibson 2010), individual characteristics, mental factors, and sociodemographic factors (Aristovnik 2020) also becomes apparent. Certainly, the individual differences in students' living and learning situations cannot be overlooked when assessing the satisfaction with their studies, as the Covid-19 situation in particular has shown. However, it would be wrong to conclude that individual characteristics as predictors of students' satisfaction with their studies only emerged with the pandemic. Researchers have highlighted this before; however, in the context of Covid-19, these characteristics have become more prominent (Aristovnik et al. 2020; Doolan et al. 2021) or more readily apparent. Heterogeneity in student satisfaction factors is present in both traditional and distance learning before and during Covid-19. Higher levels of satisfaction with distance learning in this research were reported by students who were women, by students who did not experience mental distress during distance learning, by students who were more likely to feel optimistic and confident about the future, and by students who were more likely to feel connected to other students. Moreover, higher levels of satisfaction with distance learning was also found among those who were more likely to engage in screen-free or offline leisure activities during distance learning, who were more satisfied with their living conditions, who found it financially easier to get through

their months, who had their own rooms, who had a good online connection most of the time, and who were less likely to experience a lack of digital literacy.

The results of the predictive model with the included study variables demonstrate the lower predictive power of gender and experiencing mental distress than in the previous steps of the predictive model, while the predictive power of the frequency of experiencing connectedness with other students during distance learning is just behind the predictive power of study efficiency and engaging in diverse activities and methods in distance learning classes. This means that, according to the tested model, the frequency of experiencing connectedness with other students was an important predictor of student satisfaction with distance learning. This is also consistent with the findings of previous research (Baber 2020; Bervell et al. 2020; Su and Guo 2021). Considering that the model contained relatively few different factors, it can be said that it has good predictive power concerning student satisfaction with distance learning during the pandemic.

These findings encourage reflection on how to contribute to students' learning effectiveness by improving teaching and programme implementation and taking into account and responding to students' individual characteristics and needs. The findings have confirmed the complexity of the phenomenon of student satisfaction and its relationship with various study-related and non-study-related factors. Moreover, they have highlighted the challenges and opportunities in (distance) education that could be important for the study process and study performance in the future. However, it would be worthwhile to empirically test the findings in more detail and further deepen the research.

The research limitations are that it did not examine the individual factors that influence students' satisfaction with distance learning and the consequences of students' satisfaction with distance learning. In the future, it would be worthwhile to conduct a complex study of student satisfaction that focuses on multiple parameters, as previously suggested by Elliott and Shin (2002), which would certainly provide more information about students' learning experience. The measurement instrument used in this research is also a shortcoming in this sense, as it is based on single items. It would be worthwhile to complement this research with a qualitative approach that would offer even more information about the characteristics of the individual experience and the individual characteristics and circumstances of the students. Identifying the influences on student satisfaction is a key direction for research in this area. By examining student satisfaction, we can identify its causes and consequences (Alves and Raposo 2007; Gopal et al. 2021; Santini et al. 2017; Zamri 2021). Among the consequences or positive outcomes of student satisfaction, the most statistically significant are the correlation with academic success (Baber 2020; Gopal et al. 2021) and the correlation with loyalty to faculty (Alves and Raposo 2007; Santini et al. 2017). This would imply that more successful students are more satisfied, and that the students who are more satisfied are more loyal to faculty. Quantitative cross-sectional research also limits researching a phenomenon as complex as student satisfaction. Given the unusual circumstances of Covid-19, the question of the influence of time (Elliott and Shin 2002) and how other factors outside of study are assessed, such as sense

of belonging, and social connectedness (Gibson 2010) on outcomes of research results is expected. In the future, it would be worthwhile to reflect on the appropriateness of the current student satisfaction survey practices and to establish a system that comprehensively and longitudinally measures how the university and faculty respond to student needs and expectations. Examining the predictors of student satisfaction over time would also provide insights into how changes in the implementation of the programme affect student satisfaction and the monitoring of changes in the predictors of student satisfaction (Burgess et al. 2018).

Student satisfaction is a crucial concern in higher education. By researching student satisfaction, higher education can hold up a mirror to itself and identify student needs and expectations, gain insights into its own work, and challenge itself to improve its programmes accordingly. An important message from the findings of student satisfaction research for faculty is that student satisfaction can be influenced by improved programme implementation (Li et al. 2016). The present research findings also point to this conclusion. Teachers can change their pedagogical approach by paying attention to the structure, forms, and methods of work, as well as the use of technology. At the same time, teachers must also pay attention to students' learning characteristics and their individual characteristics and circumstances to respond appropriately to the resulting learning needs.

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**IDENTIFIKACIJA NAPOVEDNIKOV ZADOVOLJSTVA S ŠTUDIJEM NA DALJAVO MED PANDEMIJO COVIDA-19**

**Povzetek:** Napovedniki zadovoljstva s študijem so fakultetam lahko vodniki pri izboljševanju študija. Identifikacija napovednikov zadovoljstva s študijem osvetli izvedbo programa in potrebe študenta glede na njegove individualne značilnosti. Prav slednje so med epidemijo covida-19, bolj kot kdajkoli prej, prišle do izraza in sokreirale značilnosti študija in zadovoljstvo s študijem. Zato smo se v raziskavi osredotočili na fenomen zadovoljstva s študijem v teh razmerah. Namen raziskave (N = 1167) je bil ugotoviti, kakšne so povezanosti zadovoljstva študentov s študijem z drugimi študijskimi dejavniki in koliko ga pojasnjujejo posamezni napovedniki. Rezultati so pokazali, da so med zadovoljstvom s študijem in drugimi študijskimi dejavniki statistično značilne povezanosti. Nadalje rezultati regresijske analize povedo, da je ob kontroli spola, soočanja z duševnimi stiskami in pogostosti doživljanja povezanosti z drugimi študenti med študijem na daljavo, zadovoljstvo s študijem najmočneje napovedovala študijska učinkovitost. Ugotovili smo, da so zadovoljstvo s študijem statistično značilno napovedovale tako študijske kot druge, individualne značilnosti in okoliščine, s katerimi so se soočili študentje. Na podlagi ugotovitev lahko sklenemo, da je v študentovi oceni zadovoljstva s študijem, orientiranost na študijske dejavnike z vidika učiteljeve izvedbe potrebno dopolnjevati z izpostavitvijo študentove vloge pri študiju.

**Ključne besede:** zadovoljstvo s študijem na daljavo, epidemija covida-19, študijski dejavniki, izvedba programa, značilnosti študenta

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