Satisfaction, utilitarian performance and learning expectations in compulsory distance education: A test of mediation effect

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People using the distance education system are students as well as consumers who use the services. In this sense, determining satisfaction with the use of this service is vital to the success of the system. The aim of this study is to determine the relationships between perceived utilitarian performance, expectation confirmation and learning satisfaction structures in universities that have been switched from formal education to distance education at a time due to the COVID-19 pandemic. Through online forms, 416 students who have entered the distance education system were reached. The data obtained were analyzed by following the basic principles of SEM and mediation effect steps put forward by Baron and Kenny. As a result of the analyses, it was determined that the level of expectation of distance education had a partial mediation effect on the relationship between perceived utilitarian performance and learning satisfaction. Results are important because they are a pioneer in the field. In addition, the results of the research were put forward by discussing with the developing literature and in this direction provided suggestions for the field professionals. As of March, 2020, the department of physical education and sports, which continues its education in the normal semester and does not have a distance education program, had to switch to distance education due to the COVID-19 pandemic and closed the spring semester in this way. In this context, a total of 416 students studying in various departments of PES and attending distance education courses were reached online. The research form was created through Google forms and delivered to students who took courses via e-mail.

Key words: Education quality, perceived benefit, distance education experience, perceived satisfaction.

INTRODUCTION

Although state institutions tend to ignore their goals, organizations such as universities should produce better effective solutions to this new and competitive context (Lin, 1997). To this end, permanent relationships with students may provide important advantages to higher education institutions. Especially the determination of the
satisfaction levels of students regarding services offered is critical in this way. Established long-term relationships may foster positive WOM behavior towards potential, current, and future students. Satisfaction outputs in higher education contain differences with the results of satisfaction perceived linearly. Public education service includes non-profit specific services. Different studies have been carried out on the basis of public higher education (Webb and Jagun, 1997; Eskildsen et al., 1999). Anderson and Sullivan (1993) stated that the effect of satisfaction in education services is more than expected. Conversely, the dissatisfaction with higher education means unsuccessful educational life for students (Astin, 1993; Wiese, 1994), but it will have significant negative consequences for higher education institutions (Ugolini, 1999).

Curran (2008) defined online distance education as a process in which students and teachers interact with each other regarding course contents through online technologies. In this context, Simonson et al. (2009) stated that if 80% or more of the content is delivered online, the course can be considered an online course. Distance online learning activities are constantly increasing in line with technological developments (Kim et al., 2011). Distance education system users are students as well as consumers who use the services. In general, Oliver (1997) defined satisfaction as an assessment of the degree of consumer satisfaction arising from need. Levels of inadequate or excessive satisfaction of needs have different effects on achieving satisfaction. In this respect, Oliver and De Sarbo (1988) found that positive satisfaction arising from expectation confirmation positively is the most important factor in ensuring satisfaction.

Discussions in the online distance education literature have reported different results in similar situations (Tenenbaum et al., 2001). While various studies conducted in the literature on the subject point to the negative effects of students' performance levels, some studies stated that there is no significant difference (Hislop, 2000). Quality in education is important in the presentation of all courses and programs regardless of physical or distance learning. The most important element in the quality framework for online education is perceived satisfaction. It has been determined in many studies (Kim and Hwang, 2012; Wang, 2017), including in different disciplines, that utilitarian performance is an important indicator of quality. Limited visual and communicative signals in online classrooms can cause perceived poor performance Muirhead (2000). In particular, the lack of face-to-face social interaction has been reported as a major disadvantage of online distance courses. In this respect, Rovai and Wighting (2005) stated that isolation, disconnection and loneliness prevented students from participating in the class activities. This will cause the students' perceived academic interests and motivations to decrease their perceived performance (Russo and Benson, 2005). This indicates that more research needs to be done to make effective conclusions about the performance of the effectiveness of online learning Kim et al. (2011).

There are various opinions related to the motivation of the emergence of online distance education. While Daniel (1999) stated dealing with increasing student numbers and reducing costs, Bischoff et al. (1996) reported that increasing learning outcomes is the main motivation. Apart from all these, it is very important to determine whether online teaching platforms are successful in learning. In this context, Carswell et al. (2000) found that cultural experience in distance education provides more difficult obstacles than technical experience. Althaus (1997) found that students with a higher level of computer experience were more likely to use online discussion groups and perceive them as useful. Readiness and motivation of volunteer participation is the key factor for success in online distance learning.

In light of all this information, this research has been designed to determine the relationships between the utilitarian performance, expectation confirmation and satisfaction levels perceived by the students participating in distance online education and to determine whether the level of expectation confirmation between the perceived utilitarian performance and their satisfaction levels is a mediation effect or not.

Theoretical background for research hypotheses

Hackman and Walker (1990) stated that technology can affect and change learning outcomes. In this context, Williams (1978) stated that face-to-face meetings could be replaced by video conferences in the near future. Early research on audio and video teleconferencing technologies on user expectations has found that they do not show user satisfaction compared to physical communication (Fowler and Wackerbarth, 1980; Williams, 1978). All research conducted to understand the product/service evaluation process in the formation of the satisfaction response is very important in this sense.

Consumer satisfaction is the response resulting from an assessment of how well a product or service consumption meets a need, desire, or goal (Oliver, 1997). Allen et al. (2002) have a linear relationship with quality perceived from the educational process and learning satisfaction. Astin (1993) defines student satisfaction as the perceived value of the student's educational experiences in an educational institution. Muienburg and Berge (2005) found significant differences in the way students perceive their online experiences during learning. On-going discussions in the literature on the subject are that students' perceptions of learning expectations may affect their satisfaction levels (Carr, 2000). Kim et al. (2011) reported that online learning experience has a close relationship with learning
satisfaction. Brown (2001) stated that one of the main reasons for this situation is the lack of courage caused by the lack of experience in participating in online distance learning activities.

The expectation disconfirmation theory (EDT) states the importance of explaining consumers' satisfaction with product or service and the nature of its impact on satisfaction. In general terms, failure of expectation confirmation can be expressed as a discrepancy between expectations and perceived performance of products/services. Yi (1990) stated that how positive the performance expectations are met based on the EDT theory will have significant effects on the level of satisfaction. The performance, which is perceived as the opposite of this situation, will stay away from expectations and will create a negative dissatisfaction.

Researches in the literature have examined the product/services with their utilitarian and hedonic dimensions in general (Batra and Ahtola, 1991; Van der Heijden and Sorensen, 2003). Utilitarian consumption performance, which was examined within the scope of the research, is expressed as externally motivated consumption. In this sense, consumption is a tool in reaching results and targets in general. Information technologies developing in parallel with technologies are important in utilitarian consumption. The distance education systems examined within the scope of the research are the tools to be used in reaching the learning objectives. Hassenzahl and Tractinsky (2006) stated utilitarian experience is goal-oriented and emphasizes the functional performance of technology to fulfil the goal/task. This is also in line with the findings of technology acceptance/ adoption research. Utilitarian performance can be considered as a strong predictor of technology use intention (Johanna and van der Heijden 2000), and as an important predictor of satisfaction (Venkatesh, 2003).

METHODS

Research questions and hypotheses

Within the scope of all this theoretical information, research hypotheses for these research purposes were created as follows.

H1: Utilitarian performance perceived from online distance learning activities has a positive effect on students' satisfaction.
H2: Utilitarian performance perceived from online distance learning activities has a positive effect on the distance education expectation confirmation of students.
H3: Expectation confirmation of online distance education activities has a positive effect on students' educational satisfaction.
H4: Expectation confirmation of students from online distance learning activities has a partial mediation effect on the relationship between perceived utilitarian performance and satisfaction.

Data collection and sampling

As of March 2020, the department of physical education and sports of Siirt University (PES), which continues its education in the normal semester and does not have a distance education program, had to switch to distance education due to the COVID-19 pandemic and closed the spring semester in this way. In this context, a total of 416 students studying in various departments of Siirt University PES and attending distance education courses were reached online. The research form was created through Google forms and delivered to students who took courses via e-mail. Detailed information about the research was given in the form by adding that voluntariness was essential in participating in the research. In order to prevent one person from responding more than once, IP restrictions have been introduced on online forms. It was determined by the researchers that the research participants were similar to the faculty-student profile (department, gender, age, etc.) (Table 1). This provides clues that the research sample is distributed according to the general sampling.

Measurement tools

In order to determine the utilitarian performance perceived by the participants, the utilitarian structure of the Hedonic/Utilitarian (HED/UT) scale developed by Van der Heijden and Sorensen (2003) was used. The statements of the measurement tool developed by Oliver (1980) to determine whether participants' distance education expectations are met, and used by Deng et al. (2010) was revised for the purposes of the research. Finally, to determine the satisfaction levels of students in distance education, the statements of the measurement tools used for similar purposes in the literature (Bolliger and Wasiilik, 2009; Deng et al., 2010) were used. All structures created in this context are evaluated in a five-point Likert expression range (5-Strongly Agree; 1-Disagree). In addition, the questionnaire included questions to determine the demographic characteristics of the participants (age, number of weekly workouts, etc.).

Data analysis

Firstly, kurtosis and skewness values were determined through the SPSS program to fulfil the normality assumptions of all structures used in the research. There are many opinions in the literature, which state that it would be appropriate to use SEM methodological principles in the analyses to be made for multivariate structures (Byrne, 1998; Hair et al., 2012). In this case, researchers decided to use the basic methodological principles of SEM in the research, which was structured to determine the relationships between multivariate structures. First of all, CFA was conducted for the structures to be used in the research. After the verification of the relevant structures, a structural model was established in line with the research hypotheses. To demonstrate the mediation effect in the structural model, the steps pointed out by Baron and Kenny (1986) were monitored through the AMOS program.

RESULTS

Confirmatory factor analysis

Structural equations were created by using the AMOS program to analyse the data collected within the scope of the research. In this context, confirmatory factor analysis (CFA) was applied to determine the validity and reliability levels of the scale items by loading them correctly in their respective structures (Anderson and Gerbing, 1988). Within the scope of the research, AVE values and factor
Table 1. Findings regarding the demographic characteristics of the participants.

| Gender   | N   | %  | Monitoring device | N   | %  |
|----------|-----|----|-------------------|-----|----|
| Male     | 272 | 65.3| Mobile phone      | 302 | 72.6|
| Female   | 144 | 34.7| Computer          | 114 | 27.4|

| Age      | N   | %  | Department       | N   | %  |
|----------|-----|----|------------------|-----|----|
| 17-22    | 221 | 53.1| PES              | 138 | 33.2|
| 23-24    | 133 | 32  | Sports Management| 176 | 42.3|
| 25 and over| 62  | 14.9| Coaching         | 102 | 24.5|

Table 2. Validity and reliability analysis of research structures.

| Expectation confirmation of the distance education (AVE: ,77; α: ,92; CR: 93) | Factor load |
|--------------------------------------------------------------------------|-------------|
| My experience of using the distance education system meets my expectations | 0.814       |
| The service level of the distance education system meets my expectations  | 0.862       |
| The benefit provided by the distance education system meets my expectation | 0.919       |
| The overall performance provided by the distance education system is above my expectations | 0.923       |

Perceived utilitarian performance (AVE: ,70; α: ,93; CR: 93)

| The distance education system works                                   | 0.809       |
| The distance education system is practical                           | 0.731       |
| The distance education system is required                            | 0.800       |
| The distance education system is functional                          | 0.849       |
| The distance education system is useful                              | 0.914       |
| The distance education system is useful                              | 0.913       |

Perceived quality of education (AVE: ,81; α: ,92; CR: 93)

| I learned useful information from the distance education system     | 0.897       |
| Lessons were effective in the distance education system             | 0.898       |
| The courses I took in the distance education system broadened my knowledge | 0.909       |

Measurement model goodness of fit values ($X^2 = 256.460$ $p = 0.000$, $X^2/SD = 3.612$, GFI = 0.919, AGFI = 0.879, CFI = 0.971, TLI = 0.963, IFI = 0.971, RMSEA = 0.079).

The factor loads of all statements were calculated to reveal discriminant and convergent validity (Fornell and Larcker, 1981; Nunnally and Bernstein, 1994). As a result of the analyses, discriminant and convergent validities of the research structures were revealed (Table 2). To determine the reliability levels of the research structures, Cronbach’s alpha and composite reliability (CR) values were calculated and all structures were found to be well above the limits stated in the literature (Table 2). CFA was conducted to analyse the consistency of the measurement model created under the SEM with the data. It has been determined that the measurement model formed in expectation confirmation of distance education, perceived utilitarian performance and perceived quality of education structures sufficiently matches the data ($X^2 = 256.460$, $p = 0.000$, $X^2/SD = 3.612$, GFI = 0.919, AGFI = 0.879, CFI = 0.971, TLI = 0.963, IFI = 0.971 and RMSEA = 0.079).

Pearson correlation analysis was used to determine the correlation coefficients of all structures analysed within the scope of the research. As a result of the analyses, it was revealed that the correlation coefficients of all structures were not statistically significant and not above 0.85 (Table 2). This provides evidence of the external validity of the measurement model (Bagozzi et al., 1991).

After the validity and reliability of the research model, it was determined that the structural model created to determine the causal relationships between the structures used in the research (Perceived utilitarian performance, learning satisfaction and expectation confirmation) was well-matched ($X^2 = 249.507$ $p = 0.000$, $X^2/SD = 3.564$, GFI = 0.880, AGFI = 0.920, CFI = 0.972, TLI = 0.964, IFI = 0.972, RMSEA = 0.079). This provided an empirical opportunity to detect the mediation effect within the scope of the research Figure 1.

After ensuring the validity of the research model, the
research structural model was created to reveal the causal relationships within the hypotheses. It was determined that the goodness of fit values of the model was above the limits expressed in the literature. In this context, in line with the steps proposed by Baron and Kenny (1986), the mediation effect of expectation confirmation between the utilitarian performance and satisfaction structures was examined.

Firstly, a statistically significant relationship was investigated between the dependent variable and the independent variable (Table 4). A statistically significant relationship was found between the dependent variable (learning satisfaction) and the independent variable (Perceived utilitarian performance) of this study ($R^2 = 0.806; p < 0.01$). $H_1$ hypothesis formed in this direction was accepted. The second step was to determine a significant relationship between the independent variable and the intermediary variable. In this study, a statistically significant relationship was found between the independent variable (perceived utilitarian performance) and the intermediate variable (distance education experience) ($R^2 = 0.761; p < 0.01$). This result led to the acceptance of the generated $H_2$ hypothesis. Baron and Kenny (1986) stated that the intermediate variable was determined to have a statistically significant relationship between the dependent variable (when used with the independent variable in the model) as a third step. It was found that there was a significant relationship between the mediating variable (distance education experience) and the dependent variable (perceived quality of education) (when used with the independent variable in the model) ($R^2 = 0.728; p < 0.01$). In this case, the $H_3$ hypothesis was accepted. To talk about the mediation effect, the last step was that the coefficient of the independent variable in the basic model with the dependent variable was greater than the coefficient in the structural model. The results obtained within the scope of the study confirm this step (Table 3). As a result of the analysis of all steps stated by Baron and Kenny (1986), all the assumptions proposed were provided and it was revealed that expectation confirmation partially mediated between the perceived utilitarian performance and learning satisfaction and the $H_4$ hypothesis was accepted (Table 5).

DISCUSSION

The main motivation of this research is to determine the relationships between perceived performance, satisfaction and expectations of university students in the compulsory transition to distance education due to the COVID-19 pandemic. The acceptance of the hypotheses created within the scope of the research contributed to the discussions in the related literature, as well as provided important clues to the field scholar about the actions they need to take on a current topic. This research, especially regarding the current situation, reveals the importance of its results as being a pioneer in the literature.

Oliver and De Sarbo (1988) believe that expectation confirmation is the most important determinant in evaluating whether performance is better than expectation and satisfaction. Researches on this issue have provided empirical evidence that perceived product service performance and performance expectations are an important function (Oliver, 1980; Khalifa and Liu, 2003). The results of this study are parallel to similar studies in the related literature within the scope of distance education activities. Relevant field scholars should conduct researches to determine student expectations and shape their distance education systems accordingly which researchers think will be important in the success of the distance education system.

Researches on online communication conference systems in the literature have shown that the attitudes of the user towards previous usage experience and skills affect user satisfaction positively (Kerr and Hiltz, 1982). Regarding the subject, Hostetter and Busch (2006) stated that students with online distance education experience have higher perceived educational performance. Trainings to be given on the use of online learning environments called virtual classrooms will be effective in meeting the educational expectations of students (Hiltz,
Table 3. Correlation matrix.

| Correlation                  | 1     | 2       | 3       |
|------------------------------|-------|---------|---------|
| Utilitarian performance      | 1.000 |         |         |
| Expectation confirmation     | 0.883**| 10.000  |         |
| Perceived learning satisfaction| 0.847**| 0.782**| 10.000  |
| Average                      | 20.32 | 20.43   | 20.42   |
| Standard deviation           | 10.15 | 10.22   | 10.16   |

*p<0.01.

Table 4. Model values before the mediating variable analysis.

| Analysis | Std. R² | S.E. | T-value | P-value | Result    |
|----------|---------|------|---------|---------|-----------|
| H1 learning satisfaction ≤ utilitarian performance | 0.806 | 0.039 | 200.87  | 0.000   | Significant |

*p<0.01.

Table 5. Model values after the mediating variable analysis.

| Analysis | Std. R² | S.E. | T-value | P-value | Result    |
|----------|---------|------|---------|---------|-----------|
| H2 expectation confirmation ≤ utilitarian performance | 0.761 | 0.034 | 190.57  | 0.000   | Significant |
| H3 learning satisfaction ≤ utilitarian performance | 0.728 | 0.082 | 80.92   | 0.000   | Significant |
| H4 learning satisfaction ≤ utilitarian performance | 0.253 | 0.067 | 30.79   | 0.000   | Significant |

*p<0.01.

Within the scope of the research, the low levels of students’ satisfaction with regard to the relevant structural aspects (SD: 1.16) may be related to the students' lack of experience in these environments. In this direction, it is thought that the comprehensive visual and textual trainings that will be given to students for distance education system will be important in increasing their satisfaction and therefore their experience.

Online distance education platforms point to a serious cultural shift between students and teachers. Leaving the traditional face-to-face training activities and communicating in a largely asynchronous environment can be expressed as a radical change in this sense. This is a sign of a new culture with its own rules and traditions. Adaptation of all stakeholders in the distance education platform to the new culture can be stated as the key factor of success. The low utilitarian performance perceived by the students within the scope of the research can be expressed as a difficulty in adapting to the culture formed within this scope. It may be an important step for the field professionals to make studies adapting students to the new culture that will emerge. In this research, it was determined that a very important part of the students attended distance education courses via mobile phones. In this sense, making the applications developed only for mobile phones can be a very important step towards satisfaction.

There are important differences between the costs of distance education and traditional face-to-face education. The cost should be taken into account not only in the cost of the educational institution, but also in costs for transportation, displacement and the solution of various problems (housing, heating, etc.). In parallel with the increasing number of students and the digitalized world, it is inevitable that all educational institutions move to the distance education system partially or completely. In this sense, institutions that can perform distance education activities based on solid infrastructure foundations will gain important advantages on the way to student satisfaction.

Limitations and future research

All scientific research has some limitations for various reasons. In this sense, the reported limitations will provide important clues for future research. Within the scope of this research, basic methodological principles of quantitative research methods were used. The inclusion of qualitative research methodologies in new research may be important in providing more important insight into the subject. This research has determined student
satisfaction towards distance education systems and different results can be obtained in the research of holistic education satisfaction in new researches to be carried out. Within the scope of the research, only PES students were reached, which may be important in revealing the difference between departments in new researches for students studying different departments. Finally, testing new models that include different variables for the discussions developing in the literature will make important contributions to the literature.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests

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