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Exploring factors affecting higher education students' use of Instagram for educational purposes with a structural model

Yükseköğretim öğrencilerinin eğitim amaçlı Instagram kullanımlarını etkileyen faktörlerin yapısal bir modelle incelenmesi

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The rapid development of digital software and technologies has resulted in the design of new social networks (SNS). These social network tools have added innovations to existing social media environments and made them user-friendly. Due to the integration of software technologies into all areas of life, social media platforms have become widely used especially by higher education students. Although SNS such as YouTube and Instagram are primarily associated with entertainment, they now frequently include educational videos and posts. This study investigates the factors affecting higher education students' use of Instagram for educational purposes using a proposed structural model. The study started by developing a research model based on the literature. A data collection tool was designed based on the model and data were collected online through a link. The proposed research model and its relationships were tested using partial least squares structural equation modelling (PLS-SEM). The results of the analyses revealed that the perceived usefulness of Instagram use increases with content richness, video quality and source credibility. Furthermore, user satisfaction is positively related to perceived usefulness, leading to an increase in Instagram usage intensity.

Keywords: *Instagram, higher education, educational purposes, social networks, PLS-SEM*

Dijital yazılım ve teknolojilerin hızlı gelişimi, yeni sosyal ağların (SNS) tasarlanmasına neden olmuştur. Bu sosyal ağ araçları mevcut sosyal medya ortamlarına yenilikler katmış ve onları kullanıcı dostu hale getirmiştir. Yazılım teknolojilerinin hayatın her alanına entegre olması nedeniyle sosyal medya platformları özellikle yükseköğretim öğrencileri tarafından yaygın olarak kullanılır hale gelmiştir. YouTube ve Instagram gibi sosyal ağlar öncelikle eğlenceyle ilişkilendirilse de artık sıklıkla eğitici videolar ve gönderiler içeriyorlar. Bu çalışma, yükseköğretim öğrencilerinin eğitim amaçlı Instagram kullanımlarını etkileyen faktörleri önerilen bir yapısal model kullanarak araştırmaktadır. Çalışma literatüre dayalı bir araştırma modeli geliştirilerek başlamıştır. Model temel alınarak bir veri toplama aracı tasarlanmış ve veriler bir bağlantı aracılığıyla çevrimiçi olarak toplanmıştır. Önerilen araştırma modeli ve ilişkileri, kısmi en küçük kareler yapısal eşitlik modellemesi (PLS-SEM) kullanılarak test edildi. Analiz sonuçları, Instagram kullanımının algılanan kullanışlılığının içerik zenginliği, video kalitesi ve kaynak güvenilirliği arttıkça arttığını ortaya koydu. Ayrıca kullanıcı memnuniyeti, algılanan kullanışlılık ile pozitif yönde ilişkilidir ve bu da Instagram kullanım yoğunluğunun artmasına yol açmaktadır.

Anahtar Kelimeler: *Instagram, yükseköğrenim, eğitimsel amaçlar, sosyal ağlar, PLS-SEM*

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1. INTRODUCTION

Social media usage is on the rise across all age groups, particularly among young people. The development of social media has transformed the way individuals, societies, and organizations interact, communicate, share information, and conduct business. Social media platforms share commonalities, and similar features. The generation of 21st century youth, who have grown up with digital technology, are increasingly reliant on online resources for information. Social networks are predominantly used by adolescents and young adults as an extension of their daily lives, to share experiences with friends, connect with like-minded individuals, and communicate with others who share similar interests and personalities.

The use of social media in higher education can facilitate active, creative, and collaborative learning, increase student interaction with peers, instructors, and course material, and enhance research, questioning, and problem-solving skills. Additionally, it can streamline communication between educators and students. Instagram is a popular social media tool, particularly among young people, that offers convenient features for educational purposes such as surveys and question answering. Its ease of use and accessibility make it a valuable resource for learning. Social networks are constantly updating their features, providing users with improved learning opportunities.

As of January 2023, 31% of Instagram's global audience is aged between 18 and 24, while 30.3% are aged between 25 and 34. Additionally, 15.7% of users belong to the 35 to 44 age group. (Statista ,2024). Young people, particularly those in high school and higher education students' spend a significant portion of their day on social media. The ease of communication and user-friendly interface make it a potentially valuable educational tool. Therefore, the use of social media platforms, such as Instagram, for educational purposes should not be overlooked. Social media platforms can aid research and development processes by providing tools for accessing, monitoring, examining, presenting, and producing data. They offer the opportunity to gather opinions from a wide range of sources, including experts and the general public. Instagram is also a platform where students can share their work. Thus, students can document the progression of their careers in digital environments, including the various internet resources they utilize. It is evident that Instagram can be an asset to education.

Mazman & Usluel (2010) tried to explain the use of Facebook for educational purposes with structural equation modelling. The proposed model includes the relationships between adoption and usage purposes. As a result of the analyses, it was stated that 50% of the use of Facebook for educational purposes could be explained by Facebook adoption processes. Yu et al. (2010), online social networks have significantly impacted university campuses and changed many aspects of student life. The authors found that these networks have a direct impact on students' academic performance and help them to socially integrate and adapt to the university culture.

Roblyer et al. (2010) conducted a study to evaluate the use of social networking sites, such as Facebook, among students as a communication technology. The survey collected data on the use of Facebook and e-mail technologies among 120 university students and 62 faculty members. When comparing university students and faculty members, it was found that students used Facebook more frequently than faculty members and were more inclined to use Facebook and similar technologies to support their class work.

In their review of existing research studies on the use of Facebook for teaching and learning, Yang et al. (2011) examined twenty-one journal articles. The study suggests that research on the potential of Facebook to enhance student performance outcomes is still in its early stages. It is recommended that further empirical research be conducted to determine the effectiveness of Facebook as a tool for teaching and learning. Solmaz et al. (2013) conducted research at university to measure university students' use of social media. They found that almost all students use social media, with the majority accessing it daily and spending a significant amount of time there. Social media is used for communication with friends, entertainment, relaxation, messaging, staying up to date with current events, and accessing information.

Kilis et al. (2014) conducted qualitative research with 22 volunteer instructors from two universities in Turkey and Germany. The study found that while instructors were aware of the potential benefits of social media in education, they were not fully conscious of them. Instructors used social media to share course materials, communicate with students, and facilitate discussions during the education process. However, there are differences between the two countries in terms of the tools used. It has been stated that in Turkey, Facebook is primarily used for educational purposes, whereas in Germany, the learning management system is the preferred tool.

Morkoç & Erdönmez (2014) conducted a study to determine university students' usage habits of the internet and social media, their levels of knowledge about social media, and the effectiveness and usefulness of social media in educational processes. The results showed that the participants used social media at a very high rate, particularly Facebook. The research found that the use of social media in educational processes was beneficial. Students gained experience and found it easier to do their homework. Social media applications were also found to be simple and understandable. Additionally, faculty members and school administration encouraged the use of social media. Using social media in teaching activities, in addition to traditional methods, was found to be more effective. Sarsar et al. (2015) found that incorporating social media into educational activities is more appealing.

The study identified five main themes: social networks, learning environment, affective characteristics, learner contribution, and instructor characteristics. Based on the findings, all students' expectations for the course were met. The use of Facebook for course activities received positive evaluations from all students. It was observed that half of the learners found the use of Blogger to be positive.

Saraçoğlu & Aküzüm (2017) found that there is no significant difference in university students' attitudes towards social media based on gender. However, male students tend to have a more positive attitude towards social media's ability to provide social competence compared to female students. Argın's (2013) study found significant gender differences in the scores received by students in the social competence and social isolation sub-dimensions, with male students scoring higher in both areas. This suggests that male students may have greater social competence but may also be more isolated from social media sites and social life. According to Lim and Richardson (2016), students often use social networking sites (SNSs) for various reasons. The analysis also revealed positive perceptions about the use of SNSs for educational purposes.

Yılmazsoy & Kahraman (2017) found that students had positive opinions about using Facebook for educational purposes and its potential for reducing Facebook addiction. The study also revealed a significant relationship between the level of Facebook use for educational purposes and gender and faculty variables, but no significant difference was found based on smartphone or personal computer ownership. Üstün et al. (2018) investigated the benefits of social media for educational purposes among students receiving distance education. The study targeted students from University's Open Education Faculty, with a sample size of 587 students. Data was collected through a survey. The results showed that students primarily use social media for communication and socialization purposes. However, it is also observed that students extensively use social media for educational purposes, such as accessing teaching materials and sharing questions from previous exams. This suggests a significant correlation between daily social media usage and perceptions of social media's educational value.

Çömlekçi & Başol (2019) discovered that university students spend an average of 4 hours and 16 minutes per day on social media, which is significantly higher than the Turkish average of 2 hours and 48 minutes. This result indicates that young people spend more time on social media than other age groups. Additionally, the study found that women spend 40 minutes more time on social media than men. According to Kemp's (2018) statistics, Instagram is the social media application that young people spend the most time on, exceeding Facebook by an hour. This finding aligns with the common use of social media for entertainment and leisure time. Additionally, Turkey ranks 6th in the world in terms of Instagram usage. The survey results indicate that university students prefer to receive news through Instagram, a social media platform primarily used for leisure and communication with friends. This suggests that young people are turning to social media to fulfill their information needs. It is important to note that Instagram is not a traditional news delivery platform.

It has been observed that in higher education, students are increasingly using Instagram for educational purposes in terms of frequency and duration. Identifying the factors that contribute to this increase in usage could facilitate the design and development of networks such as Instagram. Given the limited number of studies on this topic, this study could make a valuable contribution to the literature. The aim of this study is to examine the factors that affect the use of Instagram for educational purposes among higher education students, using a proposed structural model. The study commenced by developing a research model based on the literature. A data collection tool was designed based on the model, and data were collected online via a link. The proposed research model and its relationships were tested using PLS-SEM.

2. MATERIAL AND METHODS

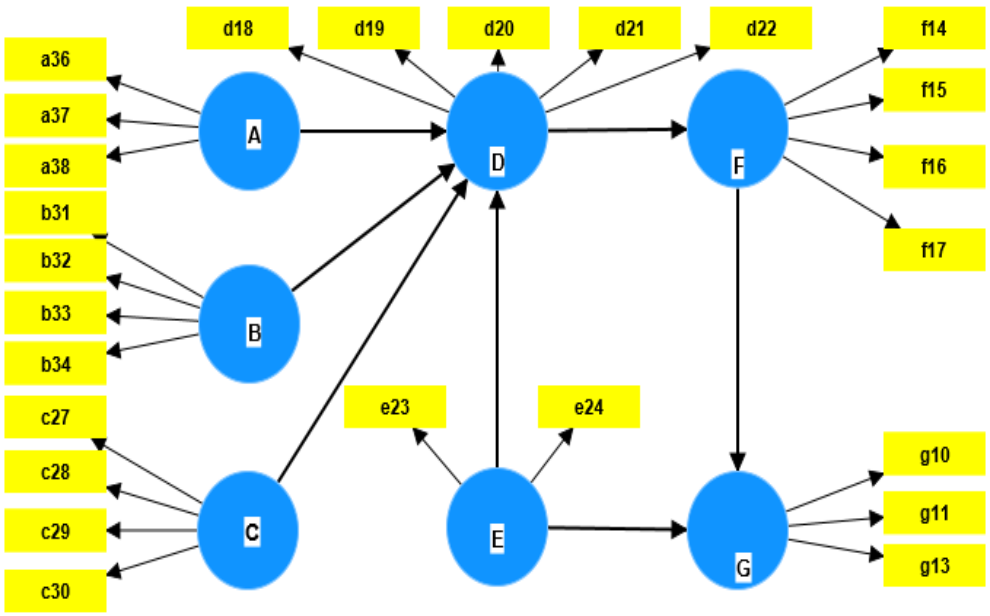
2.1. Designing the research model and hypotheses

The study investigated university students' attitudes and behavioral intentions towards using Instagram for educational purposes. The research model and items used in the study were designed in accordance with the study's purpose and the relevant literature (Chintalapati & Daruri, 2017; Lee & Lehto, 2013; Abu-Taieh et al., 2022). The model presented in Figure 1 is based on the knowledge adoption model-IAM (Sussman & Siegal, 2003; Wang, 2016) and Technology Acceptance Model -TAM (Davis, 1985, 1989).

TAM determines the acceptance of a new technology by the user. TAM determines the acceptance of a new technology by the user. It is a model based on the Theory of Reasoned Behavior and argues that acceptance depends on two variables TAM evaluates users' acceptance of new technology based on perceived usefulness and perceived ease of use. Davis (1985,1899) used TAM to explain the relationship between technology and people's adoption of these technologies by assessing the connections between perceived ease of use, perceived usefulness, users' attitudes, intentions, and actual behavior. TAM consists of six factors measured in terms of their relationships: convenience/compatibility, perceived usefulness, perceived ease of use, attitude, behavioral intention, and system use.

Wang (2016) conveyed how users adopt information on social media tools and how their behavior changes under the influence of this information. Sussman & Siegal (2003) explain perceived usefulness in the IAM model with source credibility and argument quality. Jamil & Qayyum (2022) also use source credibility to explain perceived usefulness. This study proposes a similar approach. D. The study evaluated the perceived usefulness of the content richness, video quality, and source reliability. Additionally, it predicted the behavioral intention by including user satisfaction, perceived ease of use, and other factors.

In the Technology Acceptance Model, behavioral intention is primarily dependent on perceived ease of use and perceived usefulness. The proposed model assumes that an increase in user satisfaction and perceived ease of use will have a positive impact on behavioral intention. The model evaluates content richness, source reliability, and video quality as important factors that indirectly affect behavioral intention.



A: Content richness, B: Video quality, C: Source reliability, D: Perceived usefulness, E: Perceived ease of use, F: User satisfaction, G: Behavioral intention

Figure 1. Proposed research model

Jung et al. (2009) defined content richness as the abundance of learning resources available to users to enhance their learning. The authors suggest that content richness can be measured in

terms of adequacy, appropriateness, and currency. Tung and Chang (2008) found that a system's perceived richness of content is positively correlated with the system's overall perception. Instagram content offers rich and constantly renewed resources. The degree to which Instagram is perceived to provide adequate learning content may influence the perceived usefulness of Instagram.

H1: Content richness increases the perceived usefulness of Instagram.

As the distribution of videos on the internet expands and their usage shifts from computers to television, users' expectations for high-quality content are continuously rising. Therefore, it is crucial for content providers to determine whether video quality has an impact on user engagement. As technology advances and the costs of creating and disseminating video content continue to decrease, many video services are offered. For this reason, as the quality of the videos encountered increases, the perceived benefit may also increase.

H2: Video quality increases perceived usefulness of Instagram.

The characteristics of the information source may affect its persuasiveness and perceived usefulness to the recipient. The receiver accepts the source as reliable when the incoming information can be trusted (Chaiken, 1980).

H3: Source credibility increases perceived usefulness towards Instagram.

TAM aims to uncover people's attitudes, usage, and behavior towards information systems and their role in future human life. This is done by measuring perceived ease of use, perceived usefulness, and users' attitudes. It assesses the relationship between intentions and actual behavior to explain the link between technology and its adoption by users. The aim of TAM is to identify the factors that affect users' behavior and adoption of information systems theoretically, using a validated model with a minimum number of variables.

H4: As the perceived ease of use increases, the perceived usefulness of Instagram increases.

Wu et al. (2010) and Shee & Wang (2008) identified user satisfaction as a crucial factor in the success of learning systems. As the benefits users perceive from an information system based on their previous usage experiences increase, their satisfaction with that system may also increase.

H5: As perceived usefulness increases, usage satisfaction towards Instagram also increases.

Perceived benefit is a subjective and personal element. Benefit is defined as the total gains that a product or service provides to the consumer as a result of a certain performance (Lovelock & Wright, 2002).

According to Ajzen & Fishbein (1975), a person's intention to perform a behavior and the probability of performing it increase with the level of ease or difficulty that they perceive about the behavior. Perceived ease of use refers to the ease of using a technology and learning it without much effort. It has a direct and strong effect on attitude and perceived utility. This situation allows users to achieve greater efficiency when using information technology due to its ease of use.

H6: As perceived ease of use increases, intention to use Instagram increases.

User satisfaction has a direct effect on behavioral intention. After experiencing the services, the customer's happy transfer of his service experience to others, his recommendation of the service he received to others, his desire to repurchase the relevant service he received, and his general expression of satisfaction reveal his positive behavioral intention.

H7: As user satisfaction increases, the intention to use Instagram increases.

2.2. Data and sample

The research data was collected via an online survey administered from March 2023 to June 2023. The survey consisted of two parts. The first part included demographic questions, while the second part focused on the technology acceptance model, specifically the behavioral intention factor, perceived ease of use, perceived benefit, content richness, video quality, user satisfaction, and source reliability. All items were rated on a 5-point Likert scale. Table 1 presents the items of the data compilation tool used in the study and the sources used in designing the items. The sample for the study consisted of 252 university students who voluntarily responded to the online survey shared on social media. Before the questionnaire was administered, an online pilot study was conducted on 50 people and incomprehensible questions were corrected. The questionnaire was shared on social media and administered to volunteer participants. Convenience sampling method, which is a non-probability sampling method, was used in the implementation of the survey. 44% (111) of the participants were boys and 56% (141) were girls. Of the participants, 54% (136) are in the 18-24 age group, 39.7% (100) are in the 23-30 age group, and 6.3% (16) are in the 31+ age group. When the distribution of Instagram usage purposes is examined, 5.2% is for studying, 92.5% is for entertainment, and 2.4% is for reading books.

Table 1. Items used in the data compilation tool

Factors	Items	Source
Behavioral Intention (G)	"G1: In the future, I plan to use Instagram for educational purposes. G2: Instagram has positively impacted my academic performance. G3: I intend to allocate more time to using Instagram for learning. G4: I share and recommend educational content with other Instagram users..	Chintalapati, N., and Daruri, VSK, (2017).
User Satisfaction (F)	F1: In terms of my experience with academic videos on Instagram, I found it satisfactory. F2: I used Instagram for learning and found it to be a satisfying experience. F3: While I initially questioned my choice to use Instagram for academic learning, I ultimately found it to be a wise decision. F4: Overall, I was pleased with the results I obtained by using Instagram for academic purposes..	Lee, DY, and Lehto, MR, (2013).
Perceived Benefit (D)	D1: I have found useful videos on academic subjects through Instagram. D2: Instagram offers a wide range of content covering all academic subjects that interest me. D3: Instagram can be a useful tool for obtaining content for assignments and research. D4: The search feature on Instagram provides access to high-quality video content for learning. D5: Instagram playlists offer a comprehensive view of the topics I am interested in.	Chintalapati, N., and Daruri, VSK, (2017).
Perceived Ease of Use (TO)	E1: It is possible to find Instagram videos on various topics through blogs and social media sites. E2: Academic-related Instagram videos can be easily searched for using Google search. E3: Navigating Instagram videos on my device is effortless. E4: Browsing Instagram videos on the device I am using is seamless.	Chintalapati, N., and Daruri, VSK, (2017).
Source Reliability (C)	C1: The information on the Instagram channel I follow is reliable. C2: The information on the Instagram channel I follow is real. C3: The information on the Instagram channel I follow is reliable. C4: The information on the Instagram channel I follow is expert information.	Abu-Taieh, E., et al., (2022).
Video Quality (B)	B1: I have used an Instagram video to prepare for exams. B2: Instagram videos help me decide what is important to know in textbooks. B3: Instagram videos helped me improve my grades. B4: The Instagram videos contain a clear and detailed presentation of the concepts and issues in the book. B5: Most Instagram videos present ideas in a modern and concise way.	Brecht, HD, (2012).
Content Richness (A)	A1: Instagram has a lot of useful educational content that I need. A2: Instagram provides up-to-date educational content that I need. A3: Instagram provides sufficient educational content that I need."	Lee, DY, and Lehto, MR, (2013).

3. RESULTS

In social sciences, abstract structures that cannot be measured directly have been the focus of attention of researchers. These abstract structures are called factors or latent variables. Satisfaction, burnout, happiness, attitude, and numerical ability, which are frequently the subject of research in social and educational sciences, can be given as examples of latent variables.

SEM consists of two parts: measurement and structural model. In the first stage of SEM, the theoretical model is determined by using theory, research, and information on the subject. In the second stage, structural equations are defined with the help of path diagram. In the third stage, the sample is selected, and data is collected. In the fourth stage, the parameters defined in the equations are estimated. Then, the calculated goodness of fit indices is evaluated, and because of this evaluation, the model is accepted or rejected. If necessary, corrections (modifications) are made in the model and the test is repeated. Finally, the results obtained are reported and discussed (Raykov & Marcoulides, 2006).

3.1. Measurement model

To avoid the problem of common method bias (CMB-Common Method Bias), questions belonging to the same factor were mixed non-consecutively in the survey application. Additionally, both Harman's single factor processes were applied to control CMB. In this study, more than one factor was obtained because of exploratory factor analysis, and it was determined that the first factor explained 44% of the total variance. These results show that there is no CMB threat in the data. Additionally, VIF (Variance Inflation Factors) values were also checked. According to Kock (2015), a VIF greater than 3.3 indicates collinearity and common method bias. In the study, it was evaluated that there was no CMB problem since the VIF values were below 3.

The assessment of the validity and reliability of the measurement model involves examining both discriminant and convergent validity. Convergent validity is evaluated by investigating the average variance explained (AVE), internal consistency-composite reliability (CR), and factor loadings. Discriminant validity is assessed using the Heterotrait Monotrait Ratio (HTMT) and Fornell and Larcker criteria.

Sarstedt et al. (2014) stated that factor loadings greater than 0.70 explain more than 50% of the variance of the items. An internal consistency coefficient greater than 0.70 indicates that the measurement model is sufficiently reliable. AVE measures the convergence between the indicators of a construct. Furthermore, discriminant validity determines the empirical difference between factors. In this study, both HTMT and Fornell and Larcker criteria were used to determine the discriminant validity of the measurement model. Construct reliability was measured using Cronbach's Alpha (CA) and a value of 0.70 was considered acceptable. In addition, the CR value should be above 0.70. According to Hair et al. (2019), the minimum CR value should be 0.70.

(i) Indicator reliability is recommended to be higher than 0.70 (Hair, Ringle, and Sarstedt, 2011; Hair et al., 2019).

(ii) AVE is the overall mean value of the quadratic loadings of all construct-related indicators (Ramayah et al., 2018). As stated by Hair, Ringle and Sarstedt (2011) and Hair et al., it is recommended that the AVE value be greater than 0.50.

(iii) Cross-loading, Fornell and Larcker criteria, and HTMT criteria are used to assess Discriminant Validity (Hair et al., 2019). According to Fornell and Larcker's criteria, the square root of the extracted AVE values of a construct should not show stronger correlations with other constructs in the model. Additionally, as suggested by Gold et al. (2001) the Heterotrait-Monotrait (HTMT) criterion should be less than 0.90.

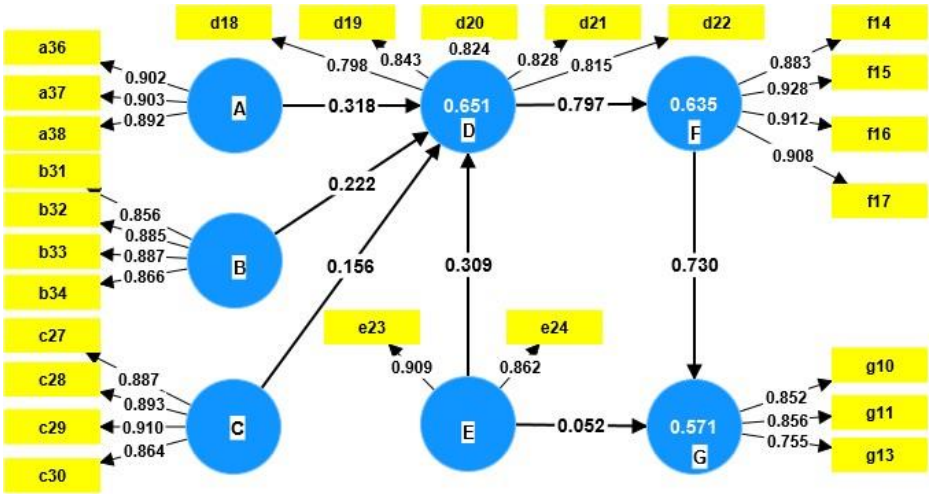
3.1.1. Construct reliability and validity

Table 2 shows that AVE values are greater than 0.50, CA and CR values are greater than 0.70. It shows that the convergent validity of the resulting model is achieved.

Table 2. Construct Reliability oath Validity

	CA	CR	AVE
A.	0.882	0.883	0.809
B.	0.897	0.898	0.763
C.	0.911	0.916	0.790
D	0.880	0.880	0.675
E	0.727	0.747	0.784
F	0.929	0.930	0.824
G	0.759	0.767	0.676

Factor loadings and parameter estimates of the measurement model are given in Figure 2. As can be seen from Figure 2, all factor loadings are greater than 0.70.



A: Content richness, B: Video quality, C: Source reliability, D: Perceived usefulness, E: Perceived ease of use, F: User satisfaction, G: behavioral intention

Figure 2. Measurement model results

3.1.2. Discriminant validity

If the square root values of AVE are greater than the correlation coefficients between all constructs, discriminant validity is achieved (Fornell and Larcker, 1981). Table 3 confirms that discriminant validity was achieved.

Table 3. Fornell-Larcker Criterion

	A	B	C	D	T	F	G
A	0.899						
B	0.757	0.874					
C	0.463	0.432	0.889				
D	0.705	0.673	0.533	0.822			
E	0.477	0.463	0.435	0.631	0.886		
F	0.611	0.608	0.526	0.797	0.459	0.908	
G	0.497	0.512	0.436	0.669	0.388	0.754	0.822

To assess discriminant validity, one method is to analyze the HTMT values. It is recommended to have values below 0.85 or 0.90. Upon analyzing the HTMT values in Table 4, it is evident that the values are less than 0.85, thus ensuring discriminant validity.

Table 4. Heterotrait-Monotrait Ratio (HTMT)

	A	B	C	D	T	F	G
A							
B	0.841						
C	0.512	0.469					
D	0.799	0.754	0.590				
E	0.598	0.573	0.527	0.786			
F	0.673	0.662	0.565	0.817	0.553		
G	0.604	0.617	0.517	0.804	0.513	0.838	

3.1.3. Cross loadings

Table 5 displays the cross-loadings of the items. As shown in Table 5, all items loaded highly on their respective factors and minimally on other factors. This finding demonstrates that all items and factors in the measurement models are distinct from one another, indicating that discriminant validity has been achieved. Upon examining Table 5, it is evident that the factor loadings are grouped under each factor and there is a difference of at least 0.10 units between the cross-loadings. Therefore, factor separation was deemed sufficient.

Table 5. Cross loadings for items

	D	E	G	C	F	B	A
D18	**0.798**	0.486	0.538	0.482	0.765	0.486	0.546
D19	**0.843**	0.444	0.600	0.460	0.754	0.533	0.613
D20	**0.824**	0.491	0.525	0.390	0.606	0.693	0.617
D21	**0.828**	0.565	0.519	0.405	0.561	0.560	0.585
D22	**0.815**	0.614	0.564	0.452	0.579	0.488	0.532
E23	0.598	**0.909**	0.390	0.425	0.438	0.399	0.412
E24	0.511	**0.862**	0.286	0.340	0.370	0.427	0.437
G10	0.586	0.382	**0.852**	0.396	0.631	0.410	0.424
G11	0.572	0.283	**0.856**	0.369	0.666	0.481	0.455
G13	0.489	0.288	**0.755**	0.305	0.560	0.368	0.339
C27	0.499	0.449	0.422	**0.887**	0.483	0.350	0.375
C28	0.413	0.343	0.334	**0.893**	0.406	0.322	0.366
C29	0.455	0.401	0.371	**0.910**	0.435	0.360	0.412
C30	0.516	0.347	0.407	**0.864**	0.528	0.487	0.479
F14	0.659	0.360	0.678	0.441	**0.883**	0.487	0.480
F15	0.685	0.408	0.710	0.475	**0.928**	0.549	0.557
F16	0.770	0.431	0.695	0.513	**0.912**	0.583	0.568
F17	0.786	0.463	0.660	0.479	**0.908**	0.584	0.609
B31	0.589	0.436	0.435	0.355	0.498	**0.856**	0.663
B32	0.598	0.445	0.452	0.403	0.556	**0.885**	0.620
B33	0.532	0.334	0.417	0.308	0.484	**0.887**	0.671
B34	0.617	0.397	0.482	0.433	0.578	**0.866**	0.690
A36	0.650	0.440	0.458	0.464	0.606	0.660	**0.902**
A37	0.612	0.453	0.461	0.410	0.534	0.689	**0.903**
A38	0.638	0.395	0.423	0.373	0.507	0.695	**0.892**

3.2. Structural model

The structural model is evaluated using various criteria, including f^2, R^2, and Q^2 statistics, as well as GoF (Goodness of Fit), SRMR, and NFI fit criteria. f^2 (effect size) is used to evaluate the values of R^2 for all endogenous latent variables and the change in value when a specific exogenous latent variable is removed from the model, to determine whether this removed structure has a specific effect. It is claimed that this structure has a significant effect on latent variables. The effect size estimator, f^2, indicates whether a latent variable has a weak effect ($f^2 < 0.14$), a moderate effect ($0.15 < f^2 < 0.34$), or a high effect ($f2 > 0.34$) at the structural level (Cohen, 1988).

Q^2, structural model is greater than zero indicates that predictive validity is achieved. Q^2 values are D=0.430, G=0.379, F=0.519. Model validity was ensured according to the Q^2 values obtained because of the analysis. That is, the model in question predicts the original observed variables well. The values R^2 for perceived usefulness, behavioral intention, and user satisfaction are R^2(D)=0.651, R^2(G)=0.572, R^2(F)=0.635, respectively.R^2 The magnitude of the values is important in determining the accuracy of the prediction values.

VIF values are calculated as less than 3. This shows that there is no multicollinearity problem among the factors (variables). For model fit, SRMR=0.061 and NFI = 0.806. Since SRMR<0.10 and NFI>0.80, the model fit can be considered sufficient.

When the literature is searched, the most commonly used statistics in determining the fit of the structural equation model are; chi-square ($\chi 2$), Root Mean Square Error of Approximation (RMSEA), goodness of fit index (GFI) and adjusted goodness of fit index (AGFI). {$\chi 2$ /sd} value being less than 3 indicates an acceptable fit. RMSEA value less than 0.05 corresponds to perfect fit, 0.05< RMSEA <0.10 corresponds to near perfect fit, and RMSEA > 0.10 corresponds to poor fit. NFI, NNFI and CFI indices are used in a similar way to the coefficient of determination ($R2$) statistic used in regression analysis. These indexes take values between 0 and 1, and generally taking values close to 1 means that the model has a good fit (Raykov and Marcoulides, 2006).

The calculated SRMR for the model is 0.061, indicating an acceptable fit. An NFI value close to 1 is indicative of a good fit, and the NFI for the model is 0.806, indicating an acceptable fit. Furthermore, since the goodness of fit (GoF) value is 0.69, which is greater than 0.36, the model fit is considered to be very good.

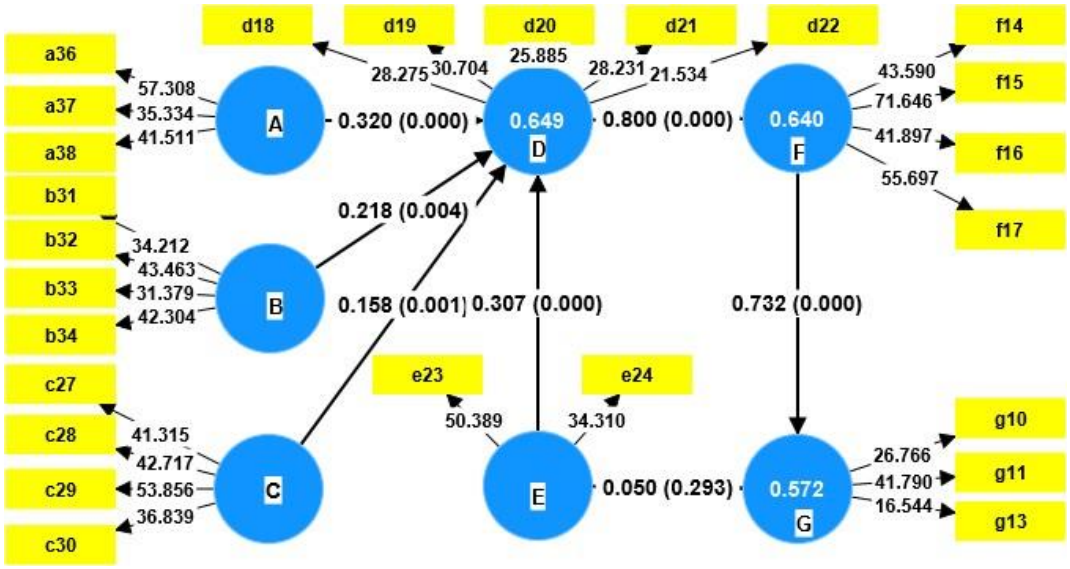


Figure 3 PLS-SEM results of structural model

Hypothesis test results, relationship coefficients, and t and p values for the structural model are given in Table 6. According to the table, only $H_6$the hypothesis was not supported. A one-unit increase in university students' perceived usefulness of Instagram for academic use will result in a 0.800-unit increase in university students' satisfaction with using Instagram. The fact that this coefficient is significant, and its size is close to 1 reveals the importance of the perceived benefit of academic use of Instagram in creating satisfaction.

As a result of the analysis, when the t values regarding the significance of the factor loadings were evaluated, it was revealed that all factor loadings were statistically significant. As a result of the analysis, it was observed that one of the highest correlation coefficients was between perceived benefit and user satisfaction (D → F: 0.800). This relationship was found to be positive and statistically significant (p<0.001). From this result, it can be said that as the perceived benefit for Instagram increases, user satisfaction also increases. This coefficient indicates that a one-unit increase in the perceived benefit level will cause a 0.800-unit increase in user satisfaction.

Table 6. Hypothesis test results

	Path Coeff.	t - statistics	p-values	Decision	f^2 (effect)
A→D	0.320	4.036	P<0.01	Supported	0.114 (Weak)
B→D	0.218	2.843	P<0.01	Supported	0.058 (Weak)
C→D	0.158	3.210	P<0.01	Supported	0.050 (Weak)
D→F	0.800	27.692	P<0.01	Supported	1.739 (Strong)
E→D	0.307	4,736	P<0.01	Supported	0.191(Medium)
E→G	0.050	1.051	0.293	Not supported	0.005 (Weak)
F→G	0.732	18.741	P<0.01	Supported	0.983 (Strong)

It was determined that there was a positive relationship between user satisfaction and behavioral intention (*F →G: 0.732).* The relationship was found to be positive and statistically significant at the 1% significance level. It is expected that as user satisfaction increases, the level of behavioral intention to use Instagram will also increase. It means that a one unit increase in the user satisfaction level will cause a 0.732-unit increase in behavioral intention.

There is a positive relationship between source reliability and perceived benefit (CG→AF:0.158). As the source reliability increases, it is expected that there will be an increase in perceived benefit. It means that a one unit increase in source reliability will cause a 0.158-unit increase in perceived benefit.

It has been determined that there is a positive relationship between video quality and perceived usefulness (VK→AF:0.218). As video quality increases, perceived benefit is expected to increase. The increase in the quality of Instagram videos also affects the perceived benefit. A one-unit increase in video quality will cause a 0.218-unit increase in perceived benefit.

As a result of the analysis, it was revealed that there was a positive relationship between content richness and perceived usefulness (IZ→AF:0.320). As content richness increases, perceived benefit is expected to increase. The content richness of the videos on Instagram positively affects the perceived benefit. It means that a one-unit increase in content richness will cause a 0.320-unit increase in perceived benefit.

As a result of the hypothesis test, a positive relationship between source reliability and perceived benefit was supported (CG→AF:0.158). As the source reliability increases, it is expected that there will be an increase in perceived benefit. It means that a one unit increase in source reliability will cause a 0.158-unit increase in perceived benefit.

PLS-SEM analyses revealed a positive relationship between video quality and perceived benefit (VK→AF:0.218). As video quality increases, perceived benefit is expected to increase. The increase in the quality of Instagram videos also affects the perceived benefit. A one-unit increase in video quality will cause a 0.218-unit increase in perceived benefit.

The results supported the existence of a positive relationship between content richness and perceived usefulness (IZ→AF:0.320). As content richness increases, perceived benefit is

expected to increase. The content richness of the videos on Instagram positively affects the perceived benefit. One unit increase in content richness will cause an increase of 0.320 units in perceived benefit. E →G hypothesis was not supported, but the relationship between perceived ease of use and behavioral intention→became significant through perceived usefulness and satisfaction E→ D→F→G: 0.180, p<0.01 (Table 7). Additionally, it has been revealed that content richness (A), video quality (B) and source reliability (C) affect behavioral intention (G) through perceived usefulness (D) and user satisfaction (F). Among the exogeneous latent variables mentioned, it was determined that content richness had the highest impact on behavioral intention.

Table 7. Indirect effects

	Path coeff.	t - statistics	p values
A→D→F→G	0.187	3.855	P<0.01
B→D→F→G	0.128	2.768	P<0.01
C→D→F→G	0.093	3.122	P<0.01
D→F→G	0.586	14.453	P<0.01
C→D→F	0.127	3.176	P<0.01
B→D→F	0.174	2.792	P<0.01
A→D→F	0.256	4.007	P<0.01
E→D→F→G	0.180	4.516	P<0.01
E→D→F	0.245	4.734	P<0.01

4. CONCLUSION AND DISCUSSION

The study investigated university students' attitudes and behavioral intentions towards using Instagram for educational purposes. Firstly, a research model based on the literature was developed, and a model-based data compilation tool was designed. Data was then collected online through a link, and finally, the proposed research model and the relationships within it were tested using partial least squares structural equation modelling. Internet and social media, which are now present in every aspect of life, are also used in many ways in the field of education and training.

According to the analysis results, the time spent by students for their academic studies on Instagram is as follows; 182 people are less than 10%, 44 people are between 10%-29%, 19 people are between 30%-49%, 3 people are between 50%-79%, and 4 people are 80% or more. When the results of the survey are examined, 92.5% of university students use Instagram as entertainment, 4.8% for research, 4% for studying, and 2.4% as an alternative to reading books. When the results were examined, it was determined that students used social media at least for studying and obtaining information. In addition, following the agenda, having fun, friendship, and conversation, and spending free time were frequently stated goals. Their use in the field of education and training has fallen far behind other expressions. However, they

should be able to benefit from these platforms, which they are very interested in, in order to spend this time more productively and in a way that supports their education in today's world where lifelong education is frequently emphasized.

The study utilized the importance-performance matrix of importance-performance map analysis (IPMA), also known as impact-performance map or priority map analysis, which is a valuable approach in PLS-SEM. Figure 4 displays the importance-performance map of exogeneous latent variables in terms of their effects on behavioral intention internal latent variables. The IPMA methodology compares the total effects of constructs on a particular target construct (endogenous latent variable) with their average latent variable scores to determine their performance. The aim is to identify constructs that have a strong total effect on the target construct but also have low mean latent variable scores The IPMA presents a graphical comparison of importance on the x-axis with latent variable performance scores scaled from 0 to 100 on the y-axis. To evaluate the results, variables in the lower right region of the IPMA map are analyzed. These variables have a high level of importance for the endogenous latent variable under consideration, but their performance is considered to be low and needs improvement. These structures are of high importance to the target structure but exhibit poor performance. According to Ringle and Sarstedt (2016), structures located in this area have a high potential for performance improvement.

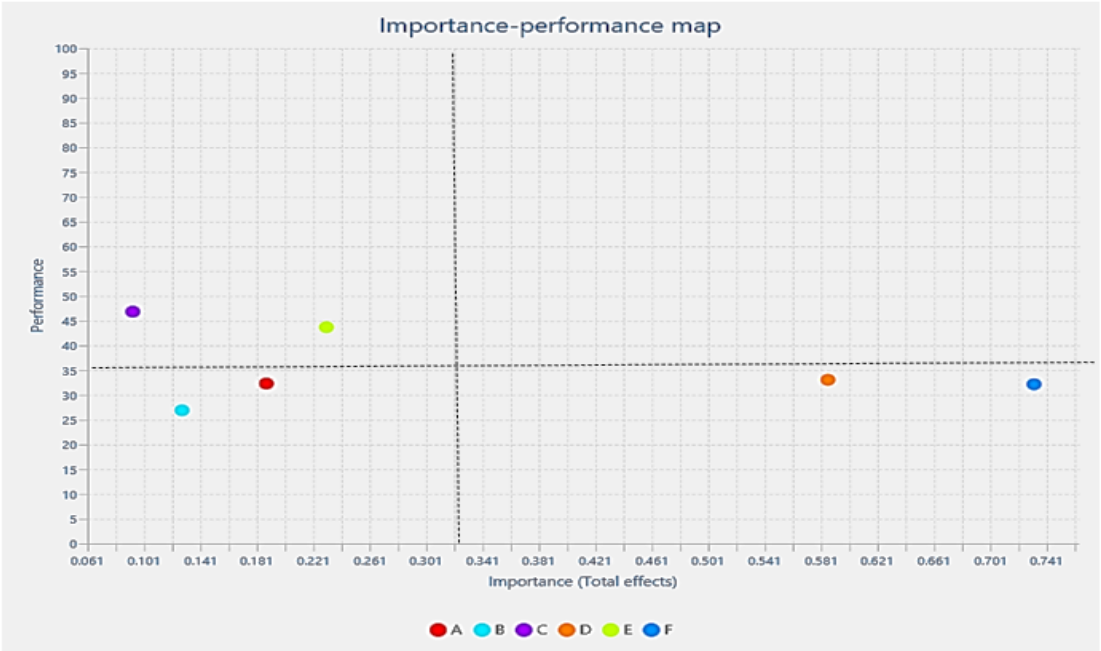


Figure 4 Behavioral intention importance-performance map

Figure 4 shows that satisfaction (F) and perceived usefulness (D) are highly important for the target structure (behavioral intention G), but they exhibit low performance. Therefore, there is significant potential to improve the performance of structures located in this area. In summary, students have a high potential to improve their perceived benefit and satisfaction performance from educational Instagram applications due to their high importance on behavioral intention. Although source reliability was found to have the lowest importance, it had the highest performance. However, it is crucial that shares for educational purposes reflect accurate information. The significance of source credibility is anticipated to have a substantial impact

on university students' behavioral intentions towards their educational use of Instagram. Additionally, video quality and content richness hold a similar level of importance to source reliability. Perceived ease of use is slightly below average in terms of importance, but still performs above average.

The study's demographic findings align with those of previous research. Overall, students primarily use Instagram for leisure activities. However, a minority also utilize the platform as a substitute for reading and studying.

Mazman & Usluel (2010) attempted to explain the use of Facebook for educational purposes using a structural model. According to their study, Facebook's adoption processes accounted for 45% of its use for educational purposes. In our study, this figure was determined to be 57%. Lee & Lehto (2013) investigated the variables that affect the behavioral intention to use YouTube using TAM. The study found that, similar to this study, behavioral intention was significantly affected by both perceived usefulness and user satisfaction. The study stated that YouTube could enhance the learning and teaching function. Chintalapati & Daruri (2017) conducted a study on the use of YouTube as a learning resource among higher education students. They found a significant relationship between perceived ease of use and perceived usefulness, as measured by TAM. The path value was 0.52 in their study, while it was 0.309 in this study. The authors assessed the compatibility of their TAM with the intention to use YouTube for learning purposes in higher education. Eid & Al-Jabri (2016) investigated the effect of SNS use on information sharing and learning performance. Results show significant positive relationships between student learning and knowledge sharing and enjoyment through chat and online discussion. When the direct and indirect relationships were examined in the study, it was revealed that as the quality of the opportunities offered by the students on Instagram increases, the perceived usefulness will increase, and as a result, user satisfaction will increase, and their usage intentions will increase significantly.

In general, it has been concluded that students and faculty require more support for the use of social media in education. The analysis shows that students primarily use social media for socializing with friends, but it can also be used for educational purposes. It is important to note that any use of social media for educational purposes should be approached with caution and objectivity. The use of social media for entertainment purposes was found to be similar to other articles. Similarly, there are also articles that report significant effects of university students' participation in online social networks on social learning processes and outcomes. Today, one of the important elements and indicators that determine the quality of education in a country is the quality educational content produced on social networks. As a suggestion for this;

Discussion environments can be created by opening forums on social networks. This allows for brainstorming, idea sharing, and information exchange on the subject matter. Additionally, question-answer surveys can be developed on educational content pages on Instagram to draw students' attention and pique their curiosity. Additionally, question-answer surveys can be developed on educational content pages on Instagram to draw students' attention and pique their curiosity.

Lecturers can provide guidance on using social media for educational purposes to encourage students to use these platforms more actively.

In future research, the perceptions, and attitudes of secondary and higher education students about social networks can be investigated through qualitative research. In addition, it was evaluated that decision makers in educational processes should use the results of the research on the benefits and risks of the use of social networks for educational purposes. It is recommended to carry out studies that can evaluate the benefits for students and teachers about the use of social networks for learning purposes and their contribution to the quality of educational content.

Declaration of competing interest

We have no conflicts of interest to disclose.

Data availability

Data will be made available on request.

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