Facebook continuance intention and its impact on addiction: the mediating role of users' security concerns

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C H R O N I C L E	A B S T R A C T
	This research involves developing a model that investigates the impact of perceived values on continuance intention to use Facebook. It also examines the impact of Facebook continuance intention on addiction and the mediating role of security concerns on the relationship between them. A structural equation modeling technique was used to analyse data obtained based on a convenience sample from 296 Facebook users in Jordan. Results showed an acceptable fit of the model. The influence of perceived values on continuance intention was confirmed based on findings. However, no similar significant effect was found for trust. A significant effect of continuance intention on Facebook addiction was found but not for security concerns. The contrasting findings represent a challenge and a possible opportunity for future research and practitioners. The research discusses different theoretical and professional contributions and outlines the implications arising from the research model.

1. Introduction

Social media addiction was described as a psychological reliance on the use of social media which hinders normal life activities for the person and has some negative consequences (Moqbel & Kock, 2018) (Maqableh, Abuhashesh, et al., 2021). It is noticeable that social media platforms or Web 2.0 applications such as Facebook have changed communication patterns between people and firms (Boyd & Ellison, 2007). According to the Statista site, there are approximately 2.89 billion monthly active users on Facebook as of the second quarter of 2021 (Statista, 2021). Vishwanath reports that due to the popularity of this platform, people tend to spend about 5-8 hours a day using the platform (A. Vishwanath, 2015). Facebook is a useful platform for connectivity and improved productivity but it is worth mentioning that excessive use may lead to several negative outcomes such as lowering self-esteem, increasing personal distraction, causing some health-related problems, and possible addiction (van der Schyff et al., 2020). Based on that some researchers proposed that in general, excessive use of social media platforms might resemble a type of addiction due to negative engendered consequences that usually accompany a classical act of addiction (e.g. withdrawal symptoms, deterioration, conflict, and mood swings) (Coopersmith, 1981; Karaiskos et al., 2010; Maqableh, Jaradat, et al., 2021). There is increasing research focused on Facebook's platform-related issues (Aida et al., 2014), Facebook's social functions (Lakshminarasimha & Vijayan, 2008), the relationship between community members (Park et al., 2011), Facebook's entertainment functions (Shin & Shin, 2011), Factors influencing use intentions (Lin et al., 2011), and stickiness (Yang & Lin, 2014). Another research stream considered the consequences of social media addiction and the individual's well-being as well as the outcomes of his/her work such as anxiety, insomnia and Turnover (Moqbel & Kock, 2018; Marengo et al., 2020). Personality, values, self-esteem, loneliness, relationship building, and social activities were antecedents of the platform and constituted interesting areas for research (Zhang et al., 2017). The insightful findings of the studies were quite useful and relevant. One notices that limited attention was given to the impact of trust and users'

perceived values on social media (Facebook) addiction (Zhang et al., 2017). In addition, there is partial coverage looking at the relationship between continuance intention and addiction. It is believed that no prior research was carried out to examine the effect of security concerns on social media (Facebook) addiction. This study compares the effect of perceived values of social media and their influence on the users' continuance intention to use and addiction to Facebook. Lin and Lu (2011) proposed that further examination of the effect of each attribute (instant messaging, chatting, shopping, and gaming) incorporated in most social media platforms, such as Facebook, on the user's intention to use as well as further investigation of the addiction issues of social media platforms. This should serve as an attempt to fill this gap in the relevant literature.

SNS users consider trust as an important factor in case they would participate and engage (Grabner-Kräuter & Bitter, 2014). Users' interaction and continuance of intention could be restricted without trust or rather limited as seen by others. SNS managers must prove that their websites are trustworthy and that they respect the users' private information as well as have the responsibility to protect the browsing log history and maintain it without any abuse. In addition, security concerns play an important role in explaining the SNS users' continuance intention to use a specific social networking site. It is believed that those users who consider that their private and sensitive information is not properly secured are less likely to be apt for addiction on SNS. Therefore, security concerns can play a vital role in the relationship between continuance intention and Facebook addiction. Consequently, providing high security to the Facebook site from managers and users should significantly increase the Facebook addiction that affects the continuance intention by individuals, educational institutions users, and business customers. Trust can have a positive impact on Facebook users' continuance intention. Several studies related to SNS were carried out. Some of them supported these two arguments and others did not (Landesberg et al., 1999; Miyazaki & Fernandez, 2001; Miyazaki & Fernandez, 2001; Sledgianowski & Kulviwat, 2009; Vinhal Nepomuceno et al., 2012; Yang & Lin, 2014; Zhang et al., 2017). Therefore, this study aims also to find the impact of Facebook users on the continuance intention to use Facebook. Another aim is to check for the impact of security concerns on the relationship between continuance intention and Facebook addiction in the context of Jordanian young users.

In summary, the proposed theoretical framework aims to:

1) Examine the influence of users' perceived values and trust on the continuance intention to use social media.

2) Examine the influence of security concerns on social media.

3) Examine the relationship between the continuance intention of users and Facebook addiction.

Several significant theoretical and practical implications can be derived based on the findings of this study. From a theoretical perspective, this research presents some important surrogate measures for the different reported gaps in the literature. In addition, this study offers a theoretical explanation for the impact of perceived values on continuance intention and social media addiction behaviour. From a managerial perspective, the study reveals a greater understanding of the factors that might reduce social media continuance intention and addiction. This is of great importance to professionals and policymakers who are interested in addressing this phenomenon and devising measures, techniques, and policies to enhance the effective utilization of social media in general and Facebook in particular. In the first section, the literature review and hypothesis development are discussed in detail. This is followed by the research methodology section. Then, the research results section covers the structured equation modeling analysis. The following section includes a results discussion, implications and future research directions. Finally, conclusions and limitations are drawn.

2. Literature Review and Hypotheses Development

Social media research is classified into different themes. The first theme focuses on antecedents of the continuous intention to use Social Networking Sites (SNS). Several studies identified some relevant factors such as perceived values, habits, personality, self-esteem, social norms and attitudes, and loneliness (Xu & Tan, 2012; Chiang, 2013; Yang & Lin, 2014; Chun & Lee, 2016; Lee et al., 2017; Zhang et al., 2017). In terms of addiction, different factors were identified including security, psychological traits, self-esteem, and loneliness (Coopersmith, 1981; De Cock et al., 2014; Vishwanath, 2015). As for the addiction consequences, some studies examined the addiction's influence on academic performance, performance and health, and anxiety (Wang & Mark, 2018; Ainin et al., 2015; Moqbel & Kock, 2018). There is a focus on the different types of online addictions. Different types of addictions were identified; these included Internet addiction, Internet gaming disorder; smartphones addiction, and Facebook and social media addictions (Young, 1996; Lemmens et al., 2011; Anderson, 2015; PERRIN, 2015; Sigerson et al., 2017). The existing studies in the literature have examined the antecedents of continuous intention separate from addiction. Following the discussion presented in the previous paragraphs, this study aimed to bridge the gap in the literature by examining the relationship between the continuous intention to use and addiction to Facebook as well as the factors influencing them. The role of security in mediating the relationship remains largely unexamined.

2.1. Perceived Values and Continuance Intention

The perceived value is based on the users' assessment or evaluation of the benefits they expect to acquire from a product or service while deducting the costs of doing that (Zeithaml, 1988). In general, the perceived values have multiple dimensions such as the utilitarian and hedonic values that motivate the user (Oliver & Mano, 1993; Park & Park, 2009), and the intrinsic

and extrinsic values from a goal orientation perspective which also includes economic, social, hedonic and altruistic dimensions (Zhang et al., 2017). Values are viewed as dimensions of enjoyment or usefulness (Lin & Lu, 2011). The dimensions are considered as functional, conditional, and epistemic values (Sheth et al., 1991). This study examines the influence of four main values (i.e., social, information, emotional and hedonic) on the continuous intention to use Facebook. While the effect of the users' perceived values on the continuance intention to use Facebook was already established by (Al-Debei et al., 2013), the unclear question that remains is how different forms of perceived values influence the continuance intention to use social media platforms (Zhang et al., 2017). The first perceived extrinsic value of the value set is the social value which refers to the observed usefulness of the social media platforms to users for building and maintaining relationships and representing themselves and acquiring social approval (Lin, 2011). Facebook is primarily considered a social platform that helps maintain social relationships among its users (Yang & Lin, 2014). This implies that people use Facebook for interacting and having some social recognition from their peers and as a way to show their inner selves (Raacke & Bonds-Raacke, 2008). Most communication tools offer the use of pictures, videos, games, and text. However, Facebook offers different means for satisfying the users' social needs. Information value refers to the possible benefits resulting from acquiring useful information about friends and professionals. (Zhang et al., 2017). In addition, Facebook can allow users to attain information and news that might enhance their abilities and skills (Al-Debei et al., 2013). As for intrinsic values, the emotional value is related to the positive emotional relief and satisfaction acquired from the online support provided (Balakrishnan & Azra, 2013). Status updates and comments offered by Facebook help users to express themselves emotionally and also gain emotional support from their contacts. Hedonic value refers to the pleasure and enjoyment obtained from online interactions and activities (Zhang et al., 2017). Facebook also offers games for entertainment (Shin & Shin, 2011). This may lead more users to join the platform for the games and entertainment value the platform provides (Yang & Lin, 2014).

This study proposes that the values discussed above will positively influence the continuance intention to use Facebook. The findings of previous studies available in the literature seem to support this claim. A positive link was found between perceived values and behavioural intention and behaviour (Al-Debei et al., 2013). Some positive links were also found between hedonic and utilitarian values and Word of Mouth intentions on social media networks (Chun & Lee, 2016). Moreover, positive links were also found between those four values and the continuance intention to use social media platforms (Zhang et al., 2017; Maqableh, Abuhashesh, et al., 2021). Another research study has also found positive links between social and hedonic values and the continuous usage intention of SNS (Kupfer et al., 2016). One can deduce that the four perceived values would positively influence the continuance intention to use Facebook. Therefore, the hypotheses can be stated as follows:

H₁. *Emotional value positively impacts continuance intention.*

H₂. *Information value positively impacts continuance intention.*

H₃. *Social value positively impacts continuance intention.*

H₄. *Hedonic value positively impacts continuance intention.*

2.2. Trust and Continuance Intention

Trust refers to the readiness of a party to be vulnerable to the activities of others with an expectation that the other side will perform actions satisfactorily (Yang & Lin, 2014). Trust is noted to be a key construct in several areas of marketing and customer retention (Landesberg et al., 1999). It has become a key component in the adoption of electronic and mobile services as a result of the rise of the Internet and its platforms since the success of any only activity depends on acquiring the trust of the consumer (Coutu, 1998) (Yang & Lai, 2011). Technology, firms and social media platforms are all objects of trust in online media (Beldad et al., 2010). It follows that it is much more challenging for Internet users to sustain trust for the platforms which in turn hinder building long-term relationships between users (Yang & Lin, 2014). Evidence from related literature suggests that trust has a positive influence on the user's intentions and on maintaining long-term relationships within online social media platforms (Landesberg et al., 1999; Palvia, 2009). Trust was also found to be a critical part of social media platform use (Sledgianowski & Kulviwat, 2009). In addition, different levels of trust were found to affect the perceived values of users and their relationships with web stickiness (Yang & Lin, 2014). Trust is assumed to have a positive effect on the continuance intention. This leads to formulating the fifth hypothesis as follows:

H₅. *Trust positively impacts continuance intention to use Facebook.*

2.3. Continuance Intention, Facebook Addiction and Security Concerns

According to Al-Debei et al. (2013), the continuance intention to use Facebook is the user's initial decision to reuse the website. Facebook addiction is considered excessive use due to psychological dependence on the actual use which interferes with other activities and yields negative outcomes (Moqbel & Kock, 2018). Previous literature had mainly examined continuance intention as a dependent variable (Yang & Lin, 2014; Zhang et al., 2017; Maqableh, Obeidat, et al., 2021). However, this study examines its relationship with Facebook addiction. Numerous theories based on findings have established the relationship between behavioural intention with the actual behaviour (Pelling & White, 2009; Turel et al., 2010; Obeidat et al., 2017). This implies that if the user intends to continue using Facebook, the user will certainly continue to do that which might

increase the chances of addiction to the platform. According to previous studies, it was found that if the behaviour results in the user's willingness to repeat use, this behaviour becomes an automatically expected response from the user (Ronis, et al., 1989). It simply means that the more a person uses social media platforms to communicate with others, the more likely for this to become habitual which ultimately leads to addiction (Turel et al., 2010).

A similar logic may be applicable and lead to a proposition that the Continuance Intention to use Facebook based on perceived values would increase Facebook addiction while considering the mediating role of security concerns. Security concerns refer to the safety data stored or transmitted through Facebook (Maqableh, 2015; van Schaik et al., 2018). According to (Miyazaki & Fernandez, 2001; Vinhal Nepomuceno et al., 2012), security concerns were considered an important factor to strongly influence the relationship between online purchase intention and actual behaviour. This means that those users who have intentions to continue using Facebook are worried about breaching, hacking or even selling their personal and private information which could imply that they are less likely to be addicted (Nepomuceno et al., 2014). This leads to the formulation of hypotheses H6, H7a and H7b as follows:

H6. *Continuance intention positively impacts Facebook addiction.*

H7a. *Continuance intention positively impacts security concerns.*

H7b. *Security concerns positively impact Facebook addiction.*

3. Research Model and Hypotheses

Based on the previous discussion, this study proposes that information value, social value, hedonic value, and trust as critical antecedents to Facebook Continuance Intention that in turn directly and indirectly impact Facebook addiction through the mediating role of security concerns. Fig. 1 presents the research model of the study and shows the relationships among the research constructs that form the basis for positing and testing the different hypotheses.
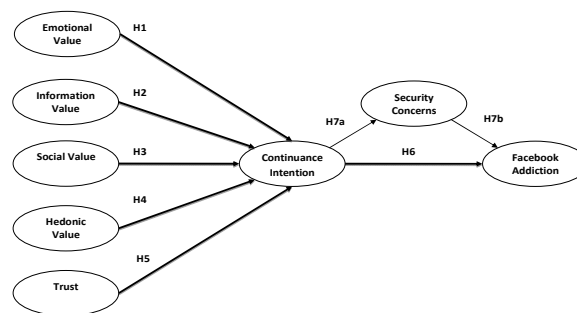

Fig. 1. Research model

4. Research Methodology

4.1. Measurement Development

This section details the methodology adopted in this study. It consists of definitions of the study's independent, mediating, and dependent variables. Additionally, it presents details about the sample and data collection instruments. There are eight variables in the model including emotional value, information value, social value, hedonic value, trust, continuance intention, security concerns, and Facebook addiction. The variables were operationalized based on previously validated studies where standard measures were used whenever possible.

Table 1
Definitions of variables

Constructs	Definitions	Sources
Emotional Value (EV)	It pertains to the emotional comfort and satisfaction obtained from online social support and interactions (e.g., expressions of care, concern, affection, and sympathy, which help one overcome his or her loneliness).	(Zhang et al., 2017)
Information Value (IV)	It indicates the benefit of acquiring useful information from friends or professional information providers on Facebook.	(Zhang et al., 2017)
Social Value (SV)	It refers to users' perceived usefulness in representing themselves, effectively building and maintaining interpersonal relationships, seeking companionship or verbal reinforcement, and pursuing social approval from using Facebook.	(Zhang et al., 2017)
Hedonic Value (HV)	Derived from the Facebook capacity to provide novelty, arouse curiosity, and/or satisfy knowledge-seeking aspirations.	(Zhang et al., 2017)
Trust (TR)	The tendency to believe in others and their posted articles on the Facebook website.	(Hsu and Lin, 2008)
Continuance Intention (CI)	Refers to Facebook users' initial decision to reuse the website.	(Al-Debei, 2013)
Security Concerns (SC)	Refers to the safety of the data stored or transmitted over Facebook.	(Schaik et al., 2018)
Facebook Addiction (FA)	The excessive use of Facebook refers to psychological dependence on the use of Facebook that interferes with other important activities and yields negative consequences.	(Moqbel et al., 2018)

Table 1 shows the definitions of those variables. A 5-point Likert scale ranging from '1=strongly disagree' to '5=strongly agree' was used for the questionnaire items that were used to measure the eight variables of the study. The preliminary instrument was pre-tested by ten semi-structured interviews with Facebook users and four MIS professors to improve clarity, relevance, completeness, and length. The process led to numerous minor amendments to the questions (items) of the instrument. The final questionnaire items are listed in Appendix I.

4.2. Sample and Data Collection

The data collection technique of the paper-based survey has primarily targeted those participants with previous Facebook experience. To boost the response rate, a cover letter accompanied each questionnaire explaining the research details and objectives and concluded with a statement assuring anonymity and confidentiality for respondents. According to the registration unit at the University of Jordan, the population of the study comprised 4000 Bachelor's students at the School of Business at the University. Participants were selected opportunely from the school's students who are currently pursuing their undergraduate degrees. It is arguable amongst researchers whether the sample size is sufficient for the estimation of regression analysis. Researchers like O'Rourke and Hatcher (2013) recommend that the sample size that is necessary for a study to apply structural equation modeling should be more than five times the number of measurement items or 100 participants. The instrument used consisted of only 32 items and therefore, the expected sample is supposed to be greater than 160. (Hair et al., 2014) recommend that a feasible sample size should be in the range of 100 to 200 participants. (Krejcie & Morgan, 1970) required a sample of 351 participants from a total population of 4000. This implies that 296 returned questionnaires indicate an adequate representation and meet the sample size requirement for the structural equation modeling technique with maximum likelihood assessment. The characteristics of respondents in this study are summarized in Table 2.

Table 2
Characteristics of the research sample (n= 296)

Category	Category	Frequency	Percentage%	Category	Category	Frequency	Percentage%
Gender	Male	97	32.8	**Hourly**	Less than	35	11.8
	Female	199	67.2	**Facebook**	1- 3 hours	121	40.9
	Total	296	100	**activities**	4- 6 hours	95	32.1
Age	17 - 19 years	36	12.2		More than 6 hours	45	15.2
	20 - 23 years	235	79.4		Total	296	100
	23 years and above	25	8.4	**Weeks of**	Less than 10 weeks	33	11.1
	Total	296	100	**Facebook**	10- 29 weeks	80	27.0
Academic	Year 1	14	4.7	**activities**	30- 50 weeks	87	29.5
Level	Year 2	81	27.4		More than 50 weeks	96	32.4
	Year 3	89	30.1		Total	296	100
	Year 4	89	30.1				
	Year 5 and above	23	7.7				
	Total	296	100				

As shown in Table 2, there were 199 females out of the 296 participants (67.2%) and 97 were males (32.8%). Most participants were 20-23 years old (235, 79.4%), followed by 17-19 years old (36, 12.2%), and 23 years and above (25, 8.4%). Most of the respondents were in their third and fourth academic year (178, 60.2%), followed by the group of second-year students (81, 27.4%). As for the hours spent on Facebook on daily basis, most participants used Facebook for 1-3 hours (121, 40.9%), 95, 32.1% for 4-6 hours and 45.15% for more than 6 hours (45, 15.2%). Regarding the number of weeks of actual use of Facebook, most participants used it for more than 50 weeks (96, 32.4%), and 87.29% for 30-50 weeks with 80.27% who used it for 10-29 weeks and 33.11% for less than 10 weeks respectively.

5. Data Analysis and Results

The current study employed Structural Equation Modeling (SEM) techniques with (Analysis of Moment Structures (AMOS), version 22 software) for data analysis for examining the hypotheses. The process consisted of two parts namely, validating the measurement model and fitting the structural model. The former was accomplished through a Confirmatory Factor Analysis (CFA) and the latter was accomplished by path analysis with latent variables (Byrne, 2001; Rex, 2011).

5.1. Measurement Properties

Table 3 exhibits the different types of goodness of fit indices. As the initial CFA model did not demonstrate an acceptable fit, three items (IV4, TR5 and TR6) were removed to acquire a better fit for the measurement model as the chi-square (x^2) value of the model was 1652.129 with 815 degrees of freedom (p< 0.05). The other model fit indices used for this research were the x^2/df (1652.129/815 = 2.027; with a threshold less than 3 for a serious viewpoint or less than 5 for acceptance criteria), the Incremental Fit Index (IFI) was 0.91and the Tucker-Lewis index (TLI) was 0.87, Comparative Fit Index (CFI) of 0. 90, the Goodness-of-Fit Index (GFI) of 0.88, the Adjusted Goodness-of-Fit Index (AGFI) of 0.91, the Normed Fit Index (NFI) of 0.90, the Root Mean Square Error of Approximation (RMSEA) of 0.057 and the Standardized Root Mean Square Residual (SRMR) of 0.048. Based on these fit indices, the measurement model appeared to fit the sample data well (Hair et al., 2014; Rex, 2011).

Table 3
Measurement model fit indices

Model	x^2	df	p	x^2/df	IFI	TLI	CFI	GFI	AGFI	RMSEA
Initial Model	1888.243	886	0.000	2.131	0.87	0.85	0.86	0.86	0.87	0.061
Final Model	1652.129	815	0.000	2.027	0.91	0.87	0.90	0.88	0.91	0.057

To evaluate the reliability and validity of the multi-item scales, a CFA was conducted. The reliability of the questionnaire items was determined by Cronbach alpha which is generally recommended to be above 0.7 (Hair et al., 2014); and for those items having a factor loading of more than 0.6 as suggested by (Antony et al., 2002) (Creswell, 2009). The composite reliabilities for all constructs exceeded the required minimum of 0.6 (Bagozzi & Yi, 1988); and the Average Variance Extracted (AVE) from a set of measurements of a latent variable should be over 0.5, as suggested by Bagozzi and Yi (1988) and Creswell (2009).

Table 4
The results of items used to measure the constructs>

Constructs and Indicators	Factor Loadings	Std. Error	Square Multiple Correlation	Error Variance	Cronbach Alpha	Composite Reliability*	AVE**
Emotional Value					0.773	0.94	0.85
EV1	0.709	***	0.504	0.065			
EV2	0.685	0.104	0.469	0.076			
EV3	0.555	0.099	0.308	0.082			
Information Value					0.740	0.96	0.88
IV1	0.624	***	0.392	0.067			
IV2	0.779	0.132	0.620	0.060			
IV3	0.707	0.127	0.495	0.065			
Social Value					0.731	0.94	0.88
SV1	0.626	***	0.393	0.095			
SV2	0.585	0.111	0.339	0.097			
SV3	0.621	0.116	0.388	0.098			
SV4	0.722	0.116	0.522	0.094			
Hedonic Value					0.696	0.94	0.84
HV1	0.589	***	0.345	0.088			
HV2	0.754	0.138	0.572	0.069			
HV3	0.644	0.135	0.413	0.081			
Trust					0.776	0.97	0.87
TR1	0.664	***	0.472	0.064			
TR2	0.704	0.106	0.565	0.063			
TR3	0.742	0.109	0.563	0.066			
TR4	0.583	0.093	0.296	0.068			
Continuance Intention					0.820	0.96	0.88
CI1	0.836	***	0.698	0.095			
CI2	0.718	0.067	0.515	0.091			
CI3	0.734	0.068	0.542	0.090			
CI4	0.631	0.067	0.398	0.098			
Security Concerns					0.857	0.97	0.89
SC1	0.700	***	0.488	0.094			
SC2	0.782	0.093	0.610	0.093			
SC3	0.841	0.092	0.710	0.084			
SC4	0.776	0.092	0.604	0.093			
Facebook Addiction					0.741	0.95	0.84
FA1	0.549	***	0.300	0.102			
FA2	0.692	0.165	0.477	0.092			
FA3	0.658	0.174	0.435	0.109			
FA4	0.690	0.177	0.476	0.107			

* Employing (Larcker et al., 1981) formula, the composite reliability calculation is expressed by the following equation:
Composite Reliability = $(\Sigma L_i)^2 / ((\Sigma L_i)^2 + \Sigma \text{Var}(E_i))$
Where L_i is the standardized factor loadings for each indicator, and Var (E_i) is the error variance associated with the individual indicator variables.
**The formula for the variance extracted is:
Average Variance Extracted = $\Sigma L_i^2 / (\Sigma L_i^2 + \Sigma \text{Var}(E_i))$
Where L_i is the standardized factor loadings for each indicator, and Var (E_i) is the error variance associated with the individual indicator variables.

Table 4 exhibits the Cronbach alpha, factor loadings, composite reliability, and AVE for the variables. Cronbach alpha for all constructs surpassed 0.7, and all the indicators of the factor loadings exceeded 0.50, which constitutes a confirmation of convergent validity according to (Bagozzi & Yi, 1988) and (Creswell, 2009). The measurement reached convergent validity at the item level because all the factor loadings were above 0.50, and all of the composite reliability values exceeded 0.60,

which in turn demonstrates a high level of internal consistency for the latent variables. Since each value of AVE exceeded 0.50 (Bagozzi & Yi, 1988; Hair et al., 2014), the convergent validity is considered to have been proven.

The means, standard deviations, AVEs, and squares of correlations between constructs are shown in Table 5. All of the inter-correlations between pairs of constructs were less than the square root of the AVE estimates of the two constructs, providing discriminant validity (Hair et al., 2014). Consequently, the measurement results indicated that this study had adequate levels of convergent and discriminant validity.

Table 5
AVE and square of correlations between constructs>

Constructs	EV	IV	SV	HV	TR	CI	SC	FA
EV	0.85							
IV	0.50	0.88						
SV	0.64	0.43	0.88					
HV	0.48	0.58	0.57	0.84				
TR	0.65	0.52	0.53	0.26	0.87			
CI	0.48	0.58	0.35	0.52	0.20	0.88		
SC	0.48	0.27	0.33	0.27	0.42	0.23	0.89	
FA	0.53	0.34	0.31	0.40	0.28	0.42	0.22	0.84
Mean	2.82	3.38	2.92	3.27	2.32	3.20	2.55	3.00
S.D.	0.88	0.87	0.84	0.91	0.85	0.91	1.01	0.97

Note: Diagonal elements are the average variance extracted for each of the eight constructs. The Off-diagonal elements are the squared correlations between constructs.

5.2. Structural Model

Structural equation modeling analysis using Amos 22 was performed to test the study hypotheses. SEM allows simultaneous testing of all hypotheses including direct and indirect effects. Table 6 shows the results of the structural model (i.e., the path estimations) of the direct effects (H1-H5). This was performed by investigating the statistical significance of the standardized regression weights (i.e., t-value) of the research hypotheses at a 0.05 level. The results show that emotional value, information value, social value, and hedonic value positively and significantly impact continuance intention. Therefore, hypotheses H1-H4 were supported. However, H5 was not supported and hence, trust was found not to have a significant impact on continuance intention ($\beta = 0.011$, t value = 0.213).

Table 6
Summary of results

Hypothesis	Path	Standardized effect	Robust t-value	Result
H1	EV→CI	0. 206***	4.154	Supported
H2	IV→CI	0.250***	4.992	Supported
H3	SV→CI	0. 261***	5.067	Supported
H4	HV→CI	0.281***	5.858	Supported
H5	TR→CI	0.011	0.213	Not Supported

Notes: ***$p < 0.001$; **$p < 0.01$; EV: Emotional Value, IV: Information Value, SV: Social Value, HV: Hedonic Value, TR: Trust; CI: Continuance Intention.

As for the mediating effect, the bootstrapping results demonstrate that the standardized indirect effect of continuance intention on Facebook addiction through security concerns is 0.021, and 0.091 of security concerns on Facebook addiction. However, findings revealed continuance intention impacted security concerns ($\beta = 0.235$, $p < 0.001$), and Facebook addiction ($\beta = 0.349$, $p < 0.001$). Consequently, while H6 and H7a were confirmed, H7b did not. Fig. 2 provides the direct and indirect models.
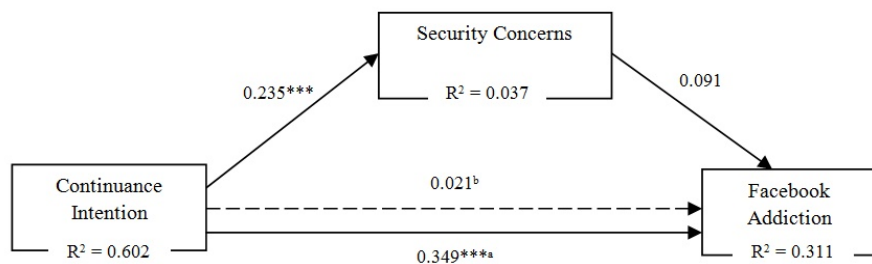

Fig. 2. Continuance intention–security concerns-Facebook addiction

Note: ***: $p < 0.001$; **: $p < 0.01$; [a]: direct effect; [b]: indirect effect

The coefficient of determination R^2 for the research endogenous constructs for continuance intention, security concerns, and Facebook addiction were 0.602, 0.037 and 0.311 respectively, which indicates that the model does account for the variation of both endogenous constructs namely continuance intention and Facebook addiction of the proposed model.

6. Discussion and implications

Based on a sample of 296 Jordanian Facebook users, the study examined the influence of perceived values (i.e., social, emotional, hedonic, informational value) and trust on the continuance intention to use Facebook. The relationship between continuance intention and addiction was also examined, and through a mediating effect. Except for two hypotheses, the developed model had a good fit with most hypothesized relationships. This research has therefore established the significant influence of perceived values on continuance intention, and the influence of continuance intention on Facebook addiction and security concerns.

When discussing the theoretical contributions here, one can state based on the results of the study that hypothesis H1, which proposed that emotional value is positively related to continuance intention, is supported. This implies that the more the user perceives the emotional benefits of using Facebook, the higher his/her continuance intention to use the social platform. The result is consistent with the findings of (Zhang et al., 2017) that link the emotional value with continuance intention to use WeChat. The results of this study provided empirical support to hypothesis H2 which suggested that information value is positively related to continuance intention which implies that the user's perceived informational benefit he/she might receive from using Facebook will also increase his/her intention to continue using the social platform. The result is consistent with the findings of Lin's (2011) research linking informational value with continuance intention. Hypothesis H3 proposed that social value is positively related to continuance intention which was also supported based on the empirical evidence of this study, which was consistent with the findings of previous (Al-Debei et al., 2013) research findings. This finding suggests that the perceived social benefits resulting from the use of Facebook would increase the intention to continue using the social platform. Finally, the H4 hypothesis that proposed that hedonic value is positively related to continuance intention was supported based on the results of this study, which is consistent with the finding of previous research (C. P. Lin, 2011) (Yang & Lin, 2014).

Due to the increasing competition between SNS providers, Facebook continuance intention is seen as being quite vital to Facebook managers. This study proposed emotional value, information value, social value, and hedonic value act as critical antecedents to the Facebook continuance intention. The overall statistical results produced positive impacts. Based on the analysis and findings of this study, Facebook managers could enhance users' continuance intention by improving emotional, information, social and hedonic values. Enhancing these values is considered crucial for Facebook and other SNS providers since continuance intention refers to the user's initial decision to reuse the SNS. Furthermore, Facebook users can also play an influential role in the impact of these values on others. This calls for Facebook managers to consider increasing the users' role in supporting these values. This research extends such theoretical significance and insights to Facebook as this research provided additional empirical support from a new context (Facebook users in Jordan), and showed that the perceived value (i.e., benefits) of using Facebook would positively influence users' intention to continue using it.

Trust is very important to users of social networks for determining if they would participate and engage in using them (Grabner-Kräuter & Bitter, 2014). The continuance intention to use Facebook without trust could be limited. Based on the effect of trust on continuance intention, Facebook managers need to work hard to prove its trustworthiness and its respect for the users' private information as well as their serious goal to protect users' browsing log history without abusing it. As hypothesis H5 proposes that trust is positively related to continuance intention, the results of this study were surprisingly in contrast to the findings of previous research (e.g. (Landesberg et al., 1999); (Yang & Lin, 2014)). As the results did not provide support to the hypothesis, which might suggest that variations in the user's level of trust in Facebook would not impact his/her intention to continue using the social platform. This implies that trust is not a significant determinant of continuance intention. This is an interesting theoretical contrast, which points to specifics about the Jordanian context (Facebook users) in relation to the literature. This might demonstrate that Facebook users do not trust the security guards and mechanisms of the platform. This could inform Facebook managers to work on enhancing and changing security guards and mechanisms to meet users' expectations, which might guarantee the validation, verification, and authentication of the information on the Facebook site. They could work on developing new tools to guarantee the true users' identity and validation mechanism to link the information on the Facebook site with other trusted sites. In addition, Facebook users do not trust other Facebook users and the validity of available information on it. Consequently, Facebook managers must improve their mechanisms and perhaps introduce new procedures to encourage its users to provide and share true information with other users. Future research could investigate the impact of trust on continuance intention to use the Facebook site in different countries and among other groups of users rather than the young users only. One possible explanation for this finding might be related to the age of participants in this study. The ages of most participants in this study (91.6%) ranged from 17 to 23 (Table 2). Individuals in this age category (i.e., youths) might be unaware and/or unknowledgeable of the risks of using such social platforms. In addition, and from my personal experience, it is usual for Jordanian youths to create (and browse) an anonymous identity on Facebook, which may lessen the impact of trust issues. This may also relate to Facebook-usage specifics and habits in Jordan in terms

of applications and features used on Facebook. This may simply point to cultural variations. However, these assertions require further investigations by any future research.

Hypothesis H6 proposed a positive relationship between Continuance intention and Facebook addiction and the study supported this hypothesis. This finding was supported by previous research that looked at the link between behavioural intention and behaviour (e.g., (Turel et al., 2010; Al-Debei et al., 2013)) and examined this relationship to conclude that the higher the intention to use Facebook, the more likely users will be addicted to it. This is an important contribution here, as this link has never been examined before. One of the aims of this study was to find the impact of security concerns on the relationship between continuance intention and Facebook addiction in the context of Jordanian youth users. H7a proposed that Continuance intention is positively related to security concerns, which was also supported in this study. This suggests that the higher the intention to continue using Facebook, the higher the security concerns the user will have when using the platform. This finding provided additional empirical support to previous research (e.g. (Miyazaki & Fernandez, 2001; Vinhal Nepomuceno et al., 2012)), which revealed positive relationships between security concerns and technology adoption and use. However, H7b which proposed that security concerns positively impact Facebook addiction was not supported and hence, addictive users were indifferent to security concerns. The results of the analysis of this study showed that continuance intention is positively related to security concerns, while security concerns do not have an impact on increasing Facebook addiction. The results of the analysis also showed that Jordanian youth Facebook users do not feel like providing any sensitive information about themselves on the Facebook site as they consider it to be unsafe. Moreover, they do not trust the security of the Facebook site to protect their sensitive information. Therefore, Facebook managers could enhance Facebook security to increase the users' security perception by providing new mechanisms and tools to guarantee the security of the Facebook site. Future research could investigate the impact of security concerns on the relationship between continuance intention and Facebook addiction in different contexts.

Trust and security concerns were not present in the Jordanian context, and this necessitates conducting further research to explain their insignificance in comparison with e.g., Westernized countries, which put greater emphasis on security and trust. This has professional implications as well and hence, the implications here are twofold. Initially, increasing awareness amongst Facebook users about Facebook security and trust issues in Jordan seemed to be an important issue to be addressed by both policymakers and professionals. Both policymakers and professionals could capitalize on this opportunity and develop campaigns, training programs, workshops and seminars targeting social media users in general and Facebook users, with content relating to security and trust and best practices. Increasing this awareness will improve usage and performance. Secondly, in light of the recent Facebook–Cambridge Analytical data scandal involving the collection of personally identifiable information of up to 87 million Facebook users raises many concerns about security breaches and endorsing trust amongst Facebook users. The issue is taken so seriously to the level of questioning the CEO of Facebook by a US Congress panel. This entails that each country should take measures to confront any possible similar threats to safeguard its citizens' data. This represents an opportunity for policymakers to craft more effective policies covering procedures, measures and countermeasures involving preventive policies to support safe and effective online social transactions and practices.

7. Conclusions and limitations

In conclusion, this research endeavoured to explore important factors affecting the continuous use and addiction of Facebook amongst a sample of Jordanian youths and found that it is mostly driven by Facebook's different advantages. What was surprising and remains to be further investigated is the absence of trust and security concerns, which were supposed to influence Facebook's usage in some way. This contrasting finding resembles an important Jordanian finding and contribution to the literature and it is hoped to be pursued by further research that might shed more light on their importance.

Discussing the research limitations, due to the cross-sectional nature of data collection, limits the ability to infer with more confidence causal relationships between the different variables examined in this study. This is in addition to the use of questionnaires for data collection, which may have created common method variance/bias. To improve the ability to conclude causal relations and reduce common method bias, future research could use other data collection methods (i.e., qualitative) and longitudinal research designs to possibly add more insights to this research. Another potential limitation of this study relates to the sample, which was limited to undergraduate students from one university. This limits the generalizability of the findings of the study to other contexts. Future research replicating this study could collect data from other age categories, other Jordanian universities in different geographical regions, and possibly from other contexts (e.g., individuals working in organizations) and perhaps develop more generalizable results.

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Appendix 1. Questionnaire items

Construct	Item #	Measure
Emotional Value	EV1	I receive adequate emotional concern from people using Facebook.
	EV2	I feel relieved by getting sympathy from online people using Facebook.
	EV3	I have been encouraged by friends on Facebook.
Information Value	IV1	I accumulate numerous knowledge through shared information by Facebook users.
	IV2	I acquire a variety of information from online people using Facebook.
	IV3	I obtain lots of useful information from online people using Facebook.
	IV4	Over the last month, I consulted online people using Facebook for practical issues and matters.
Social Value	SV1	Facebook use helps me feel accepted.
	SV2	Facebook use improves the way I am perceived.
	SV3	The fact I use Facebook makes a good impression on other people.
	SV4	Facebook use gives me social approval.
Hedonic Value	HV1	Compared to other things I could have done, the time spent online on the Facebook site was truly enjoyable.
	HV2	I enjoyed being immersed in exciting new information on Facebook sites.
	HV3	During the navigating Facebook processes, I felt the excitement of the hunt.
Trust	TR1	People on Facebook are trustworthy.
	TR2	I trust Facebook information to be true.
	TR3	I usually trust Facebook unless it gives me a reason not to trust it.
	TR4	Overall, Facebook is trustworthy.
	TR5	Facebook does respect and would not abuse my private information and browsing log history.
	TR6	The security guard and mechanism of Facebook are trustworthy.
Continuance Intention	CI1	If could, I will continue using Facebook.
	CI2	I will recommend my friends and family members use Facebook.
	CI3	I will continue using Facebook in the future.
	CI4	I intend to continue using the Facebook service rather than any alternative.
Security Concerns	SC1	I would feel secure sending sensitive information across Facebook sites.
	SC2	I would feel safe providing sensitive information about myself over Facebook sites.
	SC3	Facebook sites are a secure means through which to send sensitive information.
	SC4	Overall, the Facebook site is a safe place to transmit sensitive information.
Facebook Addiction	FA1	Using my Facebook site sometimes interfered with other activities.
	FA2	I have made unsuccessful attempts to reduce the time I interact with my Facebook site.
	FA3	Arguments have sometimes arisen at home because of the time I spend on my Facebook site.
	FA4	I think that I am addicted to the Facebook site.