Exploring the determinants of students' academic performance at university level: The mediating role of internet usage continuance intention

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Abstract

This study investigates the impact of integrating essential factors on academic performance in university students' context. The proposed model examines the influence of continuance intention, satisfaction, information value, and Internet addiction on academic performance. Additionally, it investigates the mediating role of continuance intention on the relationship of satisfaction and information value on academic performance among university students. A survey questionnaire method was adopted to collect data from university students in Jordan. Data was collected from 476 voluntary participants, and the analysis was conducted using SPSS and AMOS. The analysis results show that continuance intention, satisfaction, information value have a significant positive influence on academic performance. Besides, the results show that satisfaction and information value positively and significantly influence continuance intention. While continuance intention full mediation the relationship between satisfaction and academic performance, it partial mediation the relationship between information value and academic performance. This study is the first to examine the integrating of continuance intention, satisfaction, information value, and Internet addiction on students' academic performance. Furthermore, this study is also distinguished from other studies by investigating the mediating role of continuance intention gap.

Keywords Continuance intention · Satisfaction · Information value · Internet addiction · Academic performance

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1 Introduction

There is a significantly increasing influence of using Internet and communication technology in the education industry. University students use the Internet daily to access information, gather data, and conduct research (Bagavadi Ellore et al. 2014). Moreover, they use the internet for entertainment and enjoyment fulfilment. In addition to the importance of the internet as an educational tool, students use the internet for entertainment and enjoyment fulfilment (Al-Fraihat et al. 2020). Students worldwide are reported to spend on average around two hours and 24 min per day on social media alone in 2019 (Statista 2019). The amount of time spent on the internet or social network sites (SNS) provoked researchers in the past to examine the antecedents or determinants of continuous intention. Various media tools have been examined to understand what drives users to spent more time on the Internet (Joorabchi et al. 2011) (Błachnio et al. 2019), Facebook (Karnik et al. 2013)(Houghton et al. 2020), social networking sites (SNS) (Y. Kim et al. 2011)(Marengo et al. 2020).

Previous research showed that using technology enhances academic performance (Basak and Calisir 2015)(Choi 2016)(Naqshbandi et al. 2017) (Bae 2018)(Hou et al. 2020) (Çebi and Güyer 2020). For example, (Naqshbandi et al. 2017) found that Facebook mediates the relationship between different personality dimensions (extra-version, agreeableness and loneliness) and academic performance. Therefore, it is paramount to identify the antecedents of continuous intention. Enjoinment (Choi 2016), satisfaction (Bae 2018), entertainment and status-seeking (Basak and Calisir 2015) are among the many antecedents evidenced in the literature. (Hou et al. 2020) examined the impact of WeChat as a social network site on learning. Besides, it investigates how social network sites would influence university students' academic performance. They found that WeChat usage played a significant positive role in students' academic performance by engaging and enhancing sharing information and resources. Another study examined the impact of student interaction with different online learning activity on learning performance (Çebi and Güyer 2020). They found that spending longer time on learning activities enhance their academic performance.

Nowadays, Internet resources have become a very important component in educational systems (Salam and Farooq 2020). Students continuously and extensively use the Internet to interact online, search information, and perform specific tasks and activities. The use of the Internet implicates positive and negative effects on university students' academic performance (Chang et al. 2019). Nowadays, students are using the Internet excessively to do various tasks and access social networking sites. The Internet's intensive use is mainly for online communications, socializing, chatting, and gaming purposes (Byun et al. 2009). The overload of information can negatively influence students' academic performance (Sinha et al. 2001). Students use the Internet to perform tasks related and non-task-related to their study, influencing students' academic performance (Chang et al. 2019). For instance, (Kolek and Saunders 2011) had not found any association between Facebook use and students' academic performance. On the contrary, (Kirschner and Karpinski 2010) found students without using Facebook had higher GPAs compare with students had extensive use of Facebook. Thus, the impact of using the Internet and social media network on students' academic performance is varied. It depends on the type of websites they are visiting and the tools they are using (Michikyan et al. 2015). A research study revealed that Internet use for

academic purposes was influence positively academic performance, whereas the Internet use for other purposes was influencing negatively academic performance (Kim et al. 2017). Recently, another research study conclude the use of Internet affecting negatively physical and mental health of people, while it provides people with information and improves timely work-related data transmission (Saini et al. 2020). Currently, adopting online learning in higher education during COVID-19 Pandemic had a significant impact on learners, educators and learning performance (Ustun 2020). Many research studies examined the impact of using online learning systems on university student's satisfaction and academic performance (Kapasia et al. 2020) (Maqableh et al. 2015). However, there is a need to understand the factors that positively or negatively influence students' academic performance from the use of the Internet. Therefore, it emerges a potential research direction to investigate the factors that influence students' academic performance.

The purpose of this study is to investigate the positive and negative impact of integrating essential factors (continuance intention, satisfaction, information value, and Internet addiction) that influence students' academic performance. Additionally, it investigates the mediating role of continuance intention on the relationship between satisfaction and academic performance and information value and academic performance gap. This study is the first to examine the relationship between integrating four essential factors and students' academic performance. Additionally, it is distinguished from other studies by investigating the mediating role of continuance intention and Internet usage on students' academic performance gap.

2 Literature review and hypotheses development

2.1 Academic performance

Academic performance is defined as students' ability to carry out academic tasks, and it measures their achievement across different academic subjects using objective measures such as final course grades and grading point average (Busalim et al. 2019) (Anthonysamy et al. 2020). Researchers agree that the Internet is becoming more important for students. For example (Bagavadi Ellore et al. 2014) note that the Internet is an important part of college/university students' lives. Similarly, (Naqshbandi et al. 2017) note that most students use Facebook daily, making it a significant component of their daily lives.

Many studies confirm the benefits that Internet users provide for students. For example: (Mccamey et al. 2015) argue that as a result of the expansion of the Internet, the college students are increasingly having more resources available to help them widen their knowledge. Similarly, (Emeka and Nyeche 2016) argue that the Internet is beneficial for students, which enhances their capabilities and skills which are helpful in their studies, which students use for research purposes, assignments, and presentations in their respective fields of study.

Several studies have examined the relationship between using the Internet's resources/services and different foci' academic performance. For example: (Sampath Kumar and Manjunath 2013) found that university teachers and researchers' use of Internet sources and services positively impacted their academic performance. (Emeka

and Nyeche 2016) found that the use of the Internet has a positive influence on undergraduate students' academic performance in a university in Nigeria.

2.2 Continuance intention

Continuance intention refers to the user's initial decision to reuse Internet sites (Al-Debei et al. 2013). According to (Amoroso and Lim 2017) continuance intention refers to the strength of an individual intends to perform a specific activity. Subsequently, in this study, continuance intention refers to Internet usage continuance intention. Many studies examined the initial intention to use technology in the information system (IS) literature based on the technology acceptance model (TAM) (Schierz et al. 2010). Some studies integrated several constructs based on several theoretical perspectives with the TAM to better understand users continuance intention (Nysveen et al. 2005). Consequently, Innovation Diffusion Theory (IDT) (Shin et al. 2010) and Task Technology Fit (TTF) (Junglas et al. 2008) are introduced. Research results were crucial to the development of a better theoretical understanding of technology initial intention to use and the enhancement of different practical practices to encourage users to use technology.

However, the initial intention to use technology is not enough. It is essential also to explore and understand the continuance intention to use technology; aspects that would encourage users to stay loyal and keep using the technology (C. Kim et al. 2010)(Alzougool 2019)(Bölen 2020). Companies have invested their resources to develop technologies based on users' needs and requirements. They need to protect their investment by applying measure for continuance intention to use the technology. Literature directed towards understanding the continuance use of technology is growing (Authors et al. 2016) (Pai et al. 2018) (Bölen 2020). However, the Internet is rich cases for studying as they have high levels of interactions between users and would help researchers explore the different factors that affect continuance intention to use technology (Gao et al. 2014) (Fang and Liu 2019). Consequently, it is necessary to do exploratory research to identify and measure factors affecting continuance intention to use Internet sites. Overall, continuance intention previous has mainly examined in the literature as dependent variable literature (Yang and Lin 2014; Yang et al. 2018; Yang; Zhang et al. 2017; Zong et al. 2019). However, we will examine its relationship with satisfaction, Internet addiction and students' academic performance. Based on these arguments, it is expected that students' continuance intention to use the Internet and its resources will help them improve their academic performance. Thus, the following hypothesis is proposed:

H1: Continuance intention significantly influences students' academic performance.

2.3 Satisfaction

User satisfaction refers to the general feeling of fulfilment resulting from using the internet (Patwardhan et al. 2011). Satisfaction is an old but contemporary construct that has been used by many researchers in different disciplines (Ki Hun Kim et al. 2019). It has been used in the work context to measure job satisfaction (Locke 1976) (Saari and

Judge 2004) and in the organizational context to customer satisfaction (Oliver and Gerald 1981) (Barrett 2004). Satisfaction is measured in the IS literature as well as many theories have been deployed accordingly. An Expectation-Confirmation Model of continued IT usage (ECM-IT) developed by Odel and Bhattacharjee (2001) compares user continued IT decisions to consumer repeat purchase decision. The research found that continuous usage of an IT has three antecedents, one of which is satisfaction with the IT used (Odel and Bhattacharjee 2001). Chen et al. (2009) found that consumers' satisfaction positively and significantly influences continuance intention to use self-service technologies (S. C. Chen et al. 2009). In relation to the reuse health information, Kim et al. (2010) found that customer satisfaction had a significant positive influence on the decision to reuse health information provided by the internet (Kyoung Hwan Kim 2010). Bae (2018) found satisfaction with social network sites to have a significant impact on continuance intention to use social network sites (Bae 2018).

Based on the Expectation Confirmation Model (EDM), satisfaction is analyzed to understand the relationship between satisfaction and experiences while using technology (Melone 1990) (Bhattacharjee 2014); customers usually expect the performance of a product or a service before the actual usage. If their expectations relatively match their experience, then they would be satisfied. Therefore, the positive customer experience at first glance is a crucial determinant of user satisfaction. (Kuo et al. 2009) suggested that satisfaction can also be the aggregated positive emotional states developed through several experiences with the product or the service. Users' IT continuance use behaviour is positively influenced by their satisfaction with prior IT usage (Bhattacharjee and Lin 2015). The uses and gratification theory is also performed as a theoretical basis to ground a better understanding of satisfaction and its relationship with continuance intention to use social networking systems. (Chiu and Huang 2015) revealed that user satisfaction with contents and features of social networking systems had a positive relationship with continuance use. Another research study examined the relationship between students satisfaction from Internet usage and students performance (Goyal et al. 2011). They found that Internet usage satisfaction had a significant positive impact on students academic performance. (Samaha and Hawi 2016) found that a low level of life satisfaction were less likely to achieve satisfactory cumulative GPAs. Based on the significant influence of satisfaction on continuance usage intention and academic performance, the following hypotheses are proposed:

H2: Satisfaction significantly influences continuous intention to use the Internet.

H3: Satisfaction significantly influences students' academic performance.

2.4 Information value

Some research studies proposed another antecedent to continuous usage of an IT product/service is perceived usefulness which is closely related to information value (Zhang et al. 2017) (S. Yang et al. 2018) (Wang et al. 2020). The benefit of acquiring useful information through using the internet determines information value, especially if the information helps the user solve problems of developing his skills and abilities (Zhang et al. 2017). The uses and gratifications theory (U&G theory) explains why users select and adopts certain medium to fulfil their social and psychological needs

(Ku et al. 2013) (Ma and Lee 2012). This theory has been linked with continuous intention, factors that satisfy users' gratification needs, such as information needs and social needs. As found by (Wei et al. 2015), those two needs are critical factors to motivate users to interact with each other and enhance their stickiness towards using social networking sites. Moreover, (Chiang 2013) found that informativeness, social interactivity and playfulness needs affect users' continuance intention towards social networking sites.

Information value refers to the useful information acquired from friends or information providers (Zhang et al. 2017). (Chiang 2013) argues that website informativeness is a potential influence on a user's intentions and behaviours. (Liao and Shi 2017) found that web content (i.e. the accuracy, usefulness and completeness, and website information) directly influences the continuance intention to use online tourism services. (Zheng et al. 2013) found that information quality directly affects user satisfaction which in-turn influences a user's continuance intention to use information-exchange virtual communities. Similarly, (Valaei and Baroto 2017) found that information quality had a positive impact on continuance intention to follow a government's Facebook page. (Jin et al. 2007) found that information usefulness positively and significantly affects the continuance intention of virtual communities for information adoption. Based on these results and arguments, the following hypotheses are proposed:

- H4: Information value significantly influences continuous intention to use the Internet.
- H5: Information value significantly influences students' academic performance.

2.5 Internet addiction

Facebook addiction refers to the excessive use of Facebook due to being psychologically reliant on its use that somewhat hinders other essential actions that the user could perform and, in the process, yield negative results (Moqbel and Kock 2018). About 350 million Facebook users are between 16 and 25 years old showing Facebook addiction syndrome (Leong et al. 2019). Overall, previous literature has mainly examined the concept of continuance intention as a dependent variable (Yang and Lin 2014; Yang et al. 2018; Yang 2019; Zhang et al. 2017; Zong et al. 2019). However, we will examine its relationship with Facebook addiction. Numerous theories and findings have established the relationship between behavioural intention and actual behaviour (Obeidat et al. 2017; Pelling and White 2009; Turel et al. 2010). Consequently, if the continuance intention of Facebook use is present, the user will continue to do so, thereby increasing the chances of addiction to the website. Furthermore, previous studies found that when a certain behaviour is exhibited, and the person is willing to do it again, future behaviour becomes an automatic, aligned response (Ronis et al. 1989). Therefore, the more a person uses social media to communicate with others, the more likely it will become a habit and lead to addiction (Turel et al. 2010). (J. V. Chen et al. 2008) conducted a research study that confirms higher Internet addiction can lead to a high degree of Internet abuse. Also, (Samaha and Hawi 2016) conducted a research study that showed smartphone addiction had a negative impact on students' academic performance.

Following the same logic, we propose that the Facebook continuance intention resulting from the perceived values will increase Facebook addiction. Thus, this study is the first study that investigates the relationship between continuance intention and addiction gap. Generally, this factor strongly influences the association between online purchase intention and actual behaviour (Miyazaki and Fernandez 2001; Nepomuceno et al. 2014). Thus:

H6: Internet addiction significantly negative influences on students' academic performance.

2.6 The mediating role of continuance intention

In research, mediating factors are used to understand the mechanism that establishes the underlying relationship between the independent and dependent variables. The mediating role of employees' satisfaction on the relationship between Internet actual usage and performance impact was examined (Isaac et al. 2017). The analysis results confirmed the mediating role of satisfaction. Moreover, some researchers examined the mediating role of social interaction on the relationship between network externalities on perceived values (Zhang et al. 2017). Also, satisfaction has been considered a mediating variable for the relationship between perceived security and continuance intention (Ki Hun Kim et al. 2019). Finally, Another research study examined the mediating effect of perceived value between the relationship of security and continuance intention in mobile government service (Wang et al. 2020). In this research, it proposed to have continuance intention as a mediating variable to measure the following relationships:

H7: Continuance intention mediates the relationship between satisfaction and academic performance.

H8: Continuance intention mediates the relationship between information value and academic performance.

3 Research methodology

This section provides the methodology applied in the current study. It consists of the research model of the study's independent and dependent variables, research hypotheses, besides data collection tool and research population and sample.

3.1 Research model

In this research, the proposed model examines the impact of continuance intention, satisfaction, information value, and Internet addiction on students' academic performance gap. Moreover, it investigates the mediating role of continuance intention on the relationship between satisfaction and academic performance and information value and academic performance gap. Figure 1 shows the proposed research model.

Fig. 1 Research model

3.2 Data collection and sample

Data were collected from targeted participants with Internet experience using an online survey. Participants were selected opportunistically from 4000 bachelor students from the School of Business at the University of Jordan in the Hashemite Kingdom of Jordan. However, what constitutes an adequate sample size for regression analysis is uncertain among researchers. Some researchers (O'Rourke and Hatcher 2013) recommend that the sample size of a study that applies multiple linear regression should be 100 participants or more than five times the number of items measured. The questionnaire was made up of 22 items, so the sample size should be over 110 students. Also, (Joseph Hair et al. 2014) recommended between 100 and 200 while (Krejcie and Morgan 1970) required 351 from a population of 4000. Therefore, the number of returned surveys is 476 that meets the sample size requirement for a structural equation model and shows adequate representation with the highest probability assessment. In Table 1, the respondents' characteristics of this study are summarized.

The 476 valid responses comprised of 70.6% female student. The sample's dominant age range was 20 to 23 years, with a percentage of 73.3%. The respondents were mainly in their second and third years at the university, with 65.6% of the sample. 44.7% of students spend 1 to 3 h daily on internet activities. Moreover, almost 33% uses the internet from 10 to 29 h weekly. The full respondent's profiles are shown in Table 1.

3.3 Measurement development

The 5-points Likert scale is used to explore the associations among the research variables. It varies between strongly disagree =1 and strongly agree =5. Reliability

Table 1 Characteristics of the research sample ($n = 476$)

Category	Category	Frequency	Percentage%
Gender	Male	140	29.4
	Female	336	70.6
	Total	476	100%
Age	17–19	81	17.0
	20–23	349	73.3
	23 and above	46	9.7
	Total	476	100%
Academic Level (Year)	First	34	7.1
	Second	168	35.3
	Third	144	30.3
	Fourth	97	20.4
	Fifth and above	33	6.9
	Total	476	100%
Students spend on Internet activities daily (Hour Daily)	Less than 1	53	11.1
	1–3	213	44.7
	4–6	151	31.7
	More than 6	59	12.4
	Total	476	100%
Using the Internet (Hours weekly)	Less than 10	47	9.9
	10–29	158	33.2
	30–50	120	25.2
	More than 50	151	31.7
	Total	476	100%

and validity analyses were conducted, descriptive analysis was used to describe the characteristics of the sample and the respondent to the questionnaires besides the independent and dependent variables. Besides, SEM analysis was employed to test the research hypotheses. Table 2 shows the measured constructs and the items measuring each construct.

4 Data analysis and results

4.1 Validity and reliability

To check for the research model validity, and since all the measures were previously established, confirmatory factor analysis (CFA) was conducted using SPSS 20.0 and AMOS 22.0. The standardized factor loading of the item was examined since 0.55 represent a good fit (Harrington 2008) any item with standardized factor loading less than 0.55 was eliminated. Accordingly, item (Academic Performance 1), (Addiction 1, 2, and 3), (Information Value 4) were excluded from any further calculations. The full-standardized factor loading values from the CFA are presented in Table 3. The model

Table 2 Constructs and measurement items

Construct	Measurement Items
Satisfaction (SA)	SA1: I was very content with the Internet. SA2: I was very pleased with the Internet. SA3: I felt delighted with the Internet. SA4: Overall, I was satisfied with the Internet.
Information Value (IV)	IV1: I accumulate numerous knowledge through shared information by Internet users. IV2: I acquire a variety of information from online people using the Internet. IV3: I obtain lots of useful information from online people using the Internet. IV4: Over the last one month, I consulted online people using the Internet for practical issues and matters.
Emotional Value (EV)	EV1: I receive adequate emotional concern from people using the Internet. EV2: I feel relieved by getting sympathy from online people using the Internet. EV3: I have been encouraged by friends on the Internet.
Continuance Intention (CI)	CI1: If could, I will continue using the Internet. CI2: I will recommend my friends and family members to use the Internet. CI3: I will continue using the Internet in the future. CI4: I intend to continue using Internet service rather than any alternative.
Internet Addiction	IA1: I sometimes neglect important things because of my interest in the Internet IA2: My social life has sometimes suffered because of my use of the Internet IA3: Using the Internet sometimes interfered with other activities IA4: When I am not using the Internet I often feel agitated IA5: I have made unsuccessful attempts to reduce the time I use the Internet IA6: I am sometimes late for engagements because of my use of the Internet IA7: Arguments have sometimes arisen because of the time I spend online IA8: I think that I am addicted to the Internet IA9: I often fail to get enough rest because of my use of the Internet
Academic Performance (AP)	AP1: I am confident I have adequate academic skills and abilities. AP2: I feel competent in conducting my course assignment. AP3: I have learned how to do my coursework efficiently. AP4: I have performed academically as I anticipated I would.

fit was assessed relaying on the model fit summary results, the cut points used in this research were $\chi^2/df < 5$, Root Mean Square of Error Approximation (RMSEA) < 0.08 , while all the other indices (i.e. GFI, CFI, TLI, IFI and NFI) should be close to 1 where higher than 0.9 is acceptable (Harrington 2008). Results are shown in Table 3.

To check the reliability of the scale, Cronbach's-Alpha test was used to assess the internal consistency the cut point usually used in researches is 0.7, but it can be lowered to 0.6 (Joe Hair et al. 2011). Cronbach's-Alpha results in this research were between 0.754 and 0.864. Results are shown in Table 3.

4.2 Descriptive statistics and correlations

Pearson's correlation coefficient results are presented in Table 4. Pearson's correlation coefficient indicates the existence of a linear association between the variables according to person correlations values. No significant linear effect was found between the demographic variables and the dependent variable except for the demographic variable using the Internet (Hours per week) was found to have a significant negative correlation with academic performance ($r = -.114^*$, $p < 0.01$).

Table 3 Standardized factor loading and Cronbach's alpha result

Item	Standardized Factor loading	Cronbach's Alpha
Information Value 1	0.721	0.837
Information Value 2	0.925	
Information Value 3	0.754	
Satisfaction 1	0.681	0.864
Satisfaction 2	0.807	
Satisfaction 3	0.864	
Satisfaction 4	0.785	
Continuous Intention 1	0.711	0.810
Continuous Intention 2	0.795	
Continuous Intention 3	0.785	
Continuous Intention 4	0.612	
Internet Addiction 4	0.545	0.825
Addiction 5	0.643	
Addiction 6	0.670	
Addiction 7	0.708	
Addiction 8	0.753	0.754
Addiction 9	0.674	
Academic Performance 2	0.778	
Academic Performance 3	0.789	
Academic Performance 4	0.590	

Model fit summary: χ^2 :337.03, χ^2 /df: 2.106, NFI: 0.915, IFI: 0.953, CFI: 0.953, GFI: 0.933, RMSEA: 0.048

The highest mean score for information value (3.73) indicates a high positive respondents' attitude toward continuance intention regarding the descriptive statistics. In contrast, the lowest mean score was for satisfaction (2.69). The skewness and kurtosis values were within the range of -2 to $+2$ (Garson 2012), which indicates normally distributed data. The results are provided in Table 5.

4.3 Hypotheses testing

Multiple linear regression was used to test Hypotheses 1, 3, 5 and 6, where continuous intention, satisfaction, information value, and Internet addiction were the independent variables, and academic performance was the dependent variable. The normality plot p-p indicates that most of the points are near the best fit line, and the scatter plot produces no pattern and no multicollinearity issue was not detected. The tolerance ranged between 0.755 and 0.987, which are >1 , and the variance inflation factor (VIF) statistics ranged between 1.013 and 1.325, which are less than 4, respectively (Garson 2012). The results are shown in Table 6, the overall model was significant ($F = 32.323$, $p = 0.000 < 0.05$), the R-value indicates that the whole model is correlated with the dependent, $R = 0.464$, R^2 indicate the amount of variance in the dependent variable that is caused by the independent variables $R^2 = 21.5\%$. The adjusted $R^2 = 20.9\%$ is an indicator of the variance caused by the independent variables if the whole population

Table 4 Person correlations

	1	2	3	4	5	6	7	8	9	10
1 Gender	1.00									
2 Age	-.225 [#]	1.00								
3 Level	-.167 [#]	.630 [#]	1.00							
4 Daily	0.04	-0.03	-0.04	1.00						
5 Weekly	-0.07	0.01	-0.04	.569 [#]	1.00					
6 Information	-0.06	0.01	-0.05	0.04	0.00	1.00				
7 Satisfaction	-0.03	-0.07	-0.01	-0.01	-0.02	-0.01	1.00			
8 Intention	-0.07	-0.04	-.112 [*]	0.05	0.02	.451 [#]	.198 [#]	1.00		
9 Addiction	-0.03	-0.03	0.00	0.05	0.03	.096 [*]	0.05	0.08	1.00	
10 Performance	0.00	-0.07	-0.05	-0.04	-.114 [*]	.295 [#]	.161 [#]	.439 [#]	-0.01	1.00

[#]. Correlation is significant at the 0.01 level (2-tailed).

^{*}. Correlation is significant at the 0.05 level (2-tailed)

Table 5 Descriptive statistics

	Mean	SD	Skewness	Kurtosis
Perceived image	2.96	0.747	0.05	0.05
Enjoyment	3.84	0.645	−.971	2.44
Information Value	3.85	0.667	−.899	1.99
Emotional Value	2.90	0.793	−.088	−.276
Academic Performance	3.45	0.829	−.616	0.47
Satisfaction	2.30	0.890	0.25	−.512
Continuance Intention	3.46	0.663	−.452	0.90
Internet Addiction	2.98	0.897	−.095	−.386

were tested, the differences between R^2 and Adj- R^2 are 0.006. The regression coefficients values revealed that continuous intention, information value, and satisfaction have a significant positive effect on academic performance with effect values of $B = 0.153$, $p = 0.003 < 0.05$, $B = 0.085$, $p = 0.026 < 0.05$, and $B = 0.424$ and $p = 0.000 < 0.05$ respectively. Nevertheless, in this model, Internet addiction negatively affects academic performance $B = -0.057$, $p = 0.169 > 0.05$. Accordingly, hypotheses 1, 3 and 5 were supported, while hypothesis 6 was not supported. Results are shown in Table 6.

To test Hypotheses 2 and 4, multiple linear regression was used where satisfaction and information value were the independent variables, and the continuous intention was the dependent variable. The normality plot p-p indicates that most of the points are near the best fit line, and the scatter plot produces no pattern. No multicollinearity issue was not detected. The results are shown in Table 7 indicate that the overall model was significant ($F = 76.564$, $p = 0.000 < 0.05$), the R-value indicates that the whole model is correlated with the dependent, $R = 0.495$ and R^2 indicate the amount of variance in the dependent variable that is caused by the independent variables $R^2 = 24.5\%$. The adjusted $R^2 = 24.1\%$ is an indicator of the variance caused by the independent

Table 6 Regression Analysis results (H1, 3, 5 and 6)

Outcome					
Predictors	B	t	p	Tol.	VIF
Constant	1.293	5.464	0.000		
Information Value	0.153	2.977	0.003	0.782	1.279
Satisfaction	0.085	2.230	0.026	0.947	1.056
Continuance Intention	0.424	7.721	0.000	0.755	1.325
Internet Addiction	-0.057	-1.378	0.169	0.987	1.013
R	0.464				
R^2	0.215				
F	32.323				
p	0.000				

Dependent: Academic Performance, significance level 0.05.

Table 7 Regression Analysis Testing Hypothesis 2 and 4

Outcome					
Predictors	B	t	p	Tol.	VIF
Constant	1.406	8.365	0.000		
Information Value	0.431	11.341	0.000	1	1
Satisfaction	0.157	5.052	0.000	1	1
R	0.495				
R ²	0.245				
F	76.564				
P	0.000				

Dependent: Continuance Intention, significance level 0.05.

variables if the whole population were tested, the differences between R² and Adj-R² are 0.004. The regression coefficients values revealed that both information value and satisfaction have a significant positive effect on continuous intention. The effect values were $B = 0.431$, $p = 0.000 < 0.05$ and $B = 0.157$, $p = 0.000 < 0.05$ respectively. Accordingly, both hypotheses 2 and 4 were supported. Results are shown in Table 7.

To test Hypotheses 7, a multiple linear regression was used to test the mediation effect using PROCESS Macro by Hayes V 3.3. Using PROCESS, the mediation effect will be tested based on 5000 Bootstrapped sample. The results of the mediation paths are shown in Table 8. Where C represents the effect of satisfaction on continuous intention, b is the effect of continuous intention on performance in the presence of satisfaction and C' is the effect of satisfaction on performance in the presence of continuance intention (i.e. Direct effect). The mediation path can be calculated either by multiplying path a coefficient with path b coefficient or by subtracting path C coefficient from path C' coefficient (Hayes 2015).

Table 8 Testing the mediating role of Continuance intention on the relationship between satisfaction and academic performance (H7)

	Effect (B)	t	p	R	R ²	F	p
Sat-CI (a)	0.1538	30.07	0.000	0.198	0.04	19.315	0.000
CI-Per. (b)	0.4953	10.0864	0.000	0.445	0.198	58.53	0.000
Sat-Per. (C')	0.0703	1.8405	0.0663 (InSig.)				
Sat-Per. (C)	0.1464	3.554	0.0004	0.1611	0.026	12.633	0.0004

C: Effect of satisfaction on performance (Total effect) – significant.

a: Effect of satisfaction on continuous intention - significant.

b: Effect of continuous intention on performance in the presence of satisfaction - significant.

C': Effect of satisfaction on performance in the presence of continuance intention (Direct effect) -Insignificant.

Indirect effect = C-C' or $a*b \rightarrow 0.0762$ significant. (BootLLCI 0.0350, BootULCI 0.1214) - Full mediation.

Table 9 Testing the mediating role of continuance intention on the relationship between information value and academic performance (H8)

	Effect (B)	t	p	R	R ²	F	p
Inf.-CI (a)	0.429	11.015	0.000	0.451	0.2038	121.33	0.0000
CI-Per. (b)	0.4491	8.356	0.0000	0.452	0.2044	60.754	0.0000
Inf.-Per. (C')	0.1351	2.643	0.0085				
Inf.-Per. (C)	0.3279	6.7183	0.0000	0.2949	0.0869	45.135	0.0000

C: Effect of information value on performance (Total effect) - significant.

a: Effect of information value on continuous intention - significant.

b: Effect of continuous intention on performance in the presence of information value - significant.

C': Information value effect on performance in presence of continuance intention (Direct effect) - significant.

Indirect effect = C-C' or $a \times b \rightarrow 0.1928$ - sig. (BootLLCI 0.1293, BootULCI 0.2616) - Partial mediation.

Findings showed that 95% bias-corrected bootstrap confidence intervals based on 5000 bootstrap samples ((BootLLCI) and (BootULLCI)) for specific indirect effects through continuance intention do not include zero accordingly the mediation path was found to be significant. Additionally, since the direct effect is insignificant, continuance intention fully mediates the relationship between satisfaction and continuance intention, which indicates that satisfaction affects academic performance because of continuance intention.

To test Hypotheses 8, multiple linear regression was used to test the mediation effect using PROCESS Macro by Hayes V 3.3; using PROCESS, the mediation effect will be tested based on the 5000 bootstrapped sample. The results of the mediation paths are shown in Table 9. Where C is the effect of information value on performance (i.e. Total effect), a is the effect of information value on Continuous intention, b is the effect of continuous intention on Performance in the presence of information value and C' is the effect of information value on Performance in the presence of continuance intention (i.e. Direct effect). The mediation path can be calculated either by multiplying path a

Table 10 Hypotheses test results

Hypothesis	Result
H1. Continuance intention significantly influences students' academic performance.	Supported
H2. Satisfaction significantly influences continuous intention to use the Internet.	Supported
H3. Satisfaction significantly influences students' academic performance.	Supported
H4. Information value significantly influences continuous intention to use the Internet.	Supported
H5. Information value significantly influences students' academic performance.	Supported
H6. Internet addiction significantly negative influences on students' academic performance.	Not Supported
H7: Continuance intention mediates the relationship between satisfaction and academic performance.	Supported (Full Mediation)
H8: Continuance intention mediates the relationship between information value and academic performance.	Supported (Partial Mediation)

coefficient with path b coefficient or by subtracting path C coefficient from path C' coefficient (Hayes 2015).

Findings showed that 95% bias-corrected bootstrap confidence intervals based on 5000 bootstrap samples ((BootLLCI) and (BootULLCI)) for specific indirect effects through continuance intention do not include zero accordingly the mediation path was found to be significant. Additionally, since the direct effect is significant, information value partially mediates the relationship between satisfaction and continuance intention, which indicate that information value affects academic performance directly and because of continuance intention. Table 10 show the results of tested hypotheses in this research.

5 Discussion and conclusion

Former research studies have not investigated the impact of integrating essential factors that influence students' academic performance. Thus, this study investigates the impact of continuance intention satisfaction, information value, and Internet addiction on students' academic performance gap. Moreover, it investigates the mediating role of continuance intention on the relationship between information value and academic performance and the relationship between satisfaction and the academic performance gap. Therefore, we also tested the relationships between satisfaction and continuance intention and information value and continuance intention. The analysis results in Tables 6 and 7 show that the overall model was significant, and the whole model is correlated with the dependents. The analysis results show that most of the proposed hypotheses are supported. It shows that continuance intention, satisfaction, and information value explain 21.5% of academic performance variance. It also shows that the independent variables of continuance intention cause 19% of variances.

The research results show that continuance intention to use the Internet has a significantly positive effect on students' academic performance. This finding supports previous research such as (Emeka and Nyeche 2016) (Sampath Kumar and Manjunath 2013) that confirmed the advantages of using the Internet as students. Using the Internet can help students search for information related to their modules and assignment. In addition, using the Internet can help students working together as groups to connect and collaborate online. Many universities nowadays integrate online learning with traditional teaching methods to create more interactive student-centred learning. Another research study showed that Facebook usage increase students' academic performance (Naqshbandi et al. 2017).

The analysis results confirmed the positive influence of satisfaction on students' academic performance, which is aligned with previous research results (Goyal et al. 2011) (Samaha and Hawi 2016). Moreover, it also confirmed that information value has a positive and significant impact on students' academic performance. Regarding the impact of Internet addiction, the results show that Internet addiction is insignificant influence academic performance. The analysis results show that Internet addiction has a negative but insignificant effect on academic performance $B = -0.057, p = 0.169 > 0.05$, which is consistent with the finding of (Kolek and Saunders 2011). This can be explained as the type of the tools students are using and the type of the website would had a major role on the impact of the students' academic performance. For instance, the

students who use Internet tools that support their study might be improve their academic performance, whereas the extensive use of Internet on unrelated website to their study might be reduce academic performance. Instead, a balance use of Internet between related and unrelated websites might be not effect students' academic performance. Therefore, the impact of extensive use of Internet on academic performance might be varied from one group to another based on the type of visited websites and time spent on each type of websites. Moreover, based on the Pearson correlation coefficient, there was no significant linear effect between the demographic variables and the dependent variable except for using the Internet (hours per week). It found that Internet usage has a negative significant correlation with academic performance ($r = -.114^*$, $p < 0.01$). This can be justified as the students spend a long time using the Internet; they will waste their time on irrelative contents to their academic study that negatively affects their academic performance. This finding supports the results of previous research (J. V. Chen et al. 2008)(Samaha and Hawi 2016).

This study investigated the relationship between satisfaction and continence intention. The results confirmed that satisfaction has a significant positive impact on students' Internet continuance intention. This finding supports previous research that found satisfaction with social network sites to have a significant impact on continuance intention to use social network sites (Bae 2018). Furthermore, this study examined the influence of information value on continuance intention. The research findings confirmed that information value exhibits a significant influence on continuous intention, which is consistent with (S. Yang et al. 2018). The descriptive statistics show the information value has the highest mean score (3.73), which indicate a high positive respondents attitude toward continuance intention.

The mediating role of continuance intention on the relationship between satisfaction and academic performance is examined. The analysis results show that while satisfaction has a significant effect on academic performance, the direct effect of satisfaction on student academic performance in the presence of continuance intention is insignificant. These results indicate that continuance intention is fully mediate the relation between satisfaction and continuance intention. Finally, this research examined the mediating role of continuance intention on the relationship between information value and academic performance. The results confirmed the significant direct effect of information value and the significant effect of information value on academic performance in the presence of continues intention. These findings confirmed the partially mediating role of continuance intention on the relationship between satisfaction and continuance intention.

To conclude, this study investigated the impact of integrating four main factors of Internet usage in students' context that influence students' academic performance. It investigated the effect of continuance intention, satisfaction, information value, and Internet addiction on academic performance. The analysis results showed that continuance intention, satisfaction, and information value are positively influencing the students' academic performance. Moreover, the analysis results showed that satisfaction and information value significantly influence continuance intention to use the Internet. In addition, this study investigates the mediating role of continuance intention on the relationship of satisfaction and students' academic performance and information value and academic performance gap. The results showed that while continuance intention partially mediates the relationship between information value and academic performance, it fully mediates the relationship between satisfaction and academic

performance in university students. Finally, the analysis results showed that Internet addiction does not influence students' academic performance. Still, it has a negative impact and the number of hours to use the Internet has a negative impact on academic performance. This research study contributes to the emerging body of knowledge by extending the associations between four main factors that influence academic performance. It also contributes to the evolving body of knowledge about the mediating role of continuance intention to use the Internet on the relationship of satisfaction and information value on students' academic performance. The finding of this research can help educators to advice their students to use Internet appropriately for academic purpose especially for students with low academic performance and grades to improve their academic performance.

6 Limitations and future research

This study was conducted on undergraduate students at one university in Jordan, which would limit the generalizability to other contexts. Therefore, future research can investigate other demographic groups, for example, employees or students from different year levels (or postgraduates). Besides, future research can address cultural differences to investigate if culture can influence continuance intention and academic performance. Furthermore, future research can be applied across different countries to compare and contrast the findings considering contextual factors peculiar for each country or region. This research only focused on four integrating factors that would influence students' academic performance. Thus, future research can investigate another variable, such as perceived enjoyment and perceived usefulness to enrich the current research. A noteworthy result is that against our expectation, Internet addiction is not a factor that determines academic performance. It can be suggested based on the literature that perceived enjoyment and emotional experience could affect Internet addiction. Therefore, further studies can examine the impact of Internet addiction with another group of variables to identify its effect on academic performance.

Code availability (Not applicable)

Data availability (Not applicable)

Declarations

Conflict of interest All author has participated in (a) conception and design, or analysis and interpretation of the data; (b) drafting the article or revising it critically for important intellectual content; and (c) approval of the final version. This manuscript has not been submitted to, nor is under review at, another journal or other publishing venue.

References

- Al-Debei, M. M., Al-Lozi, E., & Papazafeiropoulou, A. (2013). Why people keep coming back to Facebook: Explaining and predicting continuance participation from an extended theory of planned behaviour perspective. *Decision Support Systems*, 55(1), 43–54. <https://doi.org/10.1016/j.dss.2012.12.032>.

- Al-Fraihat, D., Joy, M., Masa'deh, R., & Sinclair, J. (2020). Evaluating E-learning systems success: An empirical study. *Computers in Human Behavior*, 102(June 2019), 67–86. <https://doi.org/10.1016/j.chb.2019.08.004>.
- Alzougool, B. (2019). The use and continuance use of social media applications by small and medium enterprises in Kuwait. *Global Knowledge, Memory and Communication*, 68(6–7), 471–490. <https://doi.org/10.1108/GKMC-11-2018-0094>.
- Amoroso, D., & Lim, R. (2017). The mediating effects of habit on continuance intention. *International Journal of Information Management*, 37(6), 693–702. <https://doi.org/10.1016/j.ijinfomgt.2017.05.003>.
- Anthonyssamy, L., Koo, A. C., & Hew, S. H. (2020). Self-regulated learning strategies and non-academic outcomes in higher education blended learning environments: A one decade review. *Education and Information Technologies*, 3677–3704. <https://doi.org/10.1007/s10639-020-10134-2>.
- Authors, F., Susanto, A., Chang, Y., & Ha, Y. (2016). Determinants of continuance intention to use the smartphone banking services. *Industrial Management & Data Systems*, 116, 508–525. <https://doi.org/10.1108/IMDS-05-2015-0195>.
- Bae, M. (2018). Understanding the effect of the discrepancy between sought and obtained gratification on social networking site users' satisfaction and continuance intention. *Computers in Human Behavior*, 79, 137–153. <https://doi.org/10.1016/j.chb.2017.10.026>.
- Bagavadi Ellore, S., Niranjana, S., Brown, U. J., Ellore, S. B., Niranjana, S., & Brown, U. J. (2014). The influence of internet usage on academic performance and face-to-face communication. *Journal of Psychology and Behavioral Science*, 2(2), 163–186. <https://doi.org/10.6007/IJARBS/v7-i8/3301>.
- Barrett, J. D. (2004). Quality from customer needs to customer satisfaction. *Technometrics*, 46(1), 118–118. <https://doi.org/10.1198/tech.2004.s752>.
- Basak, E., & Calisir, F. (2015). An empirical study on factors affecting continuance intention of using Facebook. *Computers in Human Behavior*, 48, 181–189. <https://doi.org/10.1016/j.chb.2015.01.055>.
- Bhattacharjee, A. (2014). Understanding information systems continuance: An expectation-confirmation model. *MIS Quarterly*, 25(3), 351–370.
- Bhattacharjee, A., & Lin, C. P. (2015). A unified model of IT continuance: Three complementary perspectives and crossover effects. *European Journal of Information Systems*, 24(4), 364–373. <https://doi.org/10.1057/ejis.2013.36>.
- Błachnio, A., Przepiorka, A., Benvenuti, M., Mazzoni, E., & Seidman, G. (2019). Relations between facebook intrusion, internet addiction, life satisfaction, and self-esteem: A study in Italy and the USA. *International Journal of Mental Health and Addiction*, 17(4), 793–805.
- Bölen, M. C. (2020). Exploring the determinants of users' continuance intention in smartwatches. *Technology in Society*, 60, 101209. <https://doi.org/10.1016/j.techsoc.2019.101209>.
- Busalim, A. H., Masrom, M., Normeza, W., & Wan, B. (2019). The impact of Facebook addiction and self-esteem on students' academic performance: A multi-group analysis. *Computers & Education*, 142(August), 103651. <https://doi.org/10.1016/j.compedu.2019.103651>.
- Byun, S., Ruffini, C., Mills, J. E., Douglas, A. C., Niang, M., Stepchenkova, S., et al. (2009). Internet addiction: Metasynthesis of 1996–2006 quantitative research. *Cyberpsychology and Behavior*, 12(2), 203–207. <https://doi.org/10.1089/cpb.2008.0102>.
- Çebi, A., & Güyer, T. (2020). Students' interaction patterns in different online learning activities and their relationship with motivation, self-regulated learning strategy and learning performance. *Education and Information Technologies*, 3975–3993. <https://doi.org/10.1007/s10639-020-10151-1>.
- Chang, C. T., Tu, C. S., & Hajiyev, J. (2019). Integrating academic type of social media activity with perceived academic performance: A role of task-related and non-task-related compulsive Internet use. *Computers and Education*, 139(November 2018), 157–172. <https://doi.org/10.1016/j.compedu.2019.05.011>.
- Chen, J. V., Chen, C. C., & Yang, H. H. (2008). An empirical evaluation of key factors contributing to internet abuse in the workplace. *Industrial Management and Data Systems*, 108(1), 87–106. <https://doi.org/10.1108/02635570810844106>.
- Chen, S. C., Chen, H. H., & Chen, M. F. (2009). Determinants of satisfaction and continuance intention towards self-service technologies. *Industrial Management and Data Systems*, 109(9), 1248–1263. <https://doi.org/10.1108/02635570911002306>.
- Chiang, H. S. (2013). Continuous usage of social networking sites: The effect of innovation and gratification attributes. *Online Information Review*, 37(6), 851–871. <https://doi.org/10.1108/OIR-08-2012-0133>.
- Chiu, C. M., & Huang, H. Y. (2015). Examining the antecedents of user gratification and its effects on individuals' social network services usage: The moderating role of habit. *European Journal of Information Systems*, 24(4), 411–430. <https://doi.org/10.1057/ejis.2014.9>.

- Choi, S. (2016). The flipside of ubiquitous connectivity enabled by smartphone-based social networking service: Social presence and privacy concern. *Computers in Human Behavior*, 65, 325–333. <https://doi.org/10.1016/j.chb.2016.08.039>.
- Emeka, U. J., & Nyeche, O. S. (2016). Impact of internet usage on the academic performance of undergraduates students: A case study of the University of Abuja, Nigeria. *International Journal of Scientific & Engineering Research*, 7(10), 1018–1029 <http://www.ijser.org>.
- Fang, L., & Liu, Q. (2019). Mobile SNS addiction and user continuance: An empirical investigation of wechat. *Tehnicki Vjesnik*, 26(4), 1104–1111. <https://doi.org/10.17559/TV-20190315145418>.
- Gao, L., Bai, X., & Authors, F. (2014). An empirical study on continuance intention of mobile social networking services: Integrating the IS success model, network externalities and flow theory. *Asia Pacific Journal of Marketing and Logistics*, 26(2), 168–189. <https://doi.org/10.1108/APJML-07-2013-0086>.
- Garson, G. D. (2012). *Testing statistical assumptions: Blue book series*. Asheboro: Statistical Associate Publishing https://www.researchgate.net/profile/Jurandy_Penitente-Filho/post/What_is_the_best_statistical_method_to_correlate_immunohistochemistry_and_rt-pcr/attachment/59d61d9879197b807797853c/AS:271755204071424@1441802897825/download/assumptions.pdf.
- Goyal, E., Purohit, S., & Bhaga, M. (2011). Study of satisfaction and usability of the internet on student's performance. *International Journal of Education & Development using Information & Communication Technology*, 7(1), 1–10 <http://search.ebscohost.com/login.aspx?direct=true&db=eue&AN=63157613&site=ehost-live&scope=site>.
- Hair, J., Ringle, C., & Sarstedt, M. (2011). PLS-SEM: Indeed a silver bullet. *Journal of Marketing Theory and Practice*, 19(2), 139–151. <https://doi.org/10.2753/MTP1069-6679190202>.
- Hair, J., Black, W., Babin, B., & Anderson, R. (2014). Multivariate data analysis. *Pearson custom library*., 259, 433. <https://doi.org/10.1038/259433b0>.
- Harrington, D. (2009). *Confirmatory factor analysis*. Oxford University Press. <https://doi.org/10.1093/acprof:oso/9780195339888.001.0001>.
- Hayes, A. F. (2015). An index and test of linear moderated mediation. *Multivariate Behavioral Research*, 50(1), 37–41. <https://doi.org/10.1080/00273171.2014.962683>.
- Hou, R., Han, S., Wang, K., & Zhang, C. (2020). To WeChat or to more chat during learning? The relationship between WeChat and learning from the perspective of university students. *Education and Information Technologies*. <https://doi.org/10.1007/s10639-020-10338-6>.
- Houghton, D., Pressey, A., & Istanbuloglu, D. (2020). Who needs social networking ? An empirical enquiry into the capability of Facebook to meet human needs and satisfaction with life. *Computers in Human Behavior*, 104(September 2019), 106153. <https://doi.org/10.1016/j.chb.2019.09.029>.
- Isaac, O., Abdullah, Z., Ramayah, T., & Mutahar, A. M. (2017). Internet usage, user satisfaction, task-technology fit, and performance impact among public sector employees in Yemen. *International Journal of Information and Learning Technology*, 34(3), 210–241. <https://doi.org/10.1108/IJILT-11-2016-0051>.
- Jin, X. L., Christy, M. K. C., Matthew, K. O. L., & Chen, H. P. (2007). Understanding the sustainability of virtual communities in China. *Proceedings of the 15th European Conference on Information Systems, ECIS, 2007*, 310–321.
- Joorabchi, S. H., Hassan, T. N., & Hassan, M. A. (2011). Internet usage among female undergraduates in Ferdowsi University, Iran. *SEARCH Journal of the Southeast Asia Research Centre for Communications and Humanities*, 3(2), 1–20.
- Junglas, I., Abraham, C., & Watson, R. T. (2008). Task-technology fit for mobile locatable information systems. *Decision Support Systems*, 45(4), 1046–1057. <https://doi.org/10.1016/j.dss.2008.02.007>.
- Karnik, M., Oakley, I., Venkatanathan, J., Spiliotopoulos, T., & Nisi, V. (2013). *Uses & gratifications of a facebook media sharing group* (pp. 821–826). CSCW: Proceedings of the ACM Conference on Computer Supported Cooperative Work. <https://doi.org/10.1145/2441776.2441868>.
- Kapasias, N., Paul, P., Roy, A., Saha, J., Zaveri, A., Mallick, R., et al. (2020). Impact of lockdown on learning status of undergraduate and postgraduate students during COVID-19 pandemic in West Bengal, India. *Children and Youth Services Review*, 116(June), 105194. <https://doi.org/10.1016/j.childyouth.2020.105194>.
- Kim, K. H. (2010). Understanding the consistent use of internet health information. *Online Information Review*, 34(6), 875–891. <https://doi.org/10.1108/14684521011099388>.
- Kim, C., Tao, W., Shin, N., & Kim, K.-S. (2010). An empirical study of customers' perceptions of security and trust in e-payment systems. *Electronic Commerce Research and Applications*, 9(1), 84–95. <https://doi.org/10.1016/j.elrap.2009.04.014>.

- Kim, Y., Sohn, D., & Choi, S. M. (2011). Cultural difference in motivations for using social network sites: A comparative study of American and Korean college students. *Computers in Human Behavior*, 27(1), 365–372. <https://doi.org/10.1016/j.chb.2010.08.015>.
- Kim, S. Y., Kim, M. S., Park, B., Kim, J. H., & Choi, H. G. (2017). The associations between internet use time and school performance among Korean adolescents differ according to the purpose of internet use. *PLoS ONE*, 12(4). <https://doi.org/10.1371/journal.pone.0174878>.
- Kim, K. H., Kim, K. J., Lee, D. H., & Kim, M. G. (2019). Identification of critical quality dimensions for continuance intention in mHealth services: Case study of onecare service. *International Journal of Information Management*, 46(March 2018), 187–197. <https://doi.org/10.1016/j.ijinfomgt.2018.12.008>.
- Kirschner, P. A., & Karpinski, A. C. (2010). Facebook® and academic performance. *Computers in Human Behavior*, 26(6), 1237–1245. <https://doi.org/10.1016/j.chb.2010.03.024>.
- Kolek, E. A., & Saunders, D. (2011). Online disclosure: an empirical examination of undergraduate facebook profiles. *Journal of Student Affairs Research and Practice*, 45(1), 1–25. <https://doi.org/10.2202/1949-6605.1905>.
- Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Education and Psychological Measurement*, 30, 607–610. <https://doi.org/10.1177/001316447003000308>.
- Ku, Y. C., Chen, R., & Zhang, H. (2013). Why do users continue using social networking sites? An exploratory study of members in the United States and Taiwan. *Information and Management*, 50, 571–581. <https://doi.org/10.1016/j.im.2013.07.011>.
- Kuo, Y. F., Wu, C. M., & Deng, W. J. (2009). The relationships among service quality, perceived value, customer satisfaction, and post-purchase intention in mobile value-added services. *Computers in Human Behavior*, 25(4), 887–896. <https://doi.org/10.1016/j.chb.2009.03.003>.
- Leong, L. Y., Hew, T. S., Ooi, K. B., Lee, V. H., & Hew, J. J. (2019). A hybrid SEM-neural network analysis of social media addiction. *Expert Systems with Applications*, 133, 296–316. <https://doi.org/10.1016/j.eswa.2019.05.024>.
- Liao, Z., & Shi, X. (2017). Web functionality, web content, information security, and online tourism service continuance. *Journal of Retailing and Consumer Services*, 39, 258–263. <https://doi.org/10.1016/j.jretconser.2017.06.003>.
- Locke, E. A. (1976). The nature and causes of job satisfaction. *Handbook of Industrial and Organizational Psychology*, 1297–1349.
- Ma, L., & Lee, C. (2012). News sharing in social media: The effect of gratifications and prior experience. *Computers in Human Behavior*, 28(5), 331–339. <http://avoserv.library.fordham.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=edselp&AN=S074756321100210X&site=eds-live>.
- Maqableh, M., Masa'deh, R. M. T., Shannak, R. O., & Nahar, K. M. (2015). Perceived trust and payment methods: An empirical study of MarkaVIP company. *International Journal of Communications, Network and System Sciences*, 08(11), 409–427. <https://doi.org/10.4236/ijcns.2015.811038>.
- Marengo, D., Poletti, I., & Settanni, M. (2020). The interplay between neuroticism , extraversion , and social media addiction in young adult Facebook users : Testing the mediating role of online activity using objective data. *Addictive Behaviors*, 102(October 2019), 106150. <https://doi.org/10.1016/j.addbeh.2019.106150>.
- Mccamey, R., Wilson, B., & Shaw, J. (2015). Internet dependency and academic performance. *The Journal of Social Media in Society*, 4(1), 126–150.
- Melone, N. P. (1990). A theoretical assessment of the user-satisfaction construct in information systems research. *Management Science*, 36(1), 76–91. <https://doi.org/10.1287/mnsc.36.1.76>.
- Michikyan, M., Subrahmanyam, K., & Dennis, J. (2015). Facebook use and academic performance among college students: A mixed-methods study with a multi-ethnic sample. *Computers in Human Behavior*, 45, 265–272. <https://doi.org/10.1016/j.chb.2014.12.033>.
- Miyazaki, A. D., & Fernandez, A. (2001). Consumer perceptions of privacy and security risks for online shopping. *Journal of Consumer Affairs*, 35(1), 27–44. <https://doi.org/10.1111/j.1745-6606.2001.tb00101.x>.
- Moqbel, M., & Kock, N. (2018). Unveiling the dark side of social networking sites: Personal and work-related consequences of social networking site addiction. *Information and Management*, 55(1), 109–119. <https://doi.org/10.1016/j.im.2017.05.001>.
- Naqshbandi, M. M., Ainin, S., Jaafar, N. I., & Mohd Shuib, N. L. (2017). To Facebook or to face book? An investigation of how academic performance of different personalities is affected through the intervention of Facebook usage. *Computers in Human Behavior*, 75, 167–176. <https://doi.org/10.1016/j.chb.2017.05.012>.
- Nepomuceno, M. V., Laroche, M., & Richard, M. O. (2014). How to reduce perceived risk when buying online: The interactions between intangibility, product knowledge, brand familiarity, privacy and security concerns. *Journal of Retailing and Consumer Services*, 21(4), 619–629. <https://doi.org/10.1016/j.jretconser.2013.11.006>.

- Nysveen, H., Pedersen, P. E., & Thorbjørnsen, H. (2005). Intentions to use mobile services: Antecedents and cross-service comparisons. *Journal of the Academy of Marketing Science*, 33(3), 330–346. <https://doi.org/10.1177/0092070305276149>.
- O'Rourke, N., & Hatcher, L. (2013). A step-by-step approach to using SAS® for factor analysis and structural equation modeling. The Companion to Language Assessment. <https://doi.org/10.1002/9781118411360.wbcla114>.
- Obeidat, Z. M. I., Xiao, S. H., Iyer, G. R., & Nicholson, M. (2017). Consumer revenge using the internet and social media: An examination of the role of service failure types and cognitive appraisal processes. *Psychology and Marketing*, 34(4), 496–515. <https://doi.org/10.1002/mar.21002>.
- Odel, C. O. M., & Bhattacharjee, A. (2001). Understanding Information Systems Continuance : An Expectation. *MIS Quarterly*, 25(3), 351–370.
- Oliver, R. L., & Gerald, L. (1981). Effect of satisfaction and its antecedents on consumer preference and intention. *Advances in Consumer Research*, 8(1), 88–93. <https://doi.org/10.1086/466442>.
- Pai, C. K., Wang, T. W., Chen, S. H., & Cai, K. Y. (2018). Empirical study on Chinese tourists' perceived trust and intention to use biometric technology. *Asia Pacific Journal of Tourism Research*, 23(9), 880–895. <https://doi.org/10.1080/10941665.2018.1499544>.
- Patwardhan, P., Yang, J., & Patwardhan, H. (2011). Understanding media satisfaction: Development and validation of an affect-based scale. *Atlantic Journal of Communication*, 19(3), 169–188. <https://doi.org/10.1080/15456870.2011.584508>.
- Pelling, E. L., & White, K. M. (2009). The theory of planned behavior applied to young people's use of social networking web sites. *Cyberpsychology & behavior : the impact of the Internet, multimedia and virtual reality on behavior and society*, 12(6), 755–759. <https://doi.org/10.1089/cpb.2009.0109>.
- Ronis, D. L., Yates, J. F., & Kirscht, J. P. (1989). Attitudes, decisions, and habits as determinants of repeated behavior. *Attitude Structure and Function*, 213–239. <https://books.google.com/books?hl=es&lr=&id=fiOvSm50Z7kC&pgis=1>
- Saari, L. M., & Judge, T. A. (2004). Employee attitudes and job satisfaction. *Human Resource Management*, 43(4), 395–407. <https://doi.org/10.1002/hrm.20032>.
- Saini, N., Sangwan, G., Verma, M., Kohli, A., Kaur, M., & Lakshmi, P. V. M. (2020). Effect of social networking sites on the quality of life of college students: A Cross-Sectional Study from a City in North India. *Scientific World Journal*, 8. http://search.proquest.com.ezpprod1.hul.harvard.edu/docview/2400277340?accountid=11311%0Ahttps://hollis.harvard.edu/openurl/01HVD/HVD_URL?url_ver=Z39.88-2004&rft_val_fmt=info:ofi/fmt:kev:mtx:journal&genre=article&sid=ProQ:ProQ%3AAgriculturejournals&ati.
- Salam, M., & Farooq, M. S. (2020). Does sociability quality of web-based collaborative learning information system influence students' satisfaction and system usage? *International Journal of Educational Technology in Higher Education*, 17(1). <https://doi.org/10.1186/s41239-020-00189-z>.
- Samaha, M., & Hawi, N. S. (2016). Relationships among smartphone addiction, stress, academic performance, and satisfaction with life. *Computers in Human Behavior*, 57, 321–325. <https://doi.org/10.1016/j.chb.2015.12.045>.
- Sampath Kumar, B. T., & Manjunath, G. (2013). Internet use and its impact on the academic performance of university teachers and researches a comparative study. *Higher Education, Skills and Work-based Learning*, 3(3), 219–238. <https://doi.org/10.1108/HESWBL-09-2011-0042>.
- Schierz, P. G., Schilke, O., & Wirtz, B. W. (2010). Understanding consumer acceptance of mobile payment services: An empirical analysis. *Electronic Commerce Research and Applications*, 9(3), 209–216. <https://doi.org/10.1016/j.elerap.2009.07.005>.
- Shin, Y. M., Lee, S. C., Shin, B., & Lee, H. G. (2010). Examining influencing factors of post-adoption usage of mobile internet: Focus on the user perception of supplier-side attributes. *Information Systems Frontiers*, 12(5), 595–606. <https://doi.org/10.1007/s10796-009-9184-x>.
- Sinha, U. K., Sharma, V., & Nepal, M. K. (2001). Development of a scale for assessing academic stress: a preliminary report. *Journal of the Institute of Medicine*, 23, 105–102. <https://pdfs.semanticscholar.org/4675/9cc82480f71a5172b15d8c350b1046549f71.pdf>.
- Statista. (2019). Social media usage. Secretintelligenceservice.Org. https://www.secretintelligenceservice.org/wp-content/uploads/2016/02/PI_2015-10-08_Social-Networking-Usage-2005-2015_FINAL.pdf
- Turel, O., Serenko, A., & Bontis, N. (2010). User acceptance of hedonic digital artifacts: A theory of consumption values perspective. *Information and Management*, 47(1), 53–59. <https://doi.org/10.1016/j.im.2009.10.002>.
- Ustun, G. (2020). Determining depression and related factors in a society affected by COVID-19 pandemic. *International Journal of Social Psychiatry*. <https://doi.org/10.1177/0020764020938807>.

- Valaei, N., & Baroto, M. B. (2017). Modelling continuance intention of citizens in government Facebook page: A complementary PLS approach. *Computers in Human Behavior*, 73, 224–237. <https://doi.org/10.1016/j.chb.2017.03.047>.
- Wang, C., Teo, T. S. H., & Liu, L. (2020). Perceived value and continuance intention in mobile government service in China. *Telematics and Informatics*, 48(September 2019), 101348. <https://doi.org/10.1016/j.tele.2020.101348>.
- Wei, H. L., Lin, K. Y., Lu, H. P., & Chuang, I. H. (2015). Understanding the intentions of users to stick to social networking sites: A case study in Taiwan. *Behaviour and Information Technology*, 34(2), 151–162. <https://doi.org/10.1080/0144929X.2014.928745>.
- Yang, X. (2019). Social influence or personal attitudes?: Understanding users' social network sites continuance intention. *Kybernetes*, 48(3), 424–437. <https://doi.org/10.1108/K-05-2018-0223>.
- Yang, H.-L., & Lin, C.-L. (2014). Why do people stick to Facebook web site? A value theory-based view. *Information Technology and People*, 27(1), 21–37. <https://doi.org/10.1108/ITP-11-2012-0130>.
- Yang, S., Jiang, H., Yao, J., Chen, Y., & Wei, J. (2018). Perceived values on mobile GMS continuance: A perspective from perceived integration and interactivity. *Computers in Human Behavior*, 89(June), 16–26. <https://doi.org/10.1016/j.chb.2018.07.032>.
- Zhang, C. B., Li, Y. N., Wu, B., & Li, D. J. (2017). How WeChat can retain users: Roles of network externalities, social interaction ties, and perceived values in building continuance intention. *Computers in Human Behavior*, 69, 284–293. <https://doi.org/10.1016/j.chb.2016.11.069>.
- Zheng, Y., Zhao, K., & Stylianou, A. (2013). The impacts of information quality and system quality on users' continuance intention in information-exchange virtual communities: An empirical investigation. *Decision Support Systems*, 56(1), 513–524. <https://doi.org/10.1016/j.dss.2012.11.008>.
- Zong, W., Yang, J., & Bao, Z. (2019). Social network fatigue affecting continuance intention of social networking services: The case of WeChat users in China's universities. *Data Technologies and Applications*, 53(1), 123–139. <https://doi.org/10.1108/DTA-06-2018-0054>.

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