# The Impact of Blended Learning on Students' Performance and Satisfaction in South East European University

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## Abstract

Blended learning is a new way of teaching and learning. As the name implies it is a combination of classroom learning with the online learning platform. This way of learning enables students to partially control the process of learning. The study aims to find out the effect of blended learning on students' performance and satisfaction. Students' satisfaction with blended learning does not necessarily lead to students' performance improvement. A structured questionnaire is used to gather data. Three hundred and nineteen (319) collected questionnaires were analysed using multivariate regression from structural equation modelling (SEM). Collected data were analysed using the SPSS statistical software and Smart PLS. The results of the analysis show that blended learning has an impact on both students' performance and students' satisfaction. The course management and interaction have a positive significant effect on students' satisfaction and performance, with the latter having a stronger effect on both satisfaction and performance outcomes from blended learning. Finally, the study shows that there is a correlation in on hand between blended learning and students' improved performance, and on the other hand a positive correlation between satisfaction and performance.

# Introduction

The advent of new technologies has impacted the learning process among students in higher education. The new technologies have been embraced by students and led to the growth and popularity of learning using the internet. Nowadays, many universities use online teaching in higher education (Qiu, 2019). Online learning represents the use of the internet as a means of interaction between students and teachers. Blended learning (BL) and online delivery (OL) are used by many universities in order to embrace the new challenges in higher education. (Zeqiri & Alserhan, 2020). The combination of online content delivery and traditional face to face delivery comprises blended learning (Heirdsfield et al., 2011).

Research suggests that the right combination of online and traditional delivery represent an effective methodology in higher educational institutions. The use of blended learning is thought to facilitate this kind of combination of delivery. In this context, the new communication technologies provide educational institutions with a new learning environment that fuel and improve the learning process (López-Pérez et al., 2011).

Significant studies have been carried out in recent years concerning the use and integration of Information Technologies in education (Tselios et al., 2011). Blended learning has been seen as a promising alternative for distance learning since it uses a mix of face-to-face and online learning (Diep et al., 2017).

Many scholars have tried to investigate the role of blended learning on students' satisfaction (Sadeghi et al., 2014; Sajid et al., 2016; Vernadakis et al., 2012; Wu et al., 2010). In a study, Melton et al. (2009) have also found out that blended learning is preferred over a traditional learning delivery.  In this line, Lim and Morris (2009) have noticed that blended learning increases student satisfaction. Thus, student satisfaction with blended learning helps in evaluating the effectiveness of using this form of the class mixture in higher educations. Understanding what method leads to student satisfaction provides an insight into educational institutions to create a more effective learning environment for students (Wu et al., 2010).

However, even though there has been a significant number of studies that investigated students' perception concerning online learning and face to face learning, a few pieces of research have been carried out about satisfaction and its relation to students' overall performance in courses delivered through blended mode.

Satisfaction with blended learning can lead to performance improvements for students in certain areas. Research by Boyle et al. (2003) in two higher education institutions have revealed marked improvements in students' performance in both institutions, and students had a positive evaluation of the use of blended learning features.  Since student satisfaction is seen as an important factor in measuring the quality of learning delivery, higher educational institutions try to evaluate the factors that contribute to students' satisfaction that eventually may lead to their improvement in performance. Blended learning is considered as an important factor that leads to students' satisfaction.

Therefore, this paper aims to investigate students' perceptions of blended learning. More specifically, the main objective of the study is to find out students' perception at SEE University concerning the impact of blended learning on their satisfaction and whether satisfaction leads to performance improvements in their studies.  The paper starts with an introduction of the subject matter as well as the objectives of the study. Then it focuses on the literature review. The third part explains the methodology used in this study. The findings are presented in the result section. In the end conclusions and the limitation of the study is presented.

## Literature Review

Students' perception concerning higher education course delivery has changed due to the new trends in instructional delivery modes that are influenced by the information technologies (Wu et al., 2010). Nowadays, students seem to prefer online learning apart from face to face traditional learning (Okaz, 2015). This trend has influenced the higher institutions to try to come with a mixture of course delivery contents.

The traditional way of lecturing was the main way in course delivery in higher institutions for many years. The advancement in information communication technologies has influenced students to prefer other complementary forms of content delivery. Therefore, blended learning is seen as a new way of complementing conventional face to face learning and online learning.

Blended learning is a combination of conventional face to face classes and online learning that uses the internet and physical presence in classrooms (Friesen, 2012); it is a blend of online and offline learning (Boelens et al., 2015); it integrates face to face classroom activities with technology and media (Picciano, 2006); blended learning is "hybrid teaching" (Verkroost et al., 2008). Regarding blended learning definitions, many authors point out that it consists of face-to-face and online learning components (Drysdale et al., 2013; Huang, 2016). Blended learning is a combination of traditional face to face and online learning (Graham, 2013). Blended learning facilitates course management since it combines online and faces to face course components to be accessible for students any time they want to use the resources. It also helps in organizing the process of arranging and grading assignments, since it collects everything in a given platform, and helps in managing the learning process (Rahman et al., 2015). Moreover, Fadde and Vu (2014) state that blended learning encourage students to work independently. Thus, blended learning through special platforms used by higher educational institutions, makes it more convenient for publishing materials and information. Literature also supports the idea that online learning engages and satisfies students (Fisher et al., 2018). Blended learning enhances students' engagements with course materials and activities (Fadde & Vu, 2014). Thus, the following hypotheses are proposed:

*H1: Course management has an impact on students' performance*
*H2: Course management has an impact on students' satisfaction with blended learning*
*H3: The relationship between course management and performance is moderated by the satisfaction*

Many studies emphasize the fact that blended learning increases the level of interaction of teachers with students, which eventually leads to students' satisfaction (Romero-Frías & Arquero, 2013). Studies also point out the role that interaction play in the learning experience, and it has been considered as an important factor for a successful online learning course (Du & Wu, 2014). Blended learning allows for more teacher-student interaction (Graham, 2013). Hence, the following hypotheses are postulated:

*H4: Interaction has an impact on students' performance with blended learning*
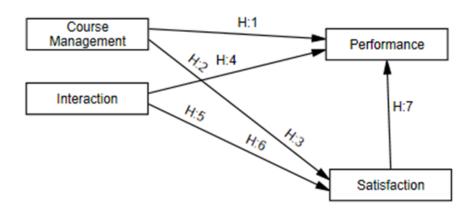*H5: Interaction has an impact on students' satisfaction*
*H6: The relationship between interaction and performance is moderated by the satisfaction*

There are also studies about the relationship between blended learning and students' satisfaction. For example, in a study carried out by Kiviniemi (2014) 83% of students preferred blended learning which lead in performance improvement. Therefore, the following hypothesis is proposed:

*H7: Satisfaction has an impact on students' performance*

Based on the above literature review a conceptual framework is put forward with students' performance and satisfaction as dependent variables, and course management and interaction as independent variables. Therefore, the hypothesized relationship between these variables is depicted in figure 1:

*Figure 1*
The Conceptual Model



*Source:* Author's illustration

## Research Methodology
This study used a quantitative research design to investigate students' perceptions of the use of blended learning in higher education. For carrying this research, a structured questionnaire was distributed to students at South East European University in North Macedonia. 319 samples were collected by probability sampling technique. The questionnaire was distributed to respondents that used blended learning in their bachelor or master degree programs by which participants were subjectively giving opinions about their self-perception about blended learning. The questionnaire provided demographic data of respondents as well as their attitudes concerning blended learning and their satisfaction. A five-point Likert scale was used (where 5 denoting strongly agree and 1 = strongly disagree). Smart PLS 3 and SPSS 20 software were used for analysing the obtained empirical data.

## Results
The first part of the questionnaire represents the demographic characteristics of respondents. Table 1 shows that the majority of respondents belong to the female group with 63.6 % and males with 36.4%. Concerning computer literacy, 24.8% of respondents are with excellent skills, 38.2% are with very good, 34.5% are good, 1.9% are poor, and 0.6% with very poor skills. Concerning respondents' experience with blended learning, 55% have less than 1 year of experience, 26.7% have 1 to 2 years of experience, 9.4% have 2 to 3 years of experience, whereas 8.8% belong to

respondents group with more than 3 years of experience. Regarding the respondents' GPA, 7.2% are with 6-7 GPA, 23% with 7-8 GPA, 30.5% belong to 8-9 GPA group, and 29.9% belong to 9-10 GPA group, whereas 9.4% of respondent didn't report their GPA. The majority of respondents around 54.4% are in their first academic year, 33.6% in the second year, 5.3% in their third year, and 3.1% in their fourth year of studies, whereas 3.5% of respondents are master students.

*Table 1*
Respondents Demographic Characteristics

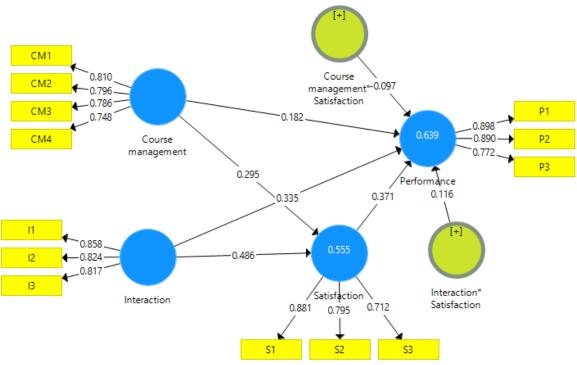| Gender | | Frequency | % |
|---|---|---|---|
| | Male | 116 | 36.4 |
| | Female | 203 | 63.6 |
| **Computer literacy** | | Frequency | % |
| | Very poor | 2 | 0.6 |
| | Poor | 6 | 1.9 |
| | Good | 110 | 34.5 |
| | Very good | 122 | 38.2 |
| | Excellent | 79 | 24.8 |
| **Experience with Blended learning** | | Frequency | % |
| | Less than 1 year | 176 | 55 |
| | 1-2 | 85 | 26.7 |
| | 2-3 | 30 | 9.4 |
| | More than 3 | 28 | 8.8 |
| **Cumulative GPA** | | Frequency | % |
| | 6-7 | 23 | 7.2 |
| | 7-8 | 73 | 23 |
| | 8-9 | 97 | 30.5 |
| | 9-10 | 95 | 29.9 |
| | NA | 31 | 9.4 |
| | | | |
| **Academic year** | | Frequency | % |
| | First-year | 174 | 54.4 |
| | Second-year | 107 | 33.6 |
| | Third-year | 17 | 5.3 |
| | Fourth-year | 10 | 3.1 |
| | Master | 11 | 3.5 |

Source: Author's calculations based on survey results

## *Structural Equation Modelling*

This study used Smart PLS Structural Equation Modelling for evaluating the proposed model. The results of the SEM path analysis are shown in figure 2. The path measurement shows that course management $R^2$ is 0.182, and teacher-student interaction $R^2$ is 0.335. The course management contributes to 0.295 to satisfaction, whereas, interaction contributes more with 0.486 to student satisfaction.

This explains that course management and interaction explain with 18.2%, respectively 33.5%, the endogenous latent variables.

*Figure 2*
Structural Equation Modelling



Source: Author's illustration

Table 2 shows factor loading for all items in the construct. As can be seen, all loadings are greater than .05., which shows the recommended threshold of average variance extracted (AVE). All item loadings are 0.712 to 0.898; that is over the recommended threshold value of 0.50. The collinearity test is used to test whether the method is biased. According to Kock (2015), the occurrence of a VIF greater than 3.3 is an indication of collinearity, and therefore the model construct might be biased. Therefore, if all VIFs from the collinearity test are equal to or lower than 3.3, the model can be considered free of common method bias.

*Table 2*
Construct items loadings

| Construct items | Loadings | Mean | SDEV | T Statistics | VIF |
|---|---|---|---|---|---|
| **Course Management (CM)** | | | | | |
| **CM1. The online and face to face course components enhance and complement each other.** | 0.810 | 3.82 | 0.82 | 38.333 | 1.625 |
| **CM2.Online learning platforms are favourable for managing and organizing learning** | 0.796 | 3.83 | 0.89 | 31.856 | 1.638 |
| **CM3. Blended learning makes it more convenient for arranging and grading assignments** | 0.786 | 3.86 | 0.95 | 27.74 | 1.577 |
| **CM4. Blended learning makes it more convenient for publishing materials and information** | 0.748 | 4.00 | 0.81 | 18.913 | 1.527 |

| | | | | | |
|---|---|---|---|---|---|
| **Interaction (I)** | | | | | |
| **I1. Blended learning creates a user-friendly learning environment with teachers** | 0.858 | 3.82 | 0.86 | 36.903 | 1.749 |
| **I2. Blended learning improves the communication and interaction between students and teachers** | 0.824 | 3.88 | 0.92 | 40.656 | 1.562 |
| **I3. The use of blended learning technology encourages me to learn independently** | 0.817 | 3.75 | 0.90 | 31.272 | 1.577 |
| **Performance (P)** | | | | | |
| **P1. Blended learning improves my overall performance in courses.** | 0.898 | 3.74 | 0.88 | 78.257 | 2.509 |
| **P2. I think blended learning is the best way of improving students' performance** | 0.890 | 3.760 | 0.93 | 62.617 | 2.439 |
| **P3. I have better grades in classes that combine online and face to face instructions** | 0.772 | 3.68 | 0.96 | 24.969 | 1.424 |
| **Satisfaction (S)** | | | | | |
| **S1. I feel more satisfied when I study using blended learning** | 0.881 | 3.89 | 0.86 | 57.188 | 1.779 |
| **S2. I am more satisfied with this learning experience compared to traditional course settings** | 0.795 | 3.73 | 0.96 | 31.848 | 1.428 |
| **S.3 I prefer a combined class with face to face and online instructions** | 0.712 | 3.89 | 0.91 | 17.069 | 1.369 |

Source: Author's calculation using SPSS

## Convergent Validity Testing

A good model fit also looks at the convergent validity of items. This test shows how close the items are with each other. Table 3 reveals that values of composite reliability range from 0.866 to 0.938. This indicates that all values exceeded the recommended value of 0.70. The Cronbach's alpha values range from 0.715 to 0.931 that exceed the proposed value of 0.70. So an alpha value of 0.70 -0.8 or greater denotes a very good level of reliability (Ursachi et al., 2015). The average variance extracted (AVE) values differ from 0.561 to 0.732, which all are over the recommended value of 0.50, recommended by Fornell and Larcker (1981).

## Discriminant Validity Testing

Discriminant validity is a test that assesses the extent to which the constructs in the model are close to each other or how they differ from one another (Bagozzi et al., 1991). As it can be seen in table 4, the AVE values exceed the proposed 0.50 loading, indicating that discriminant validity is supported for the construct (Fornell & Larcker, 1981). Besides, the correlation items in any construct should not exceed the square root of the AVE in a single construct (Hair et al., 2010). As can be seen in table 4, the discriminant validity testing is supported based on the results.

*Table 3*
Convergent Validity

|  | Cronbach's Alpha | rho_A | Composite Reliability | AVE |
|---|---|---|---|---|
| **Course management** | 0.794 | 0.800 | 0.866 | 0.617 |
| **Course management* Satisfaction** | 0.931 | 1 | 0.938 | 0.561 |
| **Interaction** | 0.779 | 0.781 | 0.872 | 0.694 |
| **Interaction* Satisfaction** | 0.914 | 1 | 0.928 | 0.589 |
| **Performance** | 0.814 | 0.821 | 0.891 | 0.732 |
| **Satisfaction** | 0.715 | 0.737 | 0.840 | 0.638 |

Source: Author's calculation based on results

*Table 4*
Discriminant validity

|  | CM | CM*S | I | I*S | P | S |
|---|---|---|---|---|---|---|
| **Course management** | 0.786 | | | | | |
| **Course management* Satisfaction** | -0.305 | 0.749 | | | | |
| **Interaction** | 0.807 | -0.290 | 0.833 | | | |
| **Interaction* Satisfaction** | -0.302 | 0.901 | -0.344 | 0.768 | | |
| **Performance** | 0.700 | -0.275 | 0.735 | -0.266 | 0.855 | |
| **Satisfaction** | 0.687 | -0.360 | 0.724 | -0.361 | 0.730 | 0.799 |

Source: Author's calculation using Smart PLS

## *Testing Hypotheses and the moderating effect*

A multiple regression analysis with SEM model was used to investigate the relationship between course management and interaction with students' performance and satisfaction. Table 5 shows that there is a significant relationship between all variables. The results show that course management has a direct effect on students' performance and is significantly related to student satisfaction.

The results also showed that course management was positively and significantly related to students' performance with path coefficient = 0.182, t = 2.977, p < 0.003, indicating that H:1 is supported. Based on the results, H:2 shows that there is a positive relation between course management and student's satisfaction with path coefficient = 0.295, t = 4.259, p < 0.000, denoting that H:2 is also supported.

Besides, results from table 5 revealed that there is a significant positive relation between interaction and satisfaction with path coefficient = 0.335, t = 4.812, p < 0.000, indicating that H:4 is supported. Moreover, results also pointed out that the interaction of students with lecturers is highly significantly related to satisfaction with a path coefficient = 0.486, t = 7.164, p < 0.000. Thus, H:5 is supported. Finally, H:7 is also supported, because the results revealed a strong relationship between students' satisfaction and their performance, path coefficient = 0.371, t = 5.731, p < 0.000.

Finally, the SEM model investigated the moderating effect of satisfaction of course management and interaction on improving students' performance. The moderating variable is used to show whether it strengthens or weakens the direct effect that exogenous variables have on the endogenous variable. Based on the results presented in table 5, we can conclude that satisfaction does not have a significant effect on course management and interaction to students' performance. Therefore,

based on results, we can conclude that H:3 and H:6 are rejected, with low T-values of 1.278, respectively 1.556. Hence, If the critical ratios for the difference are less than -1.96 to +1.96, then we can assume that there is not any significant difference between groups.

*Table 5*
Hypotheses Testing

|  |  | Path Coefficient. | STDEV | T-Values | P-Values | Results |
|---|---|---|---|---|---|---|
| **H:1** | Course management -> Performance | 0.182 | 0.061 | 2.977 | 0.003 | Supported |
| **H:2** | Course management -> Satisfaction | 0.295 | 0.069 | 4.259 | 0.000 | Supported |
| **H:3** | Course management* Satisfaction -> Performance | -0.097 | 0.076 | 1.278 | 0.201 | Rejected |
| **H:4** | Interaction -> Performance | 0.335 | 0.07 | 4.812 | 0.000 | Supported |
| **H:5** | Interaction -> Satisfaction | 0.486 | 0.068 | 7.164 | 0.000 | Supported |
| **H:6** | Interaction* Satisfaction -> Performance | 0.116 | 0.074 | 1.556 | 0.120 | Rejected |
| **H:7** | Satisfaction -> Performance | 0.371 | 0.065 | 5.731 | 0.000 | Supported |

Author's calculations using Smart PLS

## Conclusion

The main findings of this study are in line with the previous studies arguing that course management and students' teacher interaction lead to students' satisfaction and students' performance improvements. Among the variables investigated and based on the empirical findings, teacher-student interaction seems to be the most important factor of students' satisfaction and students' performance. Therefore, the results show that blended learning improves the interaction of teachers with students and it also leads to the improvement of students' satisfaction and performance with the blended learning process. Furthermore, blended learning helps students and teachers in managing their courses. The study results also show that blended learning makes it easier for publishing resources and organizing independent work by students, as well as managing and organizing courses, which eventually leads to students' satisfaction with blended learning and their outcome improvement.

Besides, the study has investigated whether there is an indirect or moderating effect of satisfaction on performance improvement. The results have demonstrated that satisfaction does not increase the effect of course management and interaction on students' performance. Finally, the study results support only five study hypotheses and reject two of them.

This study is limited because the analyses of blended learning perception are only from the students' perspective. A more thorough and two-sided approach of both teacher and student perspectives would have had better-correlated results. A more enlarged sample would benefit the generalizability of the findings, as well as analyses incorporating both teachers and students' perspectives concerning their perception of blended learning.

It is recommended that more factors are to be used in future studies to investigate and find out the most important ones that contribute to students' satisfaction and

students' outcome improvements. Furthermore, future research can focus on new trends in information technologies and how to assess the adoption process of students and teachers with so many new trends in information communication technologies.

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