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Examination of Factors Affecting Continuance Intention to use Web-Based Distance Learning System via Structural Equation Modelling

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A R T I C L E   I N F O

A B S T R A C T

Purpose: The present study aims to model continuance intention to use web-based distance learning system and reveal the relationship between structures. **Method:** In this study, factors affecting continuance intention to use a web-based distance learning system was examined with a sample of 104 students attending an initial teacher training program through a web-based distance learning system at Van Yüzüncü Yıl University. The structures used in the study were identified as a result of a detailed review of literature. Moreover, complex structure of web-based distance learning systems, which included many components, were analyzed.

Technology Acceptance Model and Expectancy Disconfirmation Theory were used in determining the model to be used, and comprehensive research was conducted. **Findings:** continuance intention to use web-based distance learning system was indirectly affected by perceived quality, perceived control, perceived usability; and was directly affected by satisfaction. **Implications for Research and Practice:** Similar studies can be conducted with different student/user groups by different distance learning centers and institutions that provide distance learning services. Web-based distance learning systems, which have become widely used especially by companies, can be expanded via studies to be conducted within these environments.

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Introduction

Widespread use of the internet, advancements in education technologies, and limitations arise from time and space have led to the existence and development of web-based distance learning systems. Better understanding of the structure of this system, which continues to become widespread through the important investments made around the world, especially in Turkey, is of great importance in terms of both the efforts made and the economic costs.

Distance learning, in its brief definition, is the act of learning in a way that teacher and student do not have to share the same environment (Moore and Kearsley, 2012). Maintaining this feature, the concept of distance learning has gained many new and different definitions in accordance with the developed models and understandings, and advanced technologies since it first emerged (Demir, 2013; Moore and Kearsley, 2012). Distance learning provides a more democratic learning environment and equal opportunities for anyone who wants to learn, facilitating access to resources without any limitations arising from time and space (Girginer, 2001). Users can learn anytime and anywhere, which means they can study at their own pace and without depending on the time of the class. The primary interaction in the learning environment through distance learning is between the student and the computer. The student is provided with a learning environment, which can be adjusted according to personal plans. Distance learning is a system established to meet the educational needs of people who cannot benefit from formal education for some reasons (Altiparmak, Kurt and Kapidere, 2011).

The present study aims to model continuance intention to use web-based distance learning system and identify the relationship between structures. To this end, models related to continuance intention to use web-services in the literature were examined, and these models were found to be shaped around Technology Acceptance Model (TAM), Expectancy Disconfirmation Theory (EDT), and Theory of Reasoned Action (TRA) (see Ajzen and Fishbein, 1980, 2005; Chiu and Wang, 2008; Lin, 2012; Roca, Chiu, Martinez, 2006). In this study, strengths of many models, which were experimentally validated, were included in the model. This study also aims to analyze the structure of web based distance learning system as well as some structures that are believed to affect the continuance intention.

The basic concepts used in this study were reported; proposed models and hypotheses were determined; the structural equation modelling was summarized in general terms; and causal relationship between the latent variables used in predicting the continuance behavior to use a web-based distance learning system was examined.

Research Hypotheses

H1.a: There is a positive correlation between perceived quality and perceived control in a web-based distance learning system.

H1.b: Perceived quality in a web-based distance learning system has a positive effect on perceived usability.

H1.c: Perceived usability in a web-based distance learning system has a positive effect on satisfaction.

H1.d: Satisfaction in a web-based distance learning system has a positive effect on continuance usage intention.

Technology Acceptance Model and Expectancy Disconfirmation Theory

The main structural model of the study comprises TAM and EDT. TAM (Davis, 1989) takes the factors affecting users' decision to use a new technology into account. Davis (1989) primarily proposed TAM as an addition to TRA. TRA is an acknowledged model in social psychology, in which the behavior of an individual is assumed to be the function of his/her intention to realize this behavior, his/her attitude towards this behavior, and his/her subjective norm. TRA is derived from the fact that tendency to perform certain behaviors is the pre-condition for real behaviors (Ajzen and Fishbein, 2005). Beliefs regarding the behavior to be performed create the attitude of that person towards the behavior, and then, this attitude and the subjective norms which include opinions acquired from the environment regarding the attitude join together, and behavioral tendency of that person is shaped (Fishbein and Ajzen, 1975).

TAM suggests that two certain dynamics in technological acceptance are priority dynamics, which are perceived usefulness and perceived ease of use. Perceived usefulness refers to the belief of a person who uses a certain system to the extent she/he can develop his/her work performance, whereas perceived ease of use refers to the belief of a person to the extent of his/her use of a system that can be independent of performing physical and mental effort. Perceived usefulness and perceived ease of use affect the attitude towards the decision to use a system, and in parallel to TRA, this attitude determines the behavioral intention, and whether it will result in the initiation of the real use of a system or not (Davis, 1989). This causal relationship has been confirmed in many experimental studies (see Mathieson, 1991; Moon and Kim, 2001; Taylor and Todd, 1995; Venkatesh and Davis, 1996, 2000; Venkatesh, 2000). TAM has been expanded by the addition of structures such as the self-efficacy of using computers, internet self-efficacy and subjective norms (Bhattacherjee, 2000; Compeau and Higgins, 1995; Eastin and LaRose, 2000; Hsu and Chiu, 2004; Igbaria and Iivari, 1995; Joo, Bong and Choi, 2000; Taylor and Todd, 1995; Venkatesh and Davis, 2000).

EDT or Disconfirmation of Expectation Theory is a widely accepted consumer behavior model used in estimating and explaining consumer satisfaction and consumer intention to re-purchase. According to EDT by Richard Oliver (1977), the customer has expectations before performing the purchase, and compares the performance she/he has received after purchasing or using the product and the performance she/he has expected from the product before purchase. If both performances are equal as a result of the comparison, the confirmation is achieved (Devebakan, 2006; Ozer, 1999). The expected result here is satisfaction.

Perceived Quality and Perceived Usability

Perceived quality structure was examined in this study in terms of information, service, and system quality. Information, service, and system quality pertain to the outcomes of quality, and contribute to the success of information systems. These structures are similar to the perceived quality in marketing. These three components were also examined as the outputs of quality structure by Roca et al. (2006). Gorla, Somers and Wong (2010) contributed to the information system success model by determining relationships between system, service, and information quality, and their relationship with organizational impact. Xu, Benbasat and Cenfetelli (2013) integrated these three components within the context of e-services, and found that system quality had a direct effect on information quality and an indirect effect on service quality. Therefore, in light of the relevant literature, these three structures were considered appropriate to be evaluated as perceived quality.

Perceived usability structure was examined in terms of perceived usefulness (PU), perceived ease of use (PEU), and cognitive absorption (CA). The PU and PEU are two important dynamics of TAM (Agarwal and Karahanna, 2000; Cheng, 2011; Saade´ and Bahli, 2005; Teo and Noyes, 2011). There are also studies in which CA was examined as perceived usability along with PU and PEU (Agarwal and Karahanna, 2000; Saade´ and Bahli, 2005). CA is defined as a pleasure taken from a software and a serious involvement in information systems (Agarwal and Karahanna, 2000). Pleasure refers to the perception of the use of a computer system as an individual pleasure in itself as well as its intermediary contribution (Davis, Bagozzi and Warshaw, 1992). Agarwal and Karahanna (2000) found out CA had a significant effect on PU and PEU. Perceived pleasure could be defined as a version of CA (Gomez, 2010). Perceived pleasure component has also been used in the literature along with PU and PEU. Teo and Noyes (2011) showed that perceived pleasure had an effect on PU and PEU. Cheng's (2011) research revealed that CA affected PU and PEU.

Information and system quality are seen as two important components of PU and PEU in the model of information system success (DeLone and McLean, 1992; Seddon, 1997). Moreover, DeLone and McLean (2003) revisited their study by adding service quality to the model of information system success. DeLone and McLean's (2003) and Lin and Lu's (2000) studies indicated that the model of information system success could also be used for websites derived from the fact that a website design could be approached within the context of the information system. From this point of view, relevant studies suggested that PU and PEU may be related to information system quality. Ahn, Ryu and Han (2007) found that system, information, and service quality had a positive effect on PU, PEU, and playfulness. Playfulness is, in fact, a similar concept to the concept of playfulness related to computer use. Playfulness is defined as an individual interaction with computers based on instant imagination (Webster and Martocchio, 1992). Roca et al. (2006) considered CA and playfulness as similar concepts. Therefore, we can tentatively say that CA could have an effect on system, service, and information quality by associating CA with playfulness defined by Ahn et al. (2007). Pai and Huang (2011) showed the relationship between service, system, and information quality, and PU and PEU. Moreover, Lin (2010) experimentally

confirmed that system and information quality related to PU. In a study conducted on the effect of perceived system quality on the continuance intention of educators to use motivation and e-learning system, Islam (2012) indicated a significant relationship between PU and perceived system quality.

Perceived Control and Perceived Usability

Perceived control structure was examined in this study under the dimensions of internet experience, and internet and computer self-efficacies. Bandura (1986) defined self-efficacy as beliefs of a person about his/her judgments, and skills regarding the capabilities she/he has to determine the organization and the procedure to follow so as to achieve designed performance types. Self-efficacy is explained within the framework of information systems as the user's self-assessment of the individual's own computer skills in completing the determined tasks. From this point of view, self-efficacy of internet use could be discussed separately from self-efficacy of computer use. An individual can successfully display a set of required behaviors to use internet or make use of the internet independently from basic computer skills (Eastin and LaRose, 2000). According to Hong and Cheng (2005), internet experience is another factor that may have an effect on e-learning. Basic technical skills displayed by a user in using internet may affect e-learning. Tsai, Lin and Tsai (2001) indicated that internet experience had an effect on perceived control and behavior. Teh and Yong (2011) discussed internet and computer self-efficacies under the dimension of information sharing self-efficacy. Roca et al. (2006) focused on computer self-efficacy and internet self-efficacy under the dimension of perceived control structure. Bhuasiri, Xaymoungkhoun, Zo, Rho and Ciganek (2012) addressed internet experience, internet and computer self-efficacies under the dimension of user characteristics in their research in which they examined the success factors in e-learning in developing countries.

The existence of the relationship between computer self-efficacy and PEU is based on the studies conducted by Davis (1989) and Mathienson (1991). Davis (1989) developed a concept of PEU and PU based on the self-efficacy theory, and suggested that self-efficacy, which is defined as an individual's judgement about himself/herself as to how well s/he can achieve the tasks s/he is meant to do for a prospective situation, is related to PEU. Causal relationship between computer self-efficacy and PEU was also experimentally reported by some studies. For example, Venkatesh and Davis (1996) found out that computer self-efficacy had a direct effect on PEU. Similarly, the fact that computer self-efficacy had an effect on PEU was also indicated in other TAM studies (Strong, Dishaw and Bandy, 2006). Igbaria and Livari (1995) indicated that computer self-efficacy had a direct effect on PEU; however, it did not have any effect on PU. As also indicated by Holden and Sinatra (2014), some researchers, who were interested in TAM, assessed the effect of users on technology acceptance within the context of e-learning self-efficacy (Grandon, Alshare and Kwun, 2005; Park, 2009) and internet self-efficacy (Lai, 2008; Ma and Liu, 2007).

Internet self-efficacy focused on how an individual deals with or will deal with (identify, maintain, make use of) internet today and in the future (Lai, 2008). Ma and

Liu (2004) identified internet self-efficacy as a measurement of using specific and certain skills for an individual when using an internet server rather than a judgment about the capacity of a person towards applying internet skills. Ma and Liu (2004) found out that internet self-efficacy explained 48% of the change in PEU and 80% of the change in the whole model. Pituch and Lee (2006) reported that internet experience did not have any effect on PEU.

CA was indicated to be an enjoyment taken from software and a serious inclusion in information systems (Agarwal and Karahanna, 2000). As also indicated by Usluel and Vural (2009), Cognitive Absorption Theory developed by Agarwal and Karahanna (2000) has been so far used in studies, which provides a framework for user and computer interaction such as acting, effective quality, personal innovativeness, as well as in studies on technology acceptance such as ease of use, usefulness and intention (see Chung and Tan, 2004; Ngai, 2005; Newman, 2005; Roca et al., 2006; Saade and Bahli 2005; Serenko, Bontis and Detlor, 2006; Shang, Chen and Shen, 2005; Qiu and Benbasat, 2005; Whitten and Wakefield, 2006; Zhang, Li and Sun, 2006). CA was relatively reported less in the studies on TAM although it is the pioneer of two important structures of TAM: PEU and PU (Zhang et al., 2006). To our knowledge, although there have been no previous studies conducted, which experimentally confirms the relationship between CA and computer/internet self-efficacy, there are some theoretical assumptions proposed within social-cognitive theory. The aspect that Sripada, Angstadt, Banks, Nathan and Liberzon (2009) referred to and studied regarding the question "Which factors are likely to affect the cognitive absorption of an individual?" asked by Agarwal and Karahanna (2000), and the studies conducted in the past (Agarwal and Karahanna, 2000; Roche and Mc Conkey, 1990) contributed to developing an understanding of this matter. Agarwal and Karahanna (2000) discussed that internet use behavior might be related to CA, and the same study indicated that individual characteristics might be effective in situations based on experiences. Previous studies presented that CA is determined by individual characteristics and environmental factors. These factors are used as personal innovativeness and perceived playfulness in the literature (Agarwal and Karahanna, 2000). In this study, individual factors are examined as internet self-efficacy and computer self-efficacy using social-cognitive theory. As indicated by Chandra and Fisher (2009), social-cognitive theory and CA could be associated with each other. According to social-cognitive theory of Bandura (1986), people behave neither based on internal stimuli nor external stimuli. Instead, human behavior was explained as a model of reciprocity among cognitive and individual factors and environmental phenomena. Bandura defined the concept of learning as information acquired within a cognitive process. Nevertheless, most of the thoughts and behaviors of human beings have a social origin, which means they include information obtained from the social environment (Stadjkovic and Luthans, 1998). Bandura's theory is based on triadic reciprocal determinism. These are individual, environment, and behavior. These three factors affect one another. According to Bandura, individual and environmental factors were not independent variables. They continuously affect each other. The individual creates, changes, and sometimes destroys his/her environment. (Bandura, 1986) The key mechanism, which affects human behavior in this dynamic relationship,

is self-efficacy. This theory refers to the fact that psychological processes require individual competency no matter what type it is; in other words, which moves will be made when dealing with situations, how much effort will be required, how long it will last and which strategies will be used are determined by individual competency. This proposition was experimentally reported in various contexts, such as complex decision-making processes (Wood and Bandura, 1989), computer skills acquisition and technology acceptance by users (Agarwal et al., 2000; Venkatesh, 2000). The relationships between CA and computer self-efficacy or internet self-efficacy structures were indirectly supported by theory in this way. *Perceived usability and satisfaction*

As also indicated by Soydal (2008), satisfaction is defined as "the disappointment caused as a result of the comparison of personal expectations with the perceived performance of a product or service" (Kotler, Jatusripiak and Maesiincee, 2000). User satisfaction is defined as "the subjective result of an interactive activity or experience" (Lindgaard and Dudek, 2003), and it is highlighted to be a key to keep the customer (Kotler, 1994). Bhattachejee (2001a, b) showed that PU is an important factor for satisfaction. Hayashi, Chen, Ryan and Wu (2004) found out that PU in three different online learning environments was related to satisfaction. Rai, Lang and Welker (2002) tested the success model in information systems, and showed that user satisfaction is easily affected by PU and PEU. De Lone and Mc Lean (1992) suggested that beliefs about information quality and ease of use affected user satisfaction. Woszczynski, Roth and Segars (2002) developed a model, which theoretically explains playfulness in computer interaction. It is found that user satisfaction might be a result of an enjoyable behavior, and a more satisfied user might be a user who enjoyed more. Lin, Wu and Tsai (2005) indicated a direct relationship between the perceived playfulness of a website and satisfaction. Joo, Kim and Kim (2011) showed that PU, PEU, and cognitive presence were all related to student satisfaction who took online university courses. The relationship between PU, PEU, and satisfaction were experimentally addressed in various studies (e.g., Rouibah and Hamdy, 2011; Wang, Lin and Liao, 2012; Wen, Prybutok and Xu, 2011).

Satisfaction and Continuance Intention to Use

Previous research showed that satisfaction had a positive effect on the intention to purchase (Bitner, 1990; LaBarbera and Mazursky, 1983; Oliver, 1981). Pioneering studies on the satisfaction of information systems found out a causal relationship between these structures (Bhattacherjee, 2001a, b; Chiu, Hsu, Sun and Lin 2005; Hayashi et al., 2004; Lin et al., 2005). Udo, Bagchi and Kirs (2011) showed in the study they conducted in which they used SERVQUAL scale to measure e-learning quality that satisfaction affected the continuance intention to use an e-learning system. Yet, in a similar manner, Limayem and Cheung (2008), Stone and Eveleth (2013), Chang and Lehman (2013), and Lin (2012) showed that there was a relationship between these structures.

Method

This study comprises two phases. In the first phase, a literature review regarding the subject was conducted, and the procedure to follow and conceptual framework were determined. In the second phase, the hypotheses of the research model were identified, and data were collected. Assessment application method was used in data collection. For the validity of the data collection tool, experts in educational sciences were consulted for the adaptation of the items in the tool to the Turkish language, and some items were translated when required. In cross cultural research, it is important that the translated items provide the same stimuli as the original items, and also they need to be equivalent (Teune and Przeworski, 1970). Reliability of each sub-scale was tested examining Cronbach's α coefficients; and then, the causal relationships based on the proposed theoretical model were analyzed using structural equation model (SEM). The proposed structural equation model in this study is given in Figure 1.

Data Collection

A measurement tool was developed to collect data which was applied to the students, who took pedagogical formation certificate program and used a web-based distance learning system in 2014-2015 fall term at Yüzüncü Yıl University. The measurement tool was applied to 180 out of 300 students, and the number decreased to 104 students after having removed invalid survey forms. For the validity of the data collection tool, relevant published studies were taken into account for various purposes as presented in Table 1.

Table 1

Relevant Studies Considered for the Creation of the Items in the Measurement Tool

| |
|---|
| Perceived usefulness and perceived ease of use items (Davis, 1989) |
| Cognitive absorption item (Agarwal and Karahanna, 2000) |
| Information and system quality item (Bailey and Pearson, 1983; Baroudi and Orlikowski, 1988; Delone and McLean, 1992) |
| Service quality (Kettinger and Lee, 1994, 1997; Parasuraman Zeithaml and Berry 1985, 1988; Pitt, Watson and Kavan, 1995) |
| Computer self-efficacy item (Compeau and Higgins, 1995) |
| Internet self-efficacy item (Hsu and Chiu, 2004; Torkzadeh and Van Dyke, 2001) |
| Internet experience item (Tan and Teo, 2000) |
| Satisfaction item (Oliver, 1980; Spreng, MacKenzie and Olshavsky, 1996) |
| Continuance intention to use item (Bhattacherjee, 2001b; Mathieson, 1991) |

Proposed Model
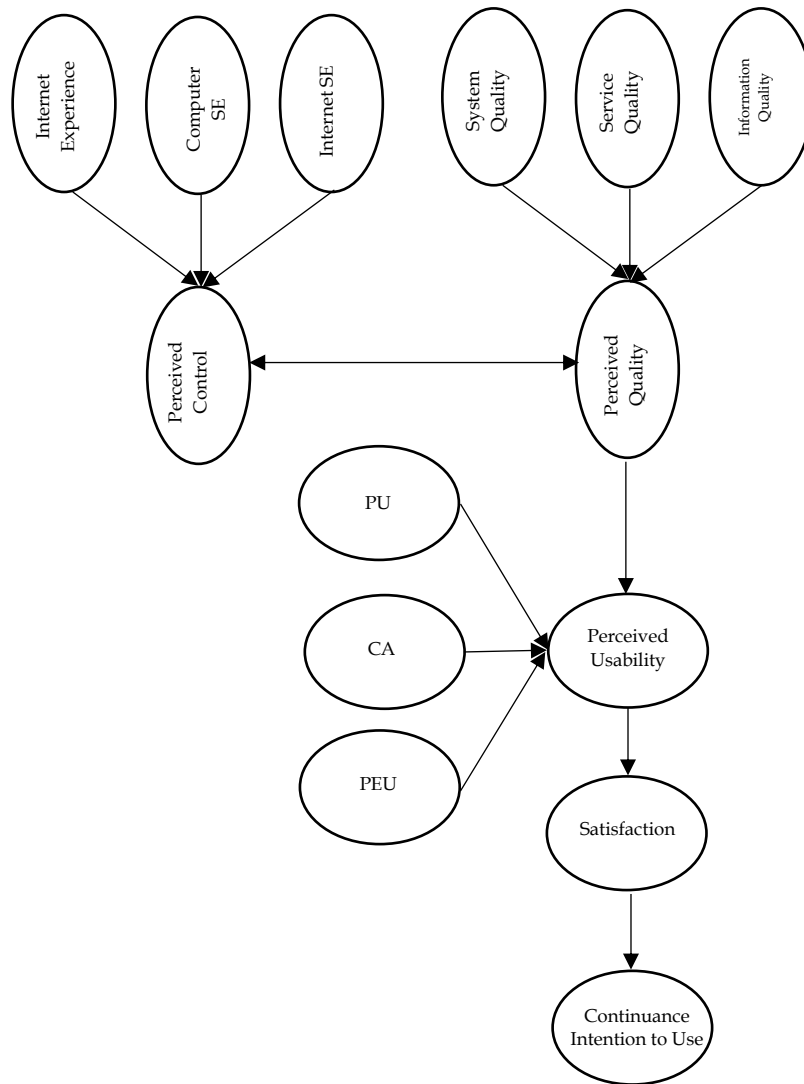
Figure 1. Perceived Quality, Perceived Usability, Perceived Control, Satisfaction and Model of Continuance Usage Intention

Structural Equation Model

Çelik and Yılmaz (2013), reported that Structural Equation Model (SEM) is a statistical methodology employed in both social and scientific research regarding behavior and education, and research in the fields of biology, marketing and medicine (Byrne, 1994; Kline 2005; Reisinger and Turner, 1999; Timm, 2002; Tomer, 2003). SEM is used in many disciplines to answer the research questions regarding causal

relationship between latent structures measured by the observed variables. Covariance structure between the observed variables is used to identify linear structural relationship between all variables in the model. Such models in social and behavioral sciences are named as "causal" models, and they include covariance matrix analysis of explicit variables derived from a linear structural model (Timm, 2002; Tomer, 2003). SEM provides researchers with an opportunity to determine direct and indirect effects between variables.

Results

Demographic Findings

In the first phase of data collection tool, questions were asked to identify demographic information of the participants and their internet use preferences. 53.5% of the participants were female, and 46.5% of them were male. As it can be seen in Table 2, the students who took pedagogical formation certificate program and answered this question were between the ages of 25 and 29, which had the highest percentage, with 49.0%. The lowest percentage was 3% with the participants who were between 35 and 39.

Table 2

Frequency According to Age Groups

Age	Frequency	Percent
24 years-old and below	38	36.5
25-29 years-old	51	49.0
30-34 years-old	12	11.5
35-39 years-old	3	3.0
Total	104	100.0

As it can be seen from Table 3, 44 of the students who took pedagogical formation certificate program used internet for 1-2 hours daily with a percentage of 42.3%. The number of students who used internet for 5 to 7 hours was 5, whereas the number of students who used internet for 7 or more hours was 7.

Table 3

Frequency of Internet Usage

Frequency	Frequency	Percent
Less than 1 hour	20	19.2
1-2 hours	44	42.3
3-5 hours	28	26.9
5-7 hours	5	4.8
7 or more hours	7	6.7
Total	104	100.0

The majority of students had not attended any online certificate program, and the number of those who had was 19 with the percentage of 19.4%.

Examination of the Proposed Model

Cronbach's α coefficient, which is one of the most frequently used methods in testing the validity of scales and the internal consistency of measurement tools, was used. Cronbach's α coefficient for the perceived quality structure was calculated as 0.888, for perceived usability as 0.839, and for perceived control as 0.880, which showed that each structure was highly reliable.
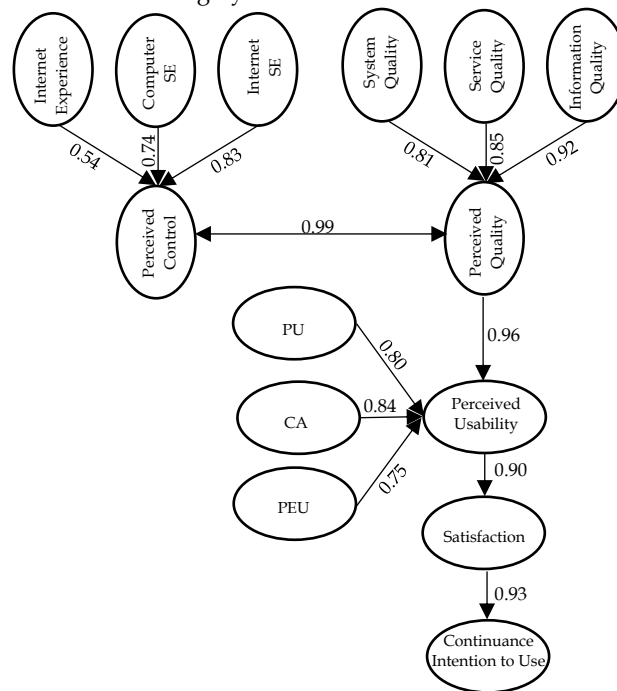

Figure 2. The Model of Perceived Control, Perceived Quality, Perceived Usability, Satisfaction and Continuance Intention to Use: Structural Model

Table 4

Research Hypotheses, t Values, R^2

Hypothesis	Path	Path Coefficient	t-value	R^2	Result
H1.a	Perceived Quality ←→Perceived Control	0.99	18.35	-----	Confirmed
H1.b	Perceived Quality→Perceived Usability	0.96	12.55	0.918	Confirmed
H1.c	Perceived Usability→Satisfaction	0.90	6.46	0.813	Confirmed
H1.d	Satisfaction→ Continuance Intention to Use	0.93	7.45	0.870	Confirmed

Path coefficients were found significant, and hypotheses were confirmed. An increase of 1 unit in perceived quality in an e-learning system would cause an increase

of 0.99 unit in perceived control. Similarly, an increase of 1 unit in perceived quality would lead to an increase of 0.96 unit in perceived usability; an increase of 1 unit in perceived usability would lead to an increase of 0.90 unit in satisfaction; and finally, an increase of 1 unit in satisfaction would lead to an increase of 0.93 unit in the continuance intention to use (see also Figure 2). Coefficient of determination (R^2) have been calculated to be 91%, 81% and 87%.

Discussion, Conclusion and Recommendations

Web-based distance learning systems as well as advancements in internet and communication have led to diversity in the forms of learning. Web–based distance learning is operated through these systems, the majority of which is web-based. These systems have many different names and learning environments. Some of the learning environments are M-learning, harmonized learning, virtual learning, and authentically-enhanced learning environments. Provision of successful learning environments in terms of e-learning applications is an important issue. The type of e-learning has taken users further from being a third party in learning process thanks to the advancements in web and the learning environments. These environments have become open to interaction thanks to Web 2.0, and have included users in learning process thanks to Web 3.0. It is therefore of great importance to examine the factors which affect continuance intentions of users to use these e-learning systems on which the users have centered. Thus, in this study, structures which may affect continuance intentionto use an e-learning system have been examined by reviewing the literature both in the light of the previous studies and the analyses conducted, and structural equation models. This study aimed to present the relationship between perceived quality, perceived usability, perceived control, satisfaction and continuance usage intention towards structures used in the models (see Chiu and Wang, 2008; Lin, 2012; Roca et al., 2006). The structures of TAM and EDT were combined with some other structures, and were examined. Firstly, it was suggested that perceived quality could be explained through system, service and information qualities, and these relations were confirmed. In the literature, it was identified that information and system qualities were used relatively more in the studies conducted on e-learning compared to the ones on service quality (SQ). However, SQ was identified to have an important effect of 85% in explaining the change in perceived quality. Perceived usability structure was aimed to be explained using PU, PEU, and CA factors, and these relations were also found to be significant. An important point to be mentioned here is that CA is included in many studies related to information systems even though it is used under different names such as perceived playfulness and perceived enjoyment, which are characterized as similar concepts in the literature. In another hypothesis, the effect of perceived quality on perceived usability was examined, and it was shown that there was a significant effect. Then, perceived control structure was examined using internet self-efficacy, computer self-efficacy and internet experience dimensions. Concepts, such as e-learning self-efficacy and e-learning experience, were observed to have been used in the studies carried out in recent years. It is therefore thought that e-learning experience will be useful to be examined as a different dimension as e-

learning continues to be widespread in Turkey. Hence, users were asked whether they had been involved in an online certificate program before or not in the demographic information section in the first phase of the study, and approximately 80% of the students were found not to have done so. Satisfaction was indicated to have a positive effect on the continuance intention to use. In the present study, the relationships between the structures were separately evaluated; and as a result, satisfaction was identified to have a direct effect on the continuance intention to use, and the other structures were identified to have an indirect effect. When the institutions, which provide online training and whose number is increasing, are considered, it will be especially useful to examine perceived quality structure in further studies. One of the limitations of our study was that only some of the students, who were enrolled in a distance pedagogical formation certificate program at Yüzüncü Yıl University, were given a questionnaire. Similar studies can be conducted with different student/user groups by different distance learning centres and institutions which provide distance learning services. E-learning systems, which have become widely-used especially by companies, can be expanded via studies to be conducted within these environments. The structure of web-based learning systems can be analyzed using different factors. It is possible to contribute to the institutions, which operate in this field, by guiding them with the help of comparative and similar studies to be conducted.

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Web Tabanlı Uzaktan Eğitim Sistemini Kullanmaya Devam Etme Niyetini Etkileyen Faktörlerin Yapısal Eşitlik Modeli ile İncelenmesi

Atıf:

Özet

Problem Durumu: Bu çalışmada, Yüzüncü Yıl Üniversitesi web tabanlı uzaktan eğitim sistemi ile formasyon eğitimi alan öğrenciler örneğinde bu sistemi kullanmaya devam etme niyetini etkileyen faktörler yapısal eşitlik modellemesi ile incelenmiştir.

Araştırmanın Amacı: Çalışmada yer alacak yapılar detaylı bir literatür taraması sonucunda belirlenmiş ve birçok bileşeni bir arada bulunduran web tabanlı uzaktan eğitim sistemlerinin karmaşık yapısı çözümlenmeye çalışılmıştır. Kullanılacak modelin belirlenmesinde Teknoloji Kabul Modeli (TAM, Technology Acceptance Model) ve Onaylanmayan Beklentiler Kuramı' ndan (EDT, Expectancy Disconfirmation Theory) faydalanılmış ve geniş kapsamlı bir araştırma yapılmıştır. Sonuç olarak bir web tabanlı uzaktan eğitim sistemini kullanmaya devam etme niyetinin algılanan kalite, algılanan kontrol, algılanan kullanılabilirlik yapılarından dolaylı olarak ve memnuniyet yapısından direk etkilendiği belirlenmiştir.

Araştırmanın Yöntemi: Araştırmanın iki aşaması mevcuttur. İlk aşamada konuyla ilgili literatür taraması yapılarak izlenecek yol ve kavramsal çerçeve belirlenmiş ikinci aşamada araştırma modelinin hipotezleri belirlenip veriler toplanmıştır. Verilerin toplanmasında ölçme aracı uygulanması yöntemi kullanılmıştır. Ölçme aracı formu geçerliliği ispatlanmış birçok ölçeğin birleşiminden oluşmaktadır. Ölçme aracında yer alan maddelerin Türkçe 'ye adaptasyonunda eğitim bilimleri alanında uzman kişilerden görüşler alınmış ve ayrıca gerektiği noktada çeviri konusunda da destek alınmıştır. Her bir alt ölçeğin güvenilirliği Cronbach's Alfa katsayıları incelenerek test edilmiş daha sonra yapısal eşitlik modeli (SEM) yardımıyla, ileri sürülen teorik modele bağlı nedensel ilişkilerin analizi yapılmıştır. Ölçeklerin güvenilirliğinin ve ölçüm araçlarının içsel tutarlılığının test edilmesinde en çok kullanılan yöntemlerden biri olan Cronbach's α katsayısından yararlanılmıştır. Algılanan kalite yapısının güvenilirliği Cronbach's α katsayısı hesaplanarak belirlenmiştir. Algılanan kalite yapısı için 0.888, Algılanan kullanılabilirlik 0,839, Algılanan kontrol 0,880 olarak hesaplanmıştır. Bu değerler her bir yapının yüksek derecede güvenilir olduğunu göstermektedir.

Araştırmanın Bulguları: Path katsayıları anlamlı bulunmuştur ve hipotezler doğrulanmıştır. Bir e-öğrenme sisteminde algılanan kalitede meydana gelen 1 birimlik artış algılanan kontrolde 0.99 birim artışa sebep olacaktır. Aynı şekilde algılanan

kalitede meydana gelen 1 birimlik artış algılanan kullanılabilirlikte 0.96 birim artışa sebep olacaktır, algılanan kullanılabilirlikte meydana gelen 1 birimlik artış memnuniyette 0.90 birimlik artışa sebep olacaktır ve son olarak memnuniyette meydana gelen 1 birimlik artış kullanmaya devam etme niyetinde 0.93 birim artışa sebep olacaktır. Belirlilik katsayıları (R^2) % 91, %81 ve %87 olarak hesaplanmıştır.

Araştırmanın Sonuçları ve Önerileri: Uzaktan eğitim sistemleri internet ve iletişim alanında yaşanılan gelişmelerle birlikte öğrenme biçimlerinde çeşitliliğe yol açmıştır. Uzaktan eğitim artık çoğunluğu web tabanlı olan bu sistemler üzerinden yürütülmektedir. Bu sistemler birçok isimle, birçok öğrenme ortamı ile karşımıza çıkmaktadır. M-öğrenme, harmanlanmış öğrenme, sanal ve gerçekliği arttırılmış öğrenme ortamları bunlardan bazılarıdır. E-öğrenme uygulamaları açısından başarılı öğrenme ortamlarının sağlanması önemli bir konudur. E-öğrenmenin şekli Web' de yaşanan gelişmelerle birlikte kullanıcıları öğrenme sürecinde üçüncü şahıs olmaktan öteye geçirmiş, Web 2.0 ile etkileşime açık hale gelen öğrenme ortamları Web 3.0 ile kullanıcıları öğrenme sürecine dâhil etmiştir. Bu sebeplerle kullanıcının giderek sistemin merkezine oturduğu bu e-öğrenme sistemlerini kullanmaya devam etme niyetlerini etkileyen faktörlerin incelenmesi araştırılmaya değer bir konudur. Bu sebeple bu çalışma ile literatür incelenerek bir e-öğrenme sistemini kullanmaya devam etme niyetini etkileyebilecek yapılar gerek önceki çalışmalar ışığında gerekse yapılan analizler ve yapısal eşitlik modelleri ile incelenmiştir. Kullanılan modellerde algılanan kalite, algılanan kullanılabilirlik, algılanan kontrol, memnuniyet ve kullanmaya devam etme niyeti yapıları arasındaki ilişkiler açığa çıkarılmaya çalışılmıştır. TAM ve EDT' nin yapıları ile bir takım diğer yapılar birleştirilerek incelenmiştir. İlk olarak algılanan kalitenin sistem, servis ve bilgi kaliteleri ile açıklanabileceği öne sürülmüş ve bu ilişkiler doğrulanmıştır. Literatürde bilgi ve sistem kalitelerinin e-öğrenme ile ilgili çalışmalarda servis kalitesine görece daha fazla kullanılmış olduğu görülmüştür. Ancak servis kalitesinin algılanan kalitedeki değişimi açıklamada %85 ile önemli bir etkisinin olduğu belirlenmiştir. Algılanan kullanılabilirlik yapısı, algılanan fayda, algılanan kullanım kolaylığı ve bilişsel kapılma faktörleri ile açıklanmak istenmiş ve bu ilişkiler de anlamlı bulunmuştur. Burada bahsedilmesi gereken önemli bir nokta, bilişsel kapılmanın literatürde benzer kavramlar olarak nitelendirilen algılanan eğlenebilirlik ve algılanan zevk bileşenleri olarak farklı isimlerle de olsa bilgi sistemlerini ilgilendiren birçok çalışmada yer almasıdır. Diğer bir hipotezde algılanan kalitenin algılanan kullanılabilirlik üzerindeki etkisi incelenmiş ve anlamlı bir etkisi olduğu gösterilmiştir. Daha sonra algılanan kontrol yapısı; internet öz-yeterliliği, bilgisayar öz yeterliliği ve internet deneyimi boyutları ile incelenmiştir. Son yıllarda yapılan çalışmalarda e-öğrenme öz-yeterliliği, e-öğrenme deneyimi gibi kavramların kullanıldığı görülmüştür Bu sebeple Ülkemizde de e-öğrenme yaygınlaşmaya devam ettikçe e-öğrenme deneyiminin farklı bir boyut olarak ayrıca irdelenmesinin faydalı olacağı düşünülmektedir. Nitekim araştırmanın ilk kısmında yer alan demografik bilgiler kısmında kullanıcıların daha önceden online bir sertifika programına katılıp katılmadıkları sorulmuş ve öğrencilerin yaklaşık % 80'inin katılmadığı bilgisine ulaşılmıştır. Kullanmaya devam etme niyetinde memnuniyetin pozitif bir etkisi olduğu belirlenmiştir. Bu çalışmada yapılar arasındaki ilişkiler ayrı ayrı birbirleri açısından değerlendirilmiştir ve sonuç olarak memnuniyetin kullanmaya devam etme

niyetinde direk etkisi olduğu diğer yapıların ise dolaylı etkisi olduğu belirlenmiştir. Sayıca çoğalan online eğitim veren kuruluşlar göz önünde bulundurulduğunda özellikle algılanan kalite yapısının gelecekteki çalışmalarca incelenmesi faydalı olacaktır. Van Yüzüncü Yıl Üniversitesinde uzaktan eğitimle pedagojik formasyon eğitimi gören öğrencilerin bir kısmına anket uygulanması ile oluşturulmuştur. Bunlar araştırmanın kısıtlarını oluşturmaktadır. Benzer çalışmalar farklı uzaktan eğitim merkezleri ve uzaktan eğitim veren kuruluşlarca farklı öğrenci/kullanıcı gruplarına uygulanabilir. Özellikle şirketlerce de kullanımı yaygınlaşan e-öğrenme sistemleri bu çevrelere yapılacak araştırmalarla genişletilebilir. Web tabanlı eğitim sistemleri yapısı farklı faktörler kullanılarak çözümlenebilir. Yapılacak karşılaştırmalı çalışmalar ve benzer çalışmalar ile bu alanda faaliyet gösteren kuruluşlara yol gösterme anlamında katkı sunabilir.

Anahtar Sözcükler: Uzaktan Eğitim, E-Öğrenme, Teknoloji Kabul Modeli, Web.