Ana Horvat[1], Maja Krsmanović[1,] Marina Dobrota[1], Mladen Čudanov[1]
[1] University of Belgrade, Faculty of Organizational Sciences, Serbia

Students` Trust in Distance Learning: Changes in Satisfaction and Significance

This research addresses the differences in the perception of quality by gender and by attitude toward distance learning opportunities in an e-learning environment. We have conducted a research on a population of 68 students enrolled for the first time on distance learning studies of Belgrade University. Using a paired sample t-test, independent samples t-test, and ANOVA, we have proven that there is no significant difference in students' satisfaction with distance learning during the semester ($t=1.796$, $p=0.078$), in satisfaction by gender ($t=-1.176$, $p=0.244$) and that three groups of students with different attitudes toward learning opportunities have different degree satisfaction with distance learning studies ($F=9.954$, $p<0.001$). Satisfaction is important for developing trust in distance learning, as elaborated in the article. Using a post hoc analysis we have explained the differences and proposed implications for the learning process.

Keywords: distance learning, students' trust, perception of quality, students' satisfaction, significance

1. Introduction

Teaching and learning environment as a social, psychological and pedagogical context in which learning occurs and which affect student achievement and attitudes (Fraser 1998) has been shown to be important in the development of the generic competencies that are so vital to today's graduates (Kember & Leung 2005; Kember & Leung 2006). The educational system is in constant development and improvement (Shahbazova, 2012). In terms of economic consideration, investment in e-learning is worthwhile in that most learners appear to be able to benefit immediately (Huang et al., 2012). In the countries that started implementing and developing distance learning courses it is very important not to neglect the learning environment, especially because distance learning is being implemented in every aspect of social life (Klein et al., 2012; Busstra et al., 2012; Nahai, 2012). The quality of such environment can be investigated through students' trust in distance learning because, in terms of achieving organisational transformation and developing effective e-learning environments, trust is identified as a primary enabler of a complex mix of processes and outputs that appear at this nexus (Mason & Lefrere, 2003). Trust enables cooperative behaviour, promotes collaborative-based forms of organization, reduces interpersonal conflict, facilitates rapid formulation of ad hoc work groups, and encourages effective reactions to crises (Contractor & Lorange, 2002; Rousseau, Sitkin, Burt & Camerer 1998), and thus it is important to develop students' trust in e-learning (Morrison, Cegielski & Rainer, 2012). Trust was found by Larson and LaFasto (1989) to be a cornerstone of a collaborative climate: "Trust is one of those mainstay virtues in the commerce of mankind. It is the bond that allows any kind of significant relationship to exist between people. Once broken, it is not easily, if ever, recovered".

Trust is defined as a psychological state comprising the intention to accept vulnerability based upon positive expectation of the intentions or behaviours of another (Sitkin & Roth 1993). Similarly, Schoorman, Mayer and Davis (2007) defined trust as the willingness of the trustor to be vulnerable to the actions of the trustee based on the expectation that the trustee will perform a certain action important to the trustor, irrespective of the ability to control the trustee.

Sargeant and Lee (2002) make an important distinction between trust and confidence: trust is distinguished from confidence in that the latter relies on knowledge or predictability of the other's actions, while the former is necessary to keep the relationship alive in the absence of such knowledge. In line with this, any change in student's confidence should be noticed timely in order to achieve student's trust. However, it is unknown what period of time is enough for change of student's confidence in distance learning.

Additionally, research suggests that distance learning environments may be more suitable for some students than others (Arbaugh & Stelzer, 2003; Horvat et al., 2013). For instance, González-Gómez et al. (2012) concluded that gender differences can also affect student's attitude toward the distance learning environment. Yau and Cheng (2012) found that age can make difference in confidence in using technology for learning while some authors (e.g. Dominicia & Palumbob, 2012; Zhu, 2012) took into consideration many other factors for student's attitude toward such an environment. Studies also suggest that some personality dimensions such as affiliations or hostility are associated with trust (Brown, Scott Poole & Rodgers 2004). Understanding the characteristics of online students and integrating this understanding into designing student-centred collaborative learning environments foster successful learning experiences in an online education. Interestingly, DeTure (2004) discovered correlations between cognitive style and students' efficacy in working with an online technology. However, his study indicates that both cognitive style and students' online technology efficacy did not relate to their academic performance as measured by course grades.

Purpose

The purpose of this study is to extend the level of knowledge on learning environment and students` trust in online learning programs; in particular, this study focuses on the differences in students` satisfaction with distance learning studies at the beginning and at the end of the first semester. The objective is to observe whether there are changes in the level of students` trust at the beginning of semester and after the period of three months. We determine this by observing the sample as a whole and monitor parts of the sample by dividing the sample into groups. One group consists of male and female students, and the other group of students who consider that they do have, do not have or partially have the same opportunity to acquire knowledge as the classic students.

Hypotheses

Based on the results of past research and the discussions in the introduction, the following hypotheses were formulated.
Hypothesis 1: There is no difference in students' satisfaction with distance learning studies at the beginning and at the end of the first semester (after three months).
Hypothesis 2: There is no statistically significant difference in satisfaction with distance learning studies between male and female students.
Hypothesis 3: There is a difference in satisfaction between distance learning students who consider that they do have, do not have or partially have the same opportunity to acquire knowledge as the classic students. In this regard, part of the questionnaire contained the question about the opinion of distance learning students if they do have, do not have or partially have the same opportunity to acquire knowledge as the classic students. Thus we have divided students into three different groups.

2. Methods

2.1 Participants

The questionnaires were sent to 68 undergraduate students of the distance learning online program at the Faculty of Organizational Sciences, University of Belgrade. This program covers eight semesters, from which at the time of this research, students were attending the first. A total of 61 questionnaires were available for analysis, resulting in a response rate of 89.7%. Respondents on average were young, age between 19 and 21 (only one respondent was 27). The percentage of males was 37.7, and of females it was 62.3.

2.2 Instruments

The Swedish National Agency for Higher Education (NAHE) engaged in a study of quality in e-learning, where it has been emphasized the increase in knowledge regarding the ways in which quality should be evaluated in the context of a quality assurance system. Thus, e-learning should be included as a natural part of any evaluation. Through an analysis of the development, research, and networking on an international basis, an evaluation model was developed, namely the e-learning quality model (Ossiannilsson & Landgren, 2012). This model is what our research has been based on.

The questionnaire used for this study consisted of two parts. The first part of the questionnaire consisted of demographic questions about the sample, while the other part contained questions on quality characteristics of distance learning studies. These are the following characteristics: waiting time for response, quality of feedback, availability of materials, materials completeness, clarity of materials, easiness in using website, cooperation diversity, communication with other distance learning students, material presentation rate and material quantity. For this study we defined two scales. The first scale was used to determine the significance of quality characteristics of distance learning studies for students. We have used a 5-point Likert scale (from "unimportant to extremely important") in the ten questions that comprise the first construct. A Cronbach's alpha coefficient for internal consistency of the scale was 0.763, which is acceptable as defined by George and Mallery (2003). The second scale was used to determine the students' satisfaction with the quality characteristics of distance learning studies. The students' satisfaction was measured at the beginning of the first semester and three months later, that is, at the end of the first semester. Again, we had ten items in a construct, both for beginning and for the end of the semester. Internal consistency was good, and Cronbach's alpha coefficient was 0.860 for the beginning of the semester (SatisfactionT1), and 0.825 for the end of the semester (SatisfactionT2). In this situation, we also used a 5-point Likert scale (from "very dissatisfied" to "very satisfied").

The response formats were explained and participants were asked to work through the questions in their own time. All the respondents were anonymous.

3. Findings

The quality perception of distance learning was measured using three variables, obtained in this research. They were created using a 5-point Likert scale (see Method section). The variables are:

- *Significance* - measures significance of quality characteristics of distance learning. It determines the significance of quality characteristics of distance learning studies for students.

- *SatisfactionT1* - measures satisfaction with quality characteristics at the beginning of the first semester. It determines students' satisfaction with the quality characteristics of distance learning studies.

- *SatisfactionT2* - measures satisfaction with quality characteristics at the end of the semester. It determines students' satisfaction with the quality characteristics of distance learning studies three months later, at the end of the first semester.

Proving the hypothesis was conducted using traditional statistical methods, implemented in IBM SPSS Statistics 19. In order to establish whether the variables are normally distributed, Kolmogorov-Smirnov test of normality was used. The results of the test, as well as the variables descriptive, are shown in Table 1. As can be noticed, significance in all three cases is higher than 0.05, which proves null-hypothesis that all three variables are normally distributed, or in other words, there is no significant discrepancy from the normal distribution. In addition, Normal Q-Q Plot and Detrended Normal Q-Q Plot show that there are no significant biases (discrepancies) from normal distribution.

Table 1: The Variables Descriptive and the Results of Kolmogorov-Smirnov Test of Normality

	Mean	**Standard deviation**	**Kolmogorov-Smirnov Z**	**Asymp. Sig.**
Significance	42.426	4.193	0.619	0.839
SatisfactionT1	34.868	5.857	0.917	0.370
SatisfactionT2	34.229	5.358	0.847	0.470

The results of the confirmatory data analysis are given in Table 2.

Table 2: Results of the Confirmatory Data Analysis

		Test	**Test value**
Hypothesis 1: There is no difference in students' satisfaction with distance learning studies at the beginning and the end of the first semester (after three months).	Paired Samples T-test		1.796
Hypothesis 2: There is no statistically significant difference in satisfaction with distance learning studies between male and female students.	SatisfactionT1	Independent Samples T-test	-1.176
	SatisfactionT2		-1.303
Hypothesis 3: There is a difference in satisfaction between distance learning students who consider that they do have, do not have or partially have the same opportunity to acquire knowledge as the classic students.	SatisfactionT1	ANOVA	9.954**
	SatisfactionT2		9.280**

* $p < 0.05$, ** $p < 0.01$

Hypothesis 1: There is no difference in students' satisfaction with distance learning studies at the beginning and the end of the first semester (after three months).

Since the variables *SatisfactionT1* and *SatisfactionT2* are normally distributed, hypothesis testing is conducted using paired sample t-test. The results show that there is no statistical significance in difference between these two time moments. The value of the t-test is 1.796, $p=0.078$. Note that the population size in this research is 68, and it is extremely difficult for small size samples to confirm certain claims.

Hypothesis 2: There is no statistically significant difference in satisfaction with distance learning studies between male and female students.

For confirmation of this hypothesis, independent sample t-test was used. No statistical significance is found in this test either. The value of Leven's test for Equality of Variances is 0.267, $p=0.607$ for the variable *SatisfactionT1*; whereas for *SatisfactionT2* the value is 0.003, $p=0.956$, which proves null hypothesis on equality of variances in both cases. For the variable *SatisfactionT1* the value of the t-test is -1.176, $p=0.244$, which shows a statistical insignificance in the difference between these groups. After three months (*SatisfactionT2*) the value of the t-test is -1.303, $p=0.198$, which proves no change.

Hypothesis 3: There is a difference in satisfaction between distance learning students who consider that they do have, do not have or partially have the same opportunity to acquire knowledge as the classic students.

In this confirmatory analysis, the ANOVA test was used. Students were divided into three groups, according to their reply to the question about the opportunity to acquire knowledge (yes/partial/no). Leven's statistics value is 2.241, $p=0.116$ for the variable *SatisfactionT1*; and 1.171, $p=0.317$ for *SatisfactionT2*, which proves, here as well, the hypothesis on the equality of variances in both cases and confirms the tests' assumptions.

For the variable *SatisfactionT1* the value of the ANOVA F statistics is 9.954, $p<0.001$, proving that there is a statistically significant difference between these groups. A further analysis was made, and Post Hoc tests showed that there was a statistically significant difference between the group who claimed that they gained the same knowledge as classic students and the group who claimed this was not the case (difference is 11.931, $p=0.007$). There also was a difference between students who considered that they partially acquired the same amount of knowledge and those who's answer was "no" (difference is 4.897, $p=0.002$). In fact, if another study were carried out, where students were divided in two groups (yes and partial/no), independent sample t-test would show that there was a statistically significant difference between them ($t=-3.966$, $p<0.001$). This proves that students who consider to be degraded in comparison to classic students are far less satisfied with distance learning than the other group. Figure 1 shows the mean values of three groups.
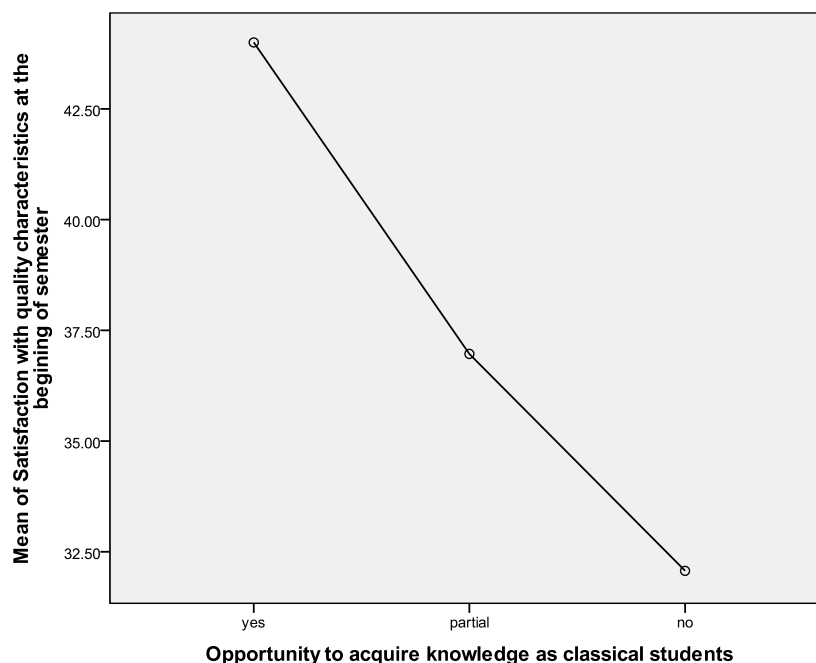
Figure 1: Means plot for *SatisfactionT1* variable

For the variable *SatisfactionT2* the value of the ANOVA F statistics is 9.280, p<0.001, which proves that the situation has remained the same. In fact, dividing them into two groups (yes and partial/no), independent sample t-test shows that the difference increased (t=-4.060, p<0.001).

Conclusion (and Discussion)

From the findings of this research we can see that there is no statistically significant difference in students' satisfaction with distance learning studies at the beginning comparing to that at the end of the semester, although it has been found that satisfaction slightly decreases as time passes (at the beginning of the semester mean satisfaction was 34.868, and at the end 34.229). This result is obtained on the complete sample of students in two different time moments. Implications of these findings may be limited to Moodle LMS system that was used to implement distance learning in our case, and further studies could help a lot to clearly make out whether other implementation tools yield different results. However, it complies with early theoretical findings about distance learning quality, stating that the use of technical equipment ensure a product of constant quality in theoretically unlimited volumes (Sewart, 1993). In practice, it directs us to focus our activities toward a design of the system that would enable constant quality of distance learning, rather than incremental and provisory advances during the semester (Sharma, 2012).

Regarding gender differences, our study has showed no significant difference in the satisfaction as regards the e-learning system either at the beginning or at the end of semester. Such findings are in line with Verdú et al. (2012), and Barrett and Lally (1999) who found that cognitive and metacognitive (learning) content of on-line seminar contributions by male and female students to be similar, although their social and interactive behaviour was significantly different. Our findings also comply in the theoretical outline that main gender differences emerge when distant learning is aimed at female adult learners with children or family responsibilities (Sullivan, 2001). Çiftci, Güneş and Üstündağ (2010) showed in their study that the resistance level towards web-based learning did not change either according to gender or according to the age of students. It can be said that due to the social structure in some environments, female students could not express themselves freely in the traditional learning. However they can express themselves freely in web-based distance learning (Isik, Karakis & Güler 2010). Since this is not the case in our study, such results can be expected. Designers and implementers of distance learning system should therefore bear notice of the demographics of their students – in case such as described in this research, where main population is between 19 and 21 years old, gender differences and adaptation of the system to specific gender traits in order to increase satisfaction with quality and consequently trust in the system is not a significant question.

However, if students are divided into two groups, those who believe that they have equal opportunity to acquire knowledge as students of classic studies, and those who do not believe in equal opportunity, a difference can be noted. Observing these two groups, a statistically significant difference in satisfaction can be notified between them. This indicates that there is a critical group of students, whose evaluation of quality characteristics of distance learning is important for improving students' trust. Their evaluation is shown to be much lower than that of the other groups, so further attention should be paid to increasing their satisfaction by improving the distance learning program. The implementation of those findings is probably related to psychology and self-fulfilling prophecy as explained by Merton (1948). If something is perceived as good or bad in an organizational system, it will probably yield results in a manner of that perception. Also, a more elaborated model of acceptance of distance learning, similar to Technology acceptance model (Venkatesh & Bala, 2008) can be developed in the light of this study and other early findings.

Satisfaction is important for developing trust in distance learning. This is the reason why we chose this particular parameter for measuring students' trust in distance learning studies. Satisfaction was measured using quality characteristics of distance learning, at the beginning and at the end of semester. Those characteristics describe the learning environment, and this is considered to be crucial for gaining students' trust. According to Sun and Rueda (2012), online activities and tools such as multimedia and discussion boards may increase emotional engagement in online learning.

Satisfaction and trust in distance learning studies are not prone to change over the length of the semester, nor are they related to gender if population is limited to younger students, not engaged in children/family obligations. The main differences found in our sample were between students who had a different perception of learning opportunities concerning the e-learning system, and it directs us toward adjustments of the system of distant learning in order to satisfy population with low trust in opportunities to acquire knowledge through the distance learning system.

There are three limitations of this study. First, it is the size of the population from which the sample was taken for research. The population consists of 68 students of distance learning studies at the Faculty of Organizational Sciences, University of Belgrade. We propose that research be extended to other faculties at the Belgrade University and other universities in Serbia. Second, the length of the period in which changes in the level of students' trust in distance learning studies was measured. The recommendation is to continue monitoring students' satisfaction using a period longer than three months. Third, it should be taken into consideration that distance learning studies are only at their beginning, and still not developed enough in Serbia. After all, our research shows that 85.2% of students enrolled distance learning studies because of the insufficient scores required to enroll classic studies. In the future they have to develop and prosper.

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// **About the Author**

Ana Horvat
University of Belgrade, Faculty of Organizational Sciences
horvat@fon.bg.ac.rs

Ana Horvat is teaching assistant at the Faculty of Organizational Sciences, University of Belgrade, Serbia, where she got her BSc and MSc degrees. Currently, she is a PhD student. Her major interests are quality management, education management, accreditation and standardization.

Maja Krsmanovic
University of Belgrade, Faculty of Organizational Sciences
krsmanovic.maja@fon.bg.ac.rs

Maja Krsmanovic works as a Teaching Assistant at the Faculty of Organizational Sciences, University of Belgrade, Serbia, where she got her BSc and MSc degrees. Currently, she is a PhD student. Her major interests are quality management, statistical process control and standardization.

Marina Dobrota
University of Belgrade, Faculty of Organizational Sciences
dobrota.marina@fon.bg.ac.rs

Marina Dobrota works as a Teaching Assistant at the Faculty of Organizational Sciences, University of Belgrade, Serbia, where she got her BSc and MSc degrees. Currently, she is a PhD student. Her major interests are applied statistics, computational statistics, econometrics, data mining, data analysis and biostatistics.

Mladen Cudanov
University of Belgrade, Faculty of Organizational Sciences
cudanov.mladen@fon.bg.ac.rs

Mladen Cudanov is an Assistant Professor at the Faculty of Organizational Sciences, University of Belgrade, Serbia, where he got his MSc and PhD degrees. He was also visiting as an Assistant Professor at joint programs of iVWA(Germany)/ZHCPT (PR China) and iVWA (Germany)/JCIT (PR China). His main research interests are information and communication technologies and organizational design, restructuring of business systems and organizational change. He has published more than 80 papers in research journals and at conferences, and works as an editor and reviewer in several journals, some indexed at the Thomson Reuters JCR list.