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Rethinking Evaluating the Use of Distance Learning Systems in the Context of the Unified Theory of Acceptance and Use of Technology-2

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Abstract: Various theories and models are used to understand the impact of technology in education. One of these models is the UTAUT-2 model. This model allows us to understand the acceptance and use of technology. In this study, students' intentions and behaviours related to using the UBYS system, which is used as a learning management system, were examined within the framework of the UTAUT-2 model. The structural equation model was also used in the study. Smart PLS 3.3.5 and IBM SPSS Statistics v20.0 programmes were used for all data analyses. The study was conducted with 208 university students in 2021-2022. The result of structural equation modeling is that performance expectancy, effort expectancy, facilitating conditions, and hedonic motivation are among the variables that influence the use and acceptance of UBYS. The components of the model explain 75% of behavioural intentions. With the knowledge gained in this study, it may be possible to increase the usefulness of the UBYS system used. At the same time, the results of this study should make an important contribution to the literature on the UTAUT-2 model.

Keywords: Unified Theory of Acceptance and Use of Technology-2, Technology Acceptance Model, Distance Learning Systems, Structural Equation Model.

Introduction

With technology development, many transactions are now conducted over the internet. Internet technologies are widely used for many transactions in our daily lives, such as banking, shopping, and accessing information. Internet and communication technologies are also commonly used in education. With the increasing use of technological tools in education, distance learning applications, in particular, are becoming more popular. Distance learning, which allows students to receive their education via the internet, is widely used, especially in times of pandemics.

Distance learning systems can be used as stand-alone educational environments, or they can be integrated or complementary with formal educational environments. The fact that the internet provides easy access to information, is inexpensive, enables user interaction, and can be enriched with multimedia tools brings distance education to the forefront (Kılınç, 2015). Distance education has become an indispensable structure for schools so that learning processes are not interrupted, especially during a pandemic period when there are restrictions. In the future, education will transform into a new hybrid/mixed system, i.e., face-to-face and distance education will be used together.

In recent years, the widespread availability and affordability of the internet have led to distance learning systems being accepted as suitable platforms for education and becoming methods preferred by millions of people. However, the COVID-19 pandemic spread around the world has also made these systems a mandatory part of education. These systems, both web-based and mobile compatible (Akkuş & Kapıdere, 2015), are now being produced and offer low cost of ownership and tools to solve educational problems in a variety of environments in public institutions and the private sector. Without time and location constraints, these systems provide various opportunities such as personal and professional development, participation in academic or certificate programmes for individuals who have limited time for work reasons or cannot be at the location where classes are being held (Akyürek, 2020; Al & Madran, 2004; Batdi, Dogan & Talan, 2021; Carswell & Venkatesh, 2002). Therefore, such a system enables educational equity and supports lifelong learning. These systems, which allow synchronous and asynchronous instruction, provide features such as defining live lessons, creating curricula, assigning teachers and students, adding rich content, creating discussion groups, tracking homework/projects, exams/tests, and assessment and grading. In addition, these systems offer several advantages in reusing and updating the content and the system (Akkuş & Kapıdere, 2015; Akyürek, 2020; Al & Madran, 2004; Deperlioğlu & Ergün, 2011).

As distance education has become more widespread, research has also accelerated. Researchers are exploring topics such as the qualities of distance education, models for distance education, and the benefits of distance education in their research. However, distance education is also a technology and an innovation. For this reason, distance education is evaluated as an innovation, and its use and acceptance are the subjects of research.

Each innovation has a different impact on human life. The adoption and acceptance by people are as important as the innovation itself. There are various theories and models about the acceptance and use of innovations. These theories and models allow us to understand why people adopt or reject innovations. The theory of diffusion of innovations, which is one of these theories, draws attention to the acceptance and adaptation of innovations. In particular, Rogers' theory of the diffusion of innovations is widely used in this field (Demir, 2006; Sahin, 2006). In addition to this theory, other theories deal with the acceptance and diffusion of innovations. One of them is the theory of reasoned action. This theory is based on social psychology and deals with the diffusion of innovations at the individual level (Usluel & Mazman, 2010). The theory of reasoned action states that an individual's ability to behave appropriately in an innovation process is related to the individual's intention, while the individual's intention is influenced by attitudes and subjective norms (Fishbein & Ajzen, 1975).

In reviewing the literature, it is clear that many studies use models related to technology and integration. Examining situations such as user acceptance, use, or adoption of various technologies used in education should help better understand the use of these technologies in education. This study aims to identify the factors that influence student behaviour when using distance learning systems. Thus, it will be possible to develop an appropriate distance education system that meets the expectations of students. It is expected that the results obtained in this study will enlighten new studies for similar learning systems.

The distance learning system examined in the study has a structure that allows students to learn online. Students can use their usernames and passwords to access this distance learning system, an open-source system. Students who participate in the distance learning system can follow the lessons

synchronously and asynchronously. Many different lessons are offered online through this system. The system also allows students to interact with each other. The population of this study, which is a descriptive study, consists of students studying at a state university in the Southeast Anatolia region of Turkey. An attempt was made to reach the sample using an appropriate sampling method. The completion of the online scale was voluntary.

Theoretical Framework

Technology integration is when teachers use technology to improve students' thinking skills (Hennessy et al., 2005). Technology integration processes that enrich students' thinking styles also mean student-centered processes that increase students' social learning skills and self-learning skills and enable self-management (Şendurur & Arslan, 2017). Technology integration generally refers to integrating information and communication technologies into the classroom environment. Some theories are based on the applications made in technology integration (Çakıroğlu, 2016).

When new technologies are used in the context of technology integration, it is not only about hardware such as computers, projectors, smartboards, and tablets but also about applications and software in education. When technology is mentioned in teaching environments, innovation is also mentioned. Society's acceptance and use of innovation are complex processes involving many components. In the context of technology integration, related technologies are examined in the context of theories of diffusion, adoption, and use of innovations (Çakıroğlu, 2016).

Diffusion of Innovations

Rogers' (2003) theory of diffusion of innovations refers to the processes of acceptance and rejection of ideas, practices, and environments that are perceived as new by individuals or organisations. The theory of diffusion of innovations is described by four main elements (Çakıroğlu, 2016; Sahin, 2006). The *innovation* element is the ideas, practices, or environments that an individual or community encounters for the first time and that individuals or organisations define as new. *Communication channels* refer to communication between individuals who know about the innovation and those who do not. *Time* refers to the time that elapses before individuals adopt and begin to use the innovation. A *social system* means that the diffusion, adoption, or rejection of innovation affects the social system. In this context, for example, innovators leading other individuals may be evaluated so that the innovation is socially accepted.

The innovation-decision process consists of five steps (Çakıroğlu, 2016; Sahin, 2006). (1) *Knowledge*: This is the step in which the innovation is perceived, and the individual is aware of the innovation. (2) *Persuasion*: This is the step in which the individual's attitude toward the innovation decreases and uncertainty about the results of the innovation decreases. (3) *Decision*: This is the step in which the individual's behaviour is observed to accept or reject the innovation. (4) *Implementation*: This is the step where the individual begins to use the innovation. Although the previous steps are mostly mental processes, this step shows that the individual uses the innovation itself. (5) *Confirmation*: In this step, the individual uses the innovation for a short period of time and then continues to use it or discards it permanently. The innovation-decision process is illustrated in Figure 1.

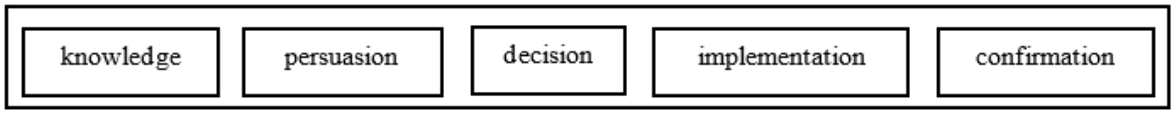

Figure 1: The Innovation-Decision Process

At each of these steps, there is also the possibility of rejecting the innovation. In addition, technology acceptance varies according to individual characteristics. While some individuals adopt innovations much more quickly, the process is slower for others.

Reasoned Action Theory

According to this theory, intention is important in the emergence of an individual's behaviour. Attitudes and subjective norms influence the intention. Attitudes consist of beliefs and outcomes for the appropriate behaviour. Subjective norms are expressed as beliefs about motivation and rules (Fishbein & Ajzen, 1975). This theory is also important at the stage of adopting innovation and making it a behaviour. The reasoned action theory is expressed in Figure 2 (Çakıroğlu, 2016; Davis, Bagozzi & Warshaw, 1989).

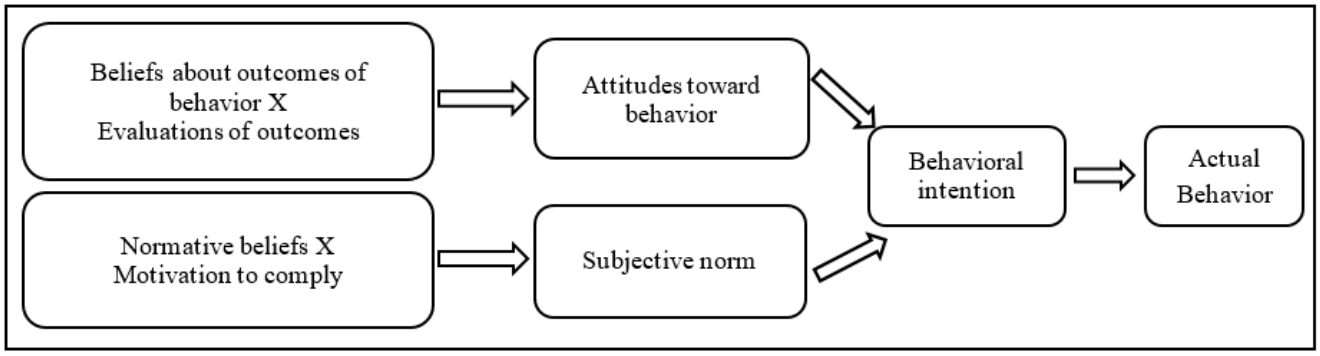

Figure 2: Theory of Reasoned Action

Technology Acceptance Model

In addition, there are some models about how technology is adopted as innovation and translated into human behaviour. One of these models is the technology acceptance model (TAM). TAM and similar models are of great importance in the context of innovation diffusion and adoption. TAM is a model whose origins are based on the theory of reasoned action. The purpose of the TAM is to present a model that determines user behaviour and the level of technology acceptance based on a small number of variables. The TAM consists of external variables, perceived usefulness, ease of use, attitude toward using, behavioural intention to use, and actual system use. The components of the TAM are shown in Figure 3 (Davis, Bagozzi & Warshaw, 1989).

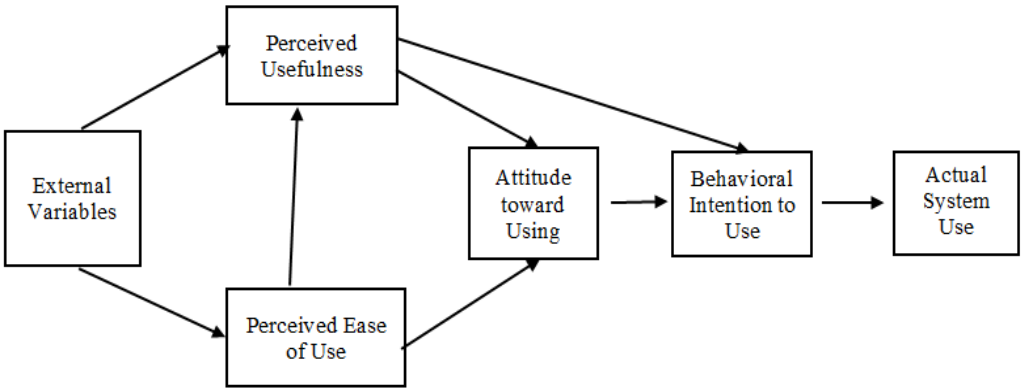

Figure 3: Technology Acceptance Model

Technology Acceptance Model-2

After developing the TAM, attempts were made to develop new models to explain technology acceptance or further explanatory models by updating the existing models. In Venkatesh and David's (2000) study, referred to as Technology Acceptance Model-2 (TAM-2), various components were added to the model to overcome the limitations of the TAM. The components of TAM-2 are shown in Figure 4.

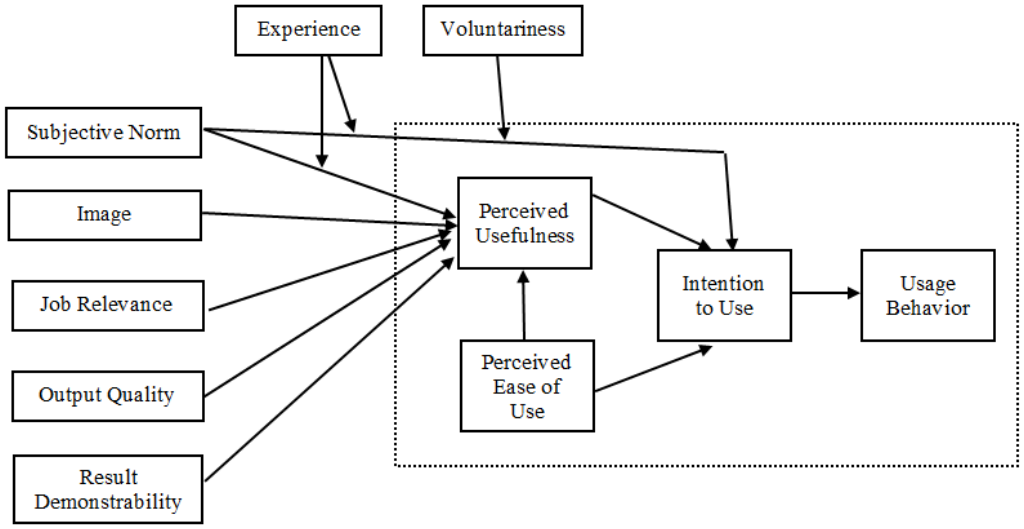

Figure 4: Technology Acceptance Model-2

Unified Theory of Acceptance and Use of Technology

There are also different rules for the TAM. As seen in Figure 5, Venkatesh et al. (2003) proposed a Unified Theory of Acceptance and Use of Technology (UTAUT) by adjusting the weaknesses and strengths of the models already presented in their study. In the UTAUT, performance expectancy, effort expectancy, social influence, and facilitating conditions are the four key elements of use and intention. In addition, use and intention and the role of key moderators, gender, age, experience, and voluntariness of use were examined (Venkatesh et al., 2003).

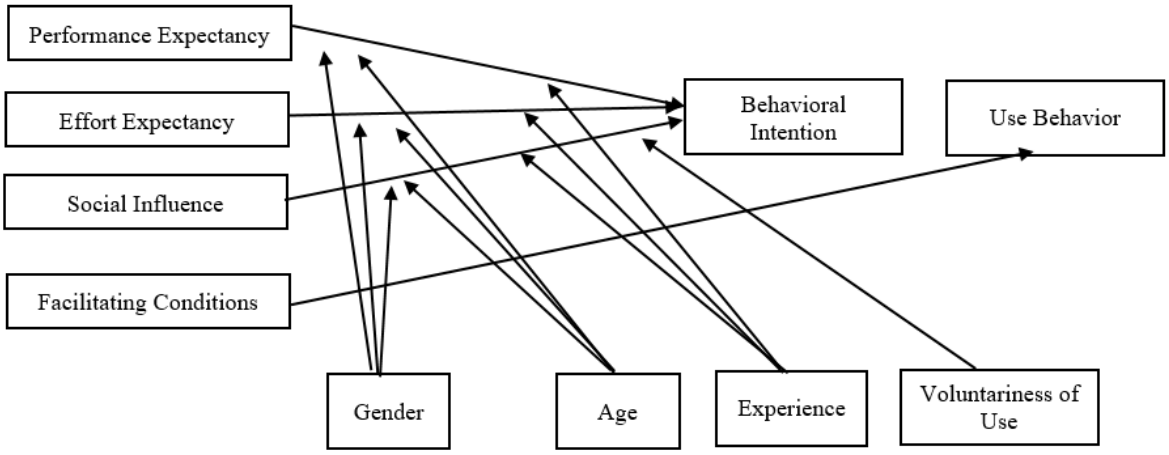

Figure 5: Unified Theory of Acceptance and Use of Technology

Unified Theory of Acceptance and Use of Technology-2

The UTAUT was reconstructed by Venkatesh et al. (2012) and named the Unified Theory of Acceptance and Use of Technology-2 (UTAUT-2). The new model does not include the voluntariness of use of the UTAUT. Unlike the old model, the variables hedonic motivation, price value, and habit were included in the new model. In terms of Behavioural Intention, the old model explained 56% of the variance, while the new model explains 74% of the variance (Yılmaz & Kavanoz, 2017). UTAUT-2 is also a model used to understand the use and adoption of various technologies such as distance education. As can be seen in Figure 6, the UTAUT-2 model consists of several variables (Kandemir, 2020; Venkatesh et al., 2003; Venkatesh et al., 2012; Yılmaz & Kavanoz, 2017):

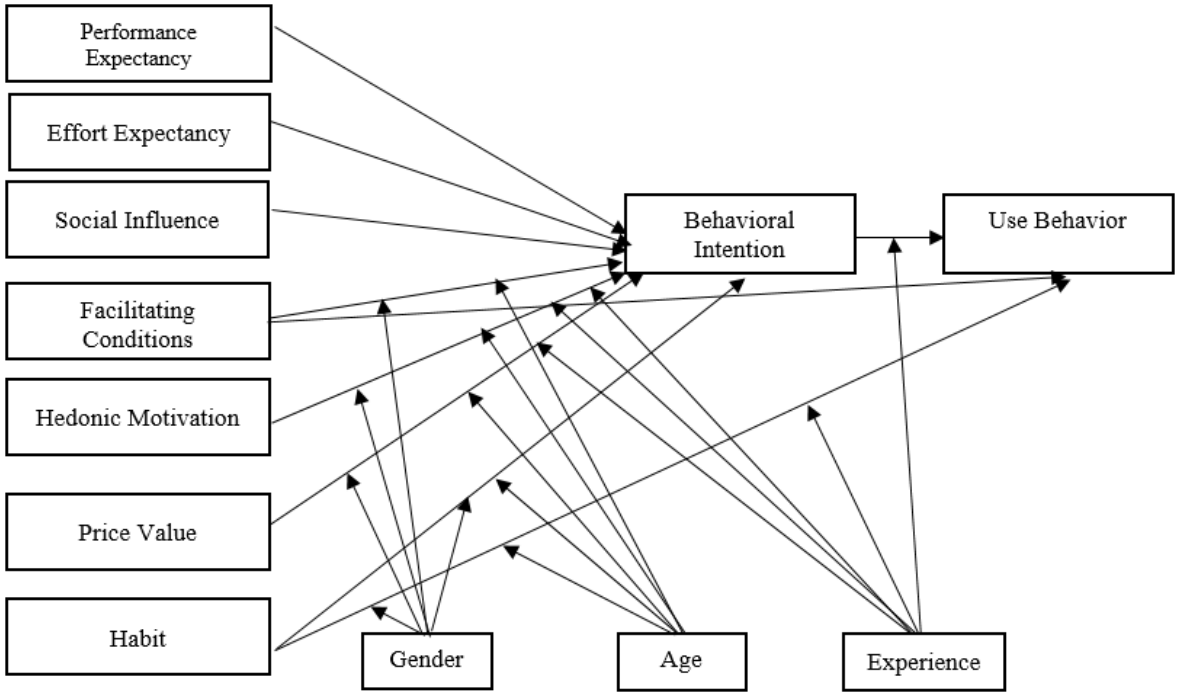

Figure 6: Unified Theory of Acceptance and Use of Technology-2

Purpose and Importance of This Research

Many theories and models can be used in the context of technology integration in the classroom. With the studies conducted based on these theories and models, it will be possible for the theories and models to provide generalisable results. For this reason, such a study was needed to determine technology acceptance and use cases.

The COVID-19 pandemic, which has become a significant public health issue in recent years, also has implications for education. As a result of the pandemic, countries have developed their educational landscapes in different directions. Distance education systems are among the technologies whose importance and use have increased with the pandemic. For this reason, it is important for technology integration to work with UTAUT-2 on the acceptance and use of distance education systems, which have become increasingly important in the wake of the pandemic.

During the pandemic, individuals benefit from technology to continue and sustain their educational lives. Adoption and use of these technologies may be due to factors arising from the technology itself and risk perceptions related to pandemic conditions. Altay's (2021) study examined the risk perceptions of academics using the distance learning system as part of TAM. In this study, in relation to the pandemic's compelling conditions and risk perception of the pandemic, the use and acceptance of the distance education system by students under UTAUT-2 were investigated. This aspect of the study is intended to contribute to the literature.

UTAUT-2 is a model introduced in 2012. It is important to test this model with different technologies to make it a valid model. It is evident from the literature that the UTAUT-2 model has been tested with various technologies and methods. For example, the LabSafety programme (Ameri et al., 2020), Lesson Capture System (Farooq et al., 2017), online meetings via Zoom (Zulherman et al., 2021), Google Classroom for mobile learning (Kumar & Bervel, 2019), Open Educational Resources (Jung & Lee, 2020), immersive virtual reality in education (Bower, DeWitt & Lai, 2020), acceptance of blended learning (Dakduk et al., 2018), and the use of social networks in education (Gharrah & Aljaafreh 2021) were studied under the UTAUT-2 model. On the other hand, the literature points out that the UTAUT-2 model has not been studied with some technologies. Studying this model with many different technologies will strengthen the model. Therefore, in this study, it is possible to investigate the corresponding model with more technologies. Thus, researchers test the same model with different technologies and serve to make the model more comprehensive. In addition, researchers verify the model with these studies. For this reason, conducting such a study allows the model to be tested with more technologies.

Several internal and external factors influence technology integration. In addition to external variables such as cultural and social influence, institutional support, and technological infrastructure, internal variables such as innovation, perceptions of technology competence, and beliefs are also important in assessing the barriers encountered in technology integration. Some of the variables that hinder technology integration include lack of time, lack of effective training, lack of accessibility, lack of technical support, resistance to change, and attitudes. Such studies are needed to understand better these and similar factors that influence technology integration. For all these reasons, it is aimed to examine the distance education system within UTAUT-2. To this end, the University Information Management System (UBYS), a technology used by students for distance education, has been

examined within the UTAUT-2 model. In this way, an attempt is made to determine the acceptance and use of technology for educational purposes by students and determine their attitudes toward adopting the technology.

Methods

This section of the study contains information about the research model, the hypotheses used in the study, and the participants. Explanations of data collection instruments and data analysis are also provided.

Research Model and Hypotheses

This study used the descriptive model, which is one of the quantitative research methods, in an attempt to uncover students' cognitive structures related to technology acceptance and use. The study used the UTAUT-2 scale developed by Venkatesh et al. (2012) and adapted by Baraz et al. (2021) in the data collection phase. The appropriate scale was presented in the online environment, and an attempt was made to obtain data from the students.

The study model is based on the UTAUT-2 model prepared by Venkatesh et al. (2012). The Price Value (PV) in the aforementioned model was excluded from the model as it has no meaningful counterpart in the study. This model, which examines the variables that influence usage behaviour, is shown in Figure 7.

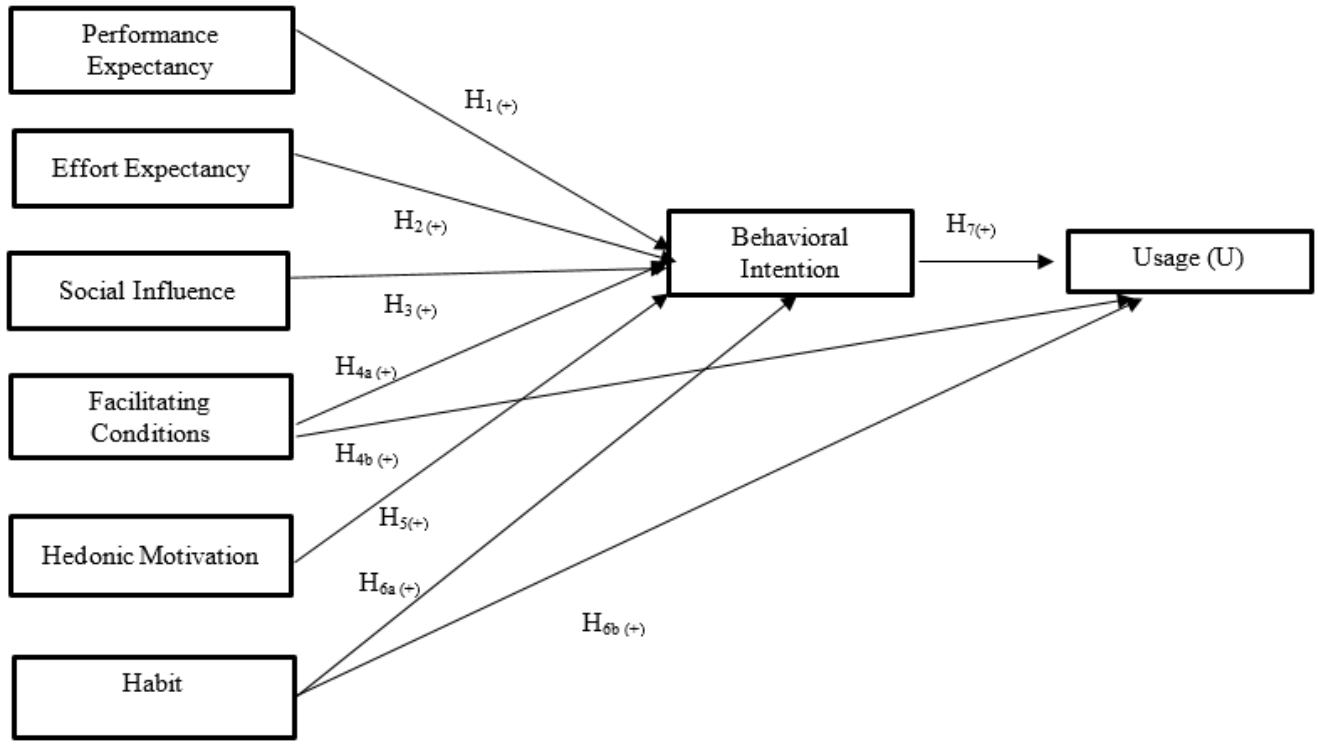

Figure 7: The model used in the study

The study's hypotheses and the model's visual version are shown in Figure 7. According to the model created, the variables PE, EE, SI, FC, HM, and HT positively influence the variable BI. The variables FC, HT, and BI positively influence the usage status.

Performance Expectancy (PE)

PE is the extent to which the use of technology benefits an individual in performing certain activities. PE is a model that helps and supports consumers using technology (Vekatesh et al., 2012). In this study, PE was investigated to understand the use of distance learning systems by the students. The hypothesis stated in the study is as follows:

H1: PE has a positive impact on students' behavioural intentions in using the distance learning system.

Effort Expectancy (EE)

EE is the extent of ease associated with an individual's use of technology. Yılmaz and Kavanoz (2017) define EE as users' belief that using a certain technology is easy and effortless. At the same time, EE also represents the time advantage that the use of the particular technology brings to the user. In this study, the following hypothesis was formulated to determine the effort expectancy of students using a distance learning system:

H2: EE has a positive impact on students' behavioural intentions in using the distance learning system.

Social Influence (SI)

SI is how individuals perceive that significant others believe they should use a particular technology. SI is a concept in UTAUT (Venkatesh et al., 2003). SI is the belief that an individual's use of technology should be shared with others and significant others. SI can be evaluated in the context of friends, colleagues, or family members (Khechine et al., 2014). SI was not ignored in this study, and the following hypothesis was made regarding this variable.

H3: SI has a positive impact on students' behavioural intentions in using the distance learning system.

Facilitating Conditions (FC)

FC is the extent to which the individual perceives the resources and support available to perform a behaviour. FC is defined as the belief of individuals who use technology that a technical and organisational infrastructure supports individuals in using technology (Venkatesh et al., 2003). In the model FC, UTAUT-2 is defined as consumers' belief that there are resources and support to sustain a behaviour (Venkatesh et al., 2012). In this study, the variable FC was examined with the following hypothesis while students used the appropriate system.

H4a: FC has a positive impact on students' behavioural intentions in using the distance learning system.

H4b: FC has a positive impact on students' behaviour using distance learning system.

Hedonic Motivation (HM)

HM is the pleasure and enjoyment derived from using the technology in question. HM is not included in UTAUT. In the UTAUT-2model, this variable was proposed by Venkatesh et al. (2012). HM is defined as the pleasure and enjoyment an individual gets from using a technology (Venkatesh et al., 2012). The hypothesis of HM proposed in this study is as follows:

H5: HM has a positive impact on students' behavioural intentions in using the distance learning system.

Price Value (PV)

PV is the relationship between the benefits of the technology and the monetary cost of using it. Therefore, PV, a concept related to costs and prices, is defined as the relationship between the fee paid to use the technology and the benefits obtained. Venkatesh et al. (2012), in the UTAUT-2 model, claim that this variable, the cost of technology, influences the use of technology by individuals. In this study, students using distance learning systems were excluded from this variable model because they did not pay the price.

Habit (HT)

HT refers to the automatic behaviour of an individual. Limayem et al. (2007) describe the habit of individuals in performing various functions automatically based on their prior learning. When the studies in the literature are examined, it is seen that many studies express that behavioural intention is affected by habit (Khan, 2020). The hypothesis regarding the relevance of the habit with behavioural intentions in the use of the distance learning system is presented below:

> *H6a: HT has a positive impact on students' behavioural intentions in using the distance learning system.*
>
> *H6b: HT has a positive impact on students' behaviour using distance learning system.*

Behavioural Intention (BI)

BI is the tendency of an individual to perform a particular task. BI, an individual's intention to perform a certain task, is included in the UTAUT-2 model (Yılmaz & Kavanoz, 2017). In the context of the model used in this study, the hypothesis about BI is presented below:

> *H7: BI has a positive impact on students' behavioural intentions in using the distance learning system.*

In the literature, there are several studies within UTAUT-2 in areas such as distance education, especially online learning. For example, Kandemir (2020) attempted to explain teachers' use of EBA (Eğitim Bilişim Ağı), Morpa Campus, and Okulistik educational environments in the context of UTAUT-2. Diri and Açıkgül (2021) also used the UTAUT-2 model for mathematics learning in their study. In the mentioned study, UTAUT-2 was used for mobile technologies in mathematics learning. In another study, the UTAUT-2 model was used to investigate university students' use and adoption of mobile phones (Nikolopoulou, Gialamas & Lavidas, 2020). Social networks have also been studied within the UTAUT-2 model. For example, Huang (2018) used the UTAUT-2 model in his study to explain the use and adoption of social networks by Chinese university students.

As can be seen, the literature has examined the use of various technologies in education using the UTAUT-2 model. However, as distance learning systems have recently increased in importance due to the pandemic and new distance education technologies are being challenged, it is of great significance to study distance learning systems in terms of technology use and acceptance. For these reasons, such a study was conducted to uncover students' behaviour in distance education. Therefore, this study examined the distance learning systems used during the pandemic period.

Participants

The study was conducted during the fall semester of the 2021-2022 academic year. The participants of the study were 208 undergraduate students studying at a state university in the Southeast Anatolia

region of Turkey. The participants volunteered to participate in the study. The research population consists of 1,700 students studying at the college in question and actively using the UBYS system. Since it was difficult to reach the entire population due to cost and time constraints, the study was conducted with a specific main sample. There are different opinions about the number of samples at the stage of generalising the sample to the population. Büyüköztürk et al. (2008) state that variables such as the type of research, the design of the research, and the number of variables to be analysed are important in calculating the sample. Oral and Çoban (2020), on the other hand, consider it sufficient to reach at least 100 samples for descriptive studies, at least 30 for experimental studies, and at least 50 for correlational studies. In this study, data were collected from a total of 208 students. Table 1 shows the distribution of participants by gender and age.

Table 1. Demographic Information about the Participants

Variables	Category	F	%
Gender	Female	124	59.62
	Male	84	40.38
Age	≤ 18	22	10.58
	≥ 19, ≤ 21	153	73.56
	≥ 22	33	15.87
Total		208	100

Table 1 shows that more than half of the participants (59.62%) were female. The percentage of males was 40.38%. It can be said that there is an unequal distribution by age in the study. It was found that participants were generally between 19 and 21 years old (73.56%).

In the active use of distance learning systems, the access to and use of these systems by participants is of great importance. In this regard, information was collected on computer ownership status, daily internet usage time, frequency of distance learning systems use, and experience with computer use. The corresponding results are presented in Table 2.

Table 2. Participants' Information on Technology Use

Variables	Category	F	%
Daily internet usage time	< 1h	8	3.85
	≥ 2, ≤ 4h	33	15.87
	≥ 5, ≤ 7h	113	54.33
	≥ 8h	54	25.96
The frequency of distance learning systems use	Sometimes	48	23.08
	Medium	132	63.46
	Very Often	28	13.46
Computer use experience	< 1y	74	35.58
	≥ 2, ≤ 4y	45	21.63
	≥ 5, ≤ 7y	30	14.42
	≥ 8y	59	28.37
Computer ownership status	Yes	119	57.21
	No	89	42.79
Total		208	100

When Table 2 is examined, it is seen that 54.33% of the participants use the internet on average five to seven hours per day. In addition, it was observed that most of the participants (63.46%) used distance education systems at a moderate level. It was also found that approximately one in three participants (35.58%) had been using a computer for less than a year. In addition, it was observed that approximately half of the students (57.21%) who participated in the study had computers.

Data Collection Instruments

The demographic information form and the UTAUT-2 scale were used for data collection. Detailed information on the data collection instruments can be found below.

Demographic Information Form

The demographic information form was used to obtain various demographic information from the participants. This form asked for information about gender, age, average daily internet usage time, frequency of distance learning systems use, computer use experience, and computer ownership status.

UTAUT-2 Scale

The UTAUT-2 scale applied to the participants was developed by Venkatesh et al. (2012). The scale was adapted into Turkish by Baraz et al. (2021). The scale consists of eight factors and 30 items. Factors in the scale are: Performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, habit, and behavioural intention. The scale is a 7-item Likert type. The first seven factors used in the scale were rated from Strongly Disagree (1) to Strongly Agree (7). The last factor in the scale, use case, was adapted to the distance education system and was rated from Always (1) to Never (7).

Results

SmartPLS 3.3.5 programme was used to analyse the data. IBM SPSS Statistics v20.0 (Statistical Package for the Social Sciences) was used to analyse the data from the demographic information form. The partial least squares method of structural equation modeling was used in the testing phase of the model.

The values of construct reliability and convergent validity were examined to evaluate the created model. The criteria of convergent validity and discriminant validity were also discussed. For construct reliability, Cronbach's alpha (Cronbach, 1951), RhoA (Dijkstra & Henseler, 2015), and composite reliability (Hair et al., 2017) values were examined. As shown in Table 3, the corresponding values are above 0.70, and the Average Variance Extracted for each construct is above 0.5, as suggested by Fornell and Larcker (1981) for multivariate constructs.

Table 3. Construct Reliability and Validity

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
BI	0.813	0.821	0.893	0.739
EE	0.871	0.884	0.910	0.718
FC	0.843	0.846	0.895	0.681
HM	0.911	0.911	0.944	0.850
HT	0.861	0.866	0.906	0.706
PE	0.941	0.948	0.957	0.849
SI	0.841	0.841	0.905	0.760
U	0.802	0.812	0.862	0.557

In considering the appropriate structure, discriminant validity was also examined. According to the criteria of Fornell and Larcker (1981), the evaluation is based on the average variance extracted values located at the top of the column where the square root value is located. The mean-variance values are in bold in each column, as shown in Table 4. As also shown in Table 4, discriminant validity could not be achieved for some constructs.

Table 4. Fornell-Larcker Criterion Analysis

	BI	EF	FC	HM	HT	PE	SI	U
BI	0.860							
EE	0.820	0.847						
FC	0.708	0.663	0.825					
HM	0.763	0.733	0.763	0.922				
HT	0.774	0.861	0.671	0.792	0.840			
PE	0.760	0.808	0.701	0.705	0.732	0.922		
SI	0.718	0.787	0.845	0.682	0.722	0.806	0.872	
U	0.326	0.350	0.361	0.381	0.322	0.285	0.355	0.746

Fornell and Larcker's (1981) criteria are used to establish the distinctiveness of a model. In addition, the Heterotrait-monatrait ratio is also considered a value since it is criticised that the above criteria are not sufficient to show distinctiveness. In a consistent model, the values of the Heterotrait-monatrait ratio should be less than 1.00 (Henseler, Ringle & Sarstedt, 2015). As seen in Table 5, the corresponding values are below 1.00.

Table 5. Heterotrait-Monotrait (HTMT) Correlation Analysis

	BI	EE	FC	HM	HT	PE	SI	U
BI								
EE	0.946							
FC	0.858	0.765						
HM	0.884	0.800	0.867					
HT	0.925	0.998	0.782	0.874				
PE	0.867	0.880	0.789	0.759	0.810			
SI	0.864	0.898	0.998	0.779	0.832	0.898		
U	0.396	0.404	0.429	0.443	0.366	0.319	0.428	

Evaluation of the Structural Model

To evaluate the structural model, the values of the goodness-of-fit measures can be considered in the first step. More than one analysis can be based on the results for the goodness-of-fit measures assessed in the confirmatory factor analysis. Goodness-of-fit is expressed as the ratio of explained generalised variance to total variance (Erkorkmaz et al., 2013). This study examined the SRMR and RMS theta values to evaluate the goodness-of-fit measures. The SRMR value takes values between 0 and 1. When the SRMR value approaches zero, it can be said that the value represents a good adaptation (Schermelleh-Engel, Moosbrugger & Müller, 2003). The SRMR value is expected to be less than 0.08 (Hu & Bentler, 1998).

Similarly, the RMS theta values were also examined for acceptable model fit. For the goodness-of-fit measure, the RMS theta value is expected to be less than 0.12 (Henseler et al., 2014). As can be seen in Table 6, when the structural model is examined in terms of the goodness-of-fit measures, it can be seen that the SRMR values are close to the acceptable value of 0.08, but the RMS theta values are far from 0.12.

Table 6. Model Fit Measures

Goodness-of-Fit Measures	
SRMR	0.096
RMS_{theta}	0.223

The coefficients of determination, which is the level of explanation of the variables, were also examined. The R2 coefficient of determination helps determine the extent to which other variables explain a change observed in the variables. It is equal to the square of the correlation coefficient (Büyüköztürk, 2002). The results regarding the R2 value, which provides information on the extent to which other variables can explain the variables, are presented in Table 7. Examination of the R-squared values shows that the degree to which other variables explain behavioural intention is 75%. Other variables can explain usage status within the model at 14%.

Table 7. R Square

	R Square
BI	0.750
U	0.144

Compatibility between the elements of the structural model was also investigated. A configuration with 500 iterations and 500 subsamples was chosen to test the hypotheses, as in the SmartPLS programme. As seen in Table 8, some hypotheses were not supported. Some hypotheses could not satisfy the condition ($p < 0.05$).

Table 8. Path Coefficients, Total Effects, and Significance Levels

		Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
H1	PE -> BI	0.174	0.171	0.084	2.083	0.038
H2	EE -> BI	0.448	0.454	0.099	4.513	0.000
H3	SI -> BI	-0.124	-0.125	0.098	1.267	0.205
H4a	FC -> BI	0.209	0.211	0.096	2.173	0.030
H4b	FC -> U	0.236	0.242	0.081	2.906	0.004
H5	HM -> BI	0.190	0.188	0.095	2.010	0.045
H6a	HT -> BI	0.059	0.059	0.099	0.600	0.549
H6b	HT -> U	0.100	0.104	0.108	0.929	0.353
H7	BI -> U	0.082	0.081	0.099	0.822	0.412

When Tables 7 and 8 are evaluated together, PE, EE, FC, and HM explain 75% of behavioural intention. According to the obtained results, PE is an important variable that predicts behavioural intention. According to this result, students believed that the technology they use will be beneficial for them. It was found that EE had a significant impact on explaining behavioural intention. This means that students perceived the technology in question as easy to use and did not put much effort into it. Also, FC was identified as a variable that has an influence on explaining behavioural intention. FC means that individuals perceive the available resources and support to perform a behaviour. According to this result, students were satisfied with the available resources when using UBYS, and they felt supported. It was found that FC is a variable that influences behavioural intention and predicts individuals' active use of the appropriate technology. Consequently, active use of technology is significantly related to available resources and support provided. From the research findings, it was concluded that another variable that explains behavioural intention is HM. The fact that HM is a significant predictor of behavioural intention means that students enjoy and have fun using this technology. Students enjoy using the UBYS system. The model that resulted from the study is shown in Figure 8. Table 9 shows the acceptance or rejection status of the hypotheses.

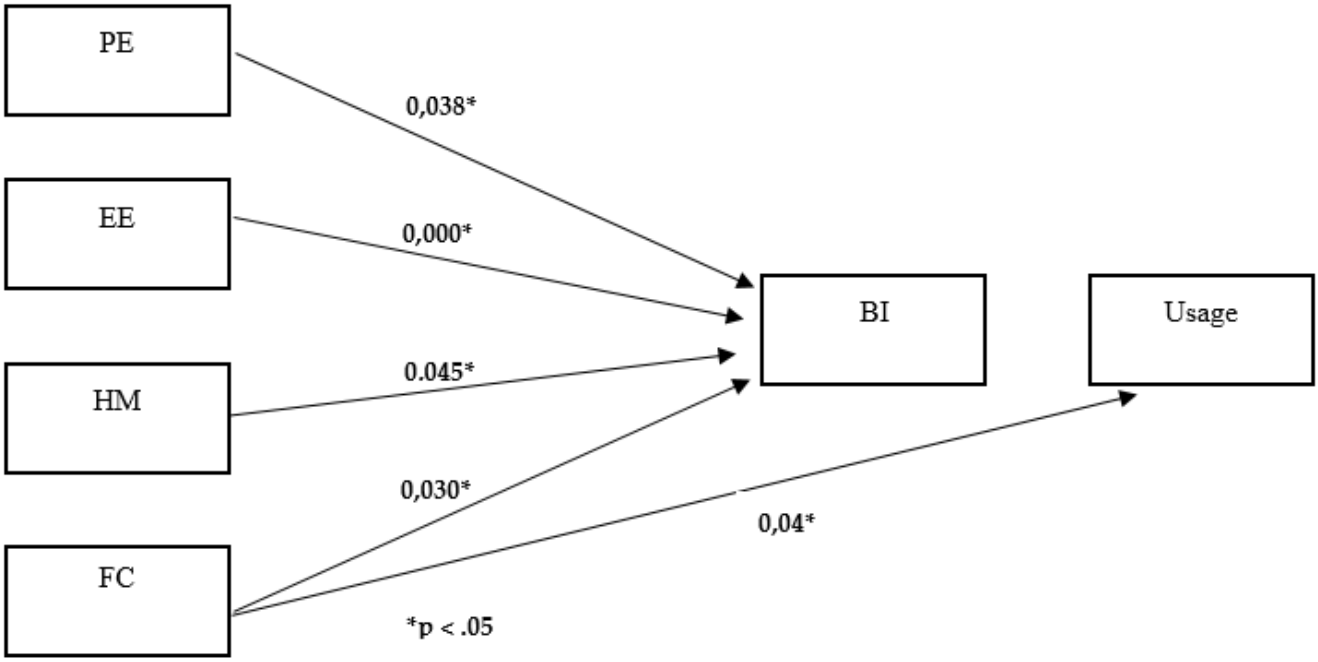

Figure 8: The Structural Model with Results

Table 9. Hypothesis Testing Results

Hypothesis	Effect	P Values	Remarks
H1	PE -> BI	0.038	Supported
H2	EE -> BI	0.000	Supported
H3	SI -> BI	0.205	Not supported
H4a	FC -> BI	0.030	Supported
H4b	FC -> U	0.004	Supported
H5	HM -> BI	0.045	Supported
H6a	HT -> BI	0.549	Not supported
H6b	HT -> U	0.353	Not supported
H7	BI -> U	0.412	Not supported

Note: $p < 0,05$

Discussion

As a result of the widespread use of internet technologies, e-learning environments have become more important. E-learning environments have gained importance, especially recently, due to the need created by the coronavirus pandemic. Courses continue in e-learning environments as educational institutions take a break from face-to-face instruction from time to time due to the pandemic. E-learning involves the use of Learning Management Systems for educational purposes, such as course tracking, online course participation and note viewing.

The University Information Management System (UBYS) used at the university where the study was conducted can also be considered a Learning Management System (LMS). The LMS stands for systems that enable the management of educational content and the systematic continuation of learning. LMS

allows the individualisation of learning and the monitoring of learners and teachers. UBYS, with its automation and management tools, can be considered an LMS. In this system, students can follow their courses synchronously or asynchronously, communicate with their classmates, track their homework/projects, and take exams. Thus, UBYS has a function used in distance education and complements face-to-face instruction.

This study aims to evaluate the UBYS system within the framework of the UTAUT-2 model. The model used in the study to represent technology acceptance and usage status of technologies by students has been used previously to evaluate other technologies. Similar to this study, LMS tools are also examined within the UTAUT-2 model. It should be noted that various technologies have been assessed using this model in the literature. For example, Farooq et al. (2017) studied the lecture capture system using the UTAUT-2 model. In this study, conducted on 481 samples of business students, it was found that performance expectancy, effort expectancy, social influence, facilitating conditions, price value, hedonic motivation, and habit determine the use and adoption of each technology.

In this study, hypotheses were formed about the components that make up the model. The result of the study was that some of the hypotheses were accepted, and others were rejected. The H1 hypothesis was *"Performance Expectancy has a positive impact on students' behavioural intentions in using the distance learning system"*. The result of the study was that the H1 hypothesis was supported. The study of several studies on performance expectancy concluded that it is an important predictor of behavioural intentions. For example, Dakduk et al. (2018) showed in their research that the most important determinant of behavioural intention is performance expectancy. However, Asare et al. (2016) concluded that performance expectancy is not a significant predictor of behavioural intention. On the other hand, Yıldız and Dinçer (2021) found that performance expectancy was found to have a significant impact on behavioural intention. The study suggests that participants are aware of the benefits of the technologies they use. Gharrah and Aljaafreh (2020) used the UTAUT-2 model to investigate students' learning objectives in social networks in Jordanian universities. The result of the study was that performance expectancy is among the determinants of behavioural intentions. Performance expectancy is the belief of the individual using the technology that the technology will improve their performance. Considering the studies in this context, it can conclude that some of the technologies used have an impact on the user's performance, while some technologies do not have a significant impact on performance.

The second hypothesis examined in the study is "*Effort expectancy has a positive impact on students' behavioural intentions in using the distance learning system"*. At the end of the study, information was obtained that confirmed this hypothesis. Effort expectancy means that users find it easy to use the appropriate technology. The result of the study is that the participants believe that they do not have much difficulty using the corresponding technology. There are research findings in the literature that contradict the results of the study or come to similar conclusions. For example, Dakduk et al. (2018) concluded in their study that the variable effort expectancy is an important predictor of behavioural intention. Nikolopoulou et al. (2020), on the other hand, concluded that the variable of effort expectancy does not influence behavioural intention. In their study, Nikolopoulou et al. (2020) examined mobile phone use among university students using the UTAUT-2 model. In the study conducted with 540 university students in Greece, mobile phone use in college was examined using

online tools. The study found that the main predictors of behaviour were habit, performance expectancy, social influence, and hedonic motivation. Behavioural intention, facilitating conditions, and habit directly affect use. In their study of social learning, Gharrah and Aljaafreh (2020) concluded that the variable effort expectancy significantly predicts behavioural intention. The significant effect of effort expectancy on behavioural intention can be explained by assuming that the technologies used are relatively easy to use (Yıldız & Dinçer, 2021). Effort expectancy is the belief that participants will not exert much effort when using the technology. In addition, the study found that there is a significant and inverse correlation between participants' behavioural intentions and effort expectancy. In other words, if participants put a lot of effort into using the technology in question, it will influence their behavioural intentions.

The third hypothesis, *"Social influence has a positive impact on students' behavioural intentions in using the distance learning system,"* was not confirmed in the study. The social influence is expressed in the sharing of technology with friends, colleagues, and the social environment. This study showed that there was no social influence on students' use of the distance education system. Gharrah and Aljaafreh (2020) concluded that the social influence variable is a significant model predictor. On the other hand, Dakduk et al. (2018) found that social influence did not significantly affect behavioural intention. This was due to the fact that the organisations conducted participation in these manager training programmes. Nikolopoulou et al. (2020) showed the effect of social influence on behavioural intention. In interpreting this finding, they related it to peer, educator, and parent endorsement of use. Yıldız and Dinçer (2021), in the related study, found the social influence variable to have no significant effect on behavioural intention. This indicates that participants are not influenced by the opinions and recommendations of others when using the technology in question. Thus, it can be seen that social influence can be a determinant of behavioural intention depending on the technology used.

One of the conclusions that emerged from this study concerns the facilitating conditions. Two hypotheses were made within the model: H4a: *"Facilitating conditions have a positive impact on students' behavioural intentions in using the distance learning system"* and H4b: *"Facilitating conditions have a positive impact on students' behaviour using distance learning system".* Facilitative conditions were important determinants of both behavioural intention and active use. The conclusion is that facilitating conditions significantly impact the model when users believe there is technical and organisational support for using the technology while using it. Consequently, participants in this study believed that their technology provided sufficient technical and organisational support. Gharrah and Aljaafreh (2020) concluded that facilitating conditions do not influence behavioural intentions and usage. In this study, it was found that students' behavioural intentions were not influenced by facilitating conditions. Most students had access to computers and internet connections and did not require organisational support to use the technologies. Baraz et al. (2021), examined the eCampus system of Anadolu University. The study conducted with 7575 students investigated students' behaviour using the UTAUT-2 model. In the study in which an organisational structure was examined, it was concluded that facilitating conditions were a significant predictor of behavioural intention. Kumar and Bervell (2019) investigated the use of Google Classroom for mobile learning in higher education. In this study, using the UTAUT-2 model with 163 students, the facilitating conditions were found to have no significant effect on behavioural intention and active use. In their study, Yıldız and Dinçer (2021) examined health professionals' behavioural attitudes toward information technologies within

the UTAUT-2 model. When testing the hypotheses made in the corresponding study, it was found that the facilitating conditions did not affect the behavioural intentions. In the study, the fact that facilitating conditions do not influence behavioural intentions is explained by the lack of support individuals' experience in using technology. At the same time, organisational or technical deficiencies are eliminated (Yıldız & Dinçer, 2021). Consequently, the impact of facilitating conditions on behavioural intention and active use varies depending on whether the technology is used individually or for an organisational purpose.

Hedonic motivation is another variable that was examined in this study. This variable, which is not included in the UTAUT model, was added to the UTAUT-2 model according to Venkatesh et al. (2012). Hedonic motivation refers to users' enjoyment of using the technology in question. The hypothesis in the form of H5: "H*edonic motivation has a positive impact on students' behavioural intentions in using the distance learning system",* was confirmed as the result of the study. This shows that students enjoy using the distance education system. Gharrah and Aljaafreh (2020) concluded that hedonic motivation does not affect behavioural intention. In a related study, it was found that the reason is that users are observed by their teachers when they use social networks for educational purposes, which makes the related technology boring. Dakduk et al. (2018) stated in their study that one of the factors that did not influence behavioural intention was habits, as they examined executive education programmes. They explained that habits do not influence behavioural intention because it is not a continuous programme. Dakduk et al. (2018) also attempted to explain the relationship between hedonic motivation and the duration of the experience. According to this study, the level of hedonic motivation may decrease with increasing user experience. This is because the more the individual uses the technology in question, the more boredom s/he may develop in using the technology, which may affect hedonic motivation. The intention to continue using the technology is directly related to how enjoyable and entertaining the technology in question is. Kasaj and Xhindi (2016) found in their study that the relationship between hedonic motivation and the behavioural intention was higher in females than in males. In another study, hedonic motivation was found to be the most important variable influencing behavioural intention (Yang, 2013). Also, Yıldız & Dinçer (2021) found that hedonic motivation influenced participants' behavioural intentions significantly but in the opposite direction. That is, health professionals were more likely to be dissatisfied when using the appropriate technology than to be satisfied or content. According to the results of the studies, hedonic motivation can be considered an important predictor of the model, depending on age and the technology used.

This study examined habit, defined as the automatic performance of certain functions. The study posits two hypotheses about habit: H6a: "*Habit has a positive impact on students' behavioural intentions in using the distance learning system"* and H6b: *"Habit has a positive impact on students' behaviour using distance learning system".* As a result of the study, the habit variable was found to have no significant effect on behavioural intention or active use. Other studies on habit, i.e., the behaviour of performing certain functions automatically based on a prior learning process, have yielded different results. Gharrah and Aljaafreh (2020) concluded in their study that the habit variable influences behavioural intention. It can be said that the habit variable can adequately explain behavioural intention because students use social networks in their daily lives. Dakduk et al. (2018) also concluded in their study that habits do not significantly influence behavioural intention. As stated in the study, it can be concluded that habits do not directly influence behavioural intention but are related to age, gender,

and experience (Dakduk et al., 2018). Venkatesh et al. (2012) found no statistically significant relationship between hedonic motivation and habits and gender, age, and experience, but some studies have found a relationship between these variables. Baraz et al. (2021) concluded in their study that habit is an important predictor of behavioural intentions. In the dissertation study with 376 participants, the UTAUT-2 model was used to examine teacher use in EBA, MorpaKampus, and Okulistik (Kandemir, 2020). In the corresponding study, habit, social influence, and facilitating conditions were found to be determinants of behavioural intention. In explaining behavioural intention, habit was found to be the most important factor with 36%. Another variable whose effects on behavioural intentions were examined is a habit, and the habit was identified as an important predictor of behavioural intentions in the study. Habit refers to the automatic and reflexive execution of technology use. This indicates that health professionals are now accustomed to using the relevant information technologies (Yıldız & Dinçer, 2021).

Behavioural intention is an individual's willingness to perform a particular task. In the context of this study, some variables predict behavioural intention. Behavioural intention is also a predictor of active use. In this context, the "*Behavioural intention has a positive impact on students' behavioural intentions in using the distance learning system"* hypothesis was established, and the accuracy of this hypothesis was tested. As a result of the study, it was found that the corresponding hypothesis was not supported.

The study also examined the demographic information of the participants without considering the moderation effect. The demographic information shows that the participants have a relatively heterogeneous structure in terms of gender. This is also important for the results of the study. Again, 73.5% of the participants are between 19 and 21 years old. This study, conducted with a young group of participants, has limitations in terms of age. Other studies could examine more heterogeneous groups as an age variable.

The survey also asked questions to determine the frequency of use of the UBYS system or the amount of internet use by participants. When participants' daily internet use was examined, it was found that 54.3% of participants used the internet between five and seven hours per day. Some of the components of the model examined in the study could be related to such behaviours of the participants. The frequency of use of the UBYS system was also among the questions asked of participants. It appears that participants used UBYS to a moderate extent. Participants were also asked questions about their experience using a computer and owning a computer. Based on the responses to these questions, it is possible to interpret the variables that influence participants' behavioural intentions.

Conclusion

Therefore, this study examined the UBYS system within the UTAUT-2 model to understand participants' behavioural intentions. The associated variables explained 75% of the behavioural intentions. Behavioural intentions, on the other hand, explained 14% of usage. As a result of the study, a statistically significant model was determined. Based on the results, Learning Management Systems that are more likely to be adopted by participants can be developed. At the same time, the results of this study can provide guidance for various researchers. Different researchers can contribute to this topic by replicating the results of this study for other technologies and at different sample levels.

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