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Social and Personal Dimensions as Predictors of Sustainable Intention to Use Facebook in Korea: An Empirical Analysis

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Abstract: The purpose of this research is to investigate the role of social and personal dimensions in predicting sustainable intention to use a social networking site (SNS). We propose and test an integrative SNS acceptance model based on the theory of planned behavior (TPB), the technology acceptance model (TAM), and the social influence theory. Included in the model are the attitudes toward the use of a SNS, the subjective norm, prevalence of information cascades, and the perceived behavioral control as antecedents of intention to use a SNS. An empirical analysis was conducted using data collected from a questionnaire survey with 228 college students in Korea, and it yielded the following findings. First, the two social dimensions, namely subjective norm and information cascade, were each found to have a significant positive relationship with behavioral intention to use a SNS. In particular, information cascades turned out to have a stronger impact than the remaining two antecedents to behavioral intention to use a SNS. Second, perceived usefulness and perceived ease of use were found to have a significant positive influence on the attitude toward SNS use.

Keywords: SNS; social influence theory; information cascade; subjective norm; Facebook

1. Introduction

A social networking site (SNS) is recognized as a website that promotes social interactions among people using information technology. The SNS is now in widespread use due to the rapid advances of the wireless Internet technology and the explosive growth of smartphone users. According to a recent report from Statistica [1], the number of active worldwide users of Facebook, a popular SNS, is over 2.1 billion as of January 2018. It is expected that the number will continue to rise as the use of mobile devices is ever-growing.

In the midst of widespread use of SNS, there has been unusual interest among researchers in SNS related topics. A number of studies have attempted in recent years to identify the factors influencing the intention to use or reuse a SNS. Drivers of SNS usage are various: for example, social interaction [2,3], shared value [2,3], perceived enjoyment [4], and social capital [5]. Despite these related studies, researchers have not devoted much attention to the examination of SNS use from a cultural perspective. Only a couple of studies [6,7] tried to address the issue, as they compared the use of SNS across two different cultures. In an oriental culture, collectivism plays an important role [7]. Hofstede [8] defines collectivism as the degree to which people in a society are integrated into groups. Given the related studies, social factors, including social norms, would likely have an important influence on the intention to use a SNS, especially in a collectivistic culture.

Meanwhile, there exist a few studies that examined social characteristics as determinants of a user's acceptance and use of information technology. A strong social bond has greater effect on technology acceptance than a weak social bond [9]. Characteristics of a social relationship may present

social pressures that may influence the adoption and use of a SNS. For example, researchers have noted that subjective norm, the perceived social pressure to perform or not to perform the behavior, can exert an influence on an individual's behavior [10]. In particular, we pay attention to information cascades as a social influence in this research. Information cascade is a key concept that can help explain the herding behavior where individuals learn and behave by observing the actions of others [11,12], and has been recognized as a determinant of a user's acceptance of a new information technology [13]. Hence it would be important to explore the role of social dimensions in a user's acceptance and use of a SNS.

This research has been motivated by the need to close the gap of existing research by incorporating social factors into a SNS acceptance model. We divide the antecedents of SNS acceptance intention into two categories, social dimensions and personal dimensions, and investigate their impacts on the intention to use a SNS. To this end, we established the following two research questions.

RQ1: From an integrative perspective, what factors influence the sustainable intention to use a SNS?
RQ2: What effects do social and personal dimensions each have on the intention to use a SNS?

To find answers to the above research questions, this study aims to develop and validate an integrative SNS acceptance model that encompasses personal and social dimensions. The rest of the paper is organized as follows. First, we go over the theoretical background related to technology acceptance. Second, we present an integrative model of SNS acceptance based on related theoretical models. Next, we conduct an empirical analysis to test the research model and hypotheses. Findings of this research are expected to contribute to the understanding of the factors leading to the adoption and use of a SNS.

2. Theoretical Background

2.1. Concept and Chacteristics of SNS

A SNS is defined as an online platform that people use to build social networks or social relations with other people who share similar personal or career interests, activities, backgrounds, or real-life connections [14]. A SNS provides web-based services that allow individuals to (1) construct a public or semipublic profile within a system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system [15]. While a SNS enables individuals to share information by strengthening an existing network of friends or creating a new network, it can also be used as a means of expressing personal thoughts or ideas that cannot otherwise be presented to others. Furthermore, a SNS makes it possible to run a virtual community that focuses on a specific area of interests. Today SNS's increasingly go beyond promoting social relationships among individuals and serve as a marketing tool to expose a company or product brand to the users of a SNS. Examples of widely used global SNS include Facebook, Twitter, Youtube, and Linkedin.

A SNS is web-based software, and thus exhibits certain characteristics at the software level. Smith [16] characterizes SNS software as having seven attributes. First, 'identity' is a way of uniquely identifying people in the system. Second, 'presence' is a way of knowing who is online, available, or otherwise nearby. Third, 'relationships' is a way of describing how two users in the system are related (e.g., in Flickr, people can be contacts, friends, of family). Fourth, 'conversations' is a way of talking to other people through the system. Fifth, 'groups' is a way of forming communities of interest. Sixth, 'reputation' is a way of knowing the status of other people in the system (e.g., Who is a good citizen? Who can be trusted?). Finally, 'sharing' is a way of sharing things that are meaningful to participants (like photos or videos).

2.2. Technology Acceptance Theories

2.2.1. Theory of Reasoned Action

Theory of Reasoned Action (TRA) is a widely-known model of human persuasion proposed by Fishbein et al. [17]. The theory is designed to explain the relationship between attitudes and behaviors within a human action. TRA predicts how individuals will behave based on their prior attitudes and behavioral intentions. It expresses the relationships among behavior, attitude, and beliefs as a mathematical equation: BI = w_1(AB) + w_2(SN). BI (Behavioral Intention) is a function of both attitude toward performing the behavior (AB) and subjective norms (SN) toward performing that behavior; w_1 and w_2 are empirically derived weights.

TRA suffers from limitations. First, it does not clearly explain the relationship between attitudes and subjective norms. While the model presumes that attitudes and subjective norms are variables independent of each other, the one may influence the other. Second, the theory postulates that behavioral intention, once formed, will lead to a behavior. However, successful attainment of the intention may be affected by many variables, thus creating uncertainty.

2.2.2. Theory of Planned Behavior

The theory of planned behavior (TPB) is a model extended from TRA that suffers from the limitation that the behavioral intention alone cannot predict a behavior. Ajzen et al. (1986) added another antecedent of behavioral intention, perceived behavioral control (PBC), to improve the predictive power of TRA. TPB is a model that focuses on explaining behavioral intention in mathematical terms. It uses an equation expressed as BI = f[w_1(AB) + w_2(SN) + w_3(PBC)] where w_1, w_2, and w_3 are the weights assigned to the three antecedents to behavioral intention.

Since TPB had been introduced, a number of related studies have been conducted. Pavlou and Gefen [18] used TPB to identify drives of e-commerce adoption. Similarly, Herrero Crespo and Rodríguez Del Bosque Rodríguez [19] used TPB to examine factors that lead consumers to adopt B2C e-commerce. In addition, Merikivi and Mantymaki [20] used TPB to understand why people continue to use social virtual worlds. Our research wishes to examine drivers of the use of Facebook using TPB too.

2.2.3. Technology Acceptance Model

The technology acceptance model (TAM) was first proposed by Davis [21], it is a theoretical model developed to uncover the factors influencing the employee's adoption of the information technology that an organization introduced to improve its business performance. TAM is one of the most influential extensions of Ajzen & Fishbein's TRA. TAM theorizes that perceived usefulness (PU) and perceived ease of use (PEOU) are antecedents to attitude for the adoption of a technology and are determined by external factors. According to Davis [21], perceived usefulness is defined as the degree to which a person believes that using a particular system would enhance his or her job performance, whereas perceived ease of use is defined as the degree to which a person believes that using a particular system would be free from effort. PU and PEOU are also research constructs used in diffusion of innovation theory, and are regarded as perceived characteristics commonly used to explain the adoption of an innovation [22,23]. Subsequently, TAM has been updated and expanded to address some shortcomings. TAM2 [24] extended the original TAM model to reflect social influence (subjective norms, voluntariness, and image) and cognitive instrumental processes (job relevance, output quality, result demonstrability, and perceived ease of use). Meanwhile, Venkatesh, et al. [25] proposed the unified theory of acceptance and use of technology (UTAUT). In UTAUT, behavioral intention is predicted by four antecedents, including performance expectancy, effort expectancy, and social influence, while use behavior is influenced by behavioral intention and facilitating conditions [25].

2.3. Social Influence Theory

Social influence has been regarded as a key theme in the field of social psychology, and is concerned with how an individual's attitudes, beliefs, and subsequent actions and behaviors are affected by referent others [26]. Social influence theory theorizes how the change in attitude and behavior occurs by social influence [27]. Deutsch and Gerard [28] state that there are two categories of psychological factors driving an individual to conform to the expectations of others; namely, normative and informational social influence. These include our need to be right (informational social influence) and our need to be liked (normative social influence).

2.3.1. Normative Social Influence

Normative social influence is defined as an influence to conform with the positive expectations of another [28]. This is the tendency to conform to the expectations of others [29]. The power of normative social influence stems from the human identity as a social being, with a need for companionship and association [26]. Thus, normative social influence leads an individual to conform in order to be liked and accepted by others [26]. Fundamentally, it involves a change in behavior that is deemed necessary in order to fit in with a particular group. The key motivation for the conformity to the normative social influence is the realization of a reward or the avoidance of a punishment or the enhancement of his or her self-image [29]. This type of social influence often leads to people exhibiting public compliance of the group's social norms in order to be accepted by the group. Normative beliefs are concerned with the likelihood that important referent individuals or groups approve or disapprove of performing a given behavior [10]. Normative social influence from a referent to conform to the referent's own judgment may be thought of as an internalized social process in which that referent holds expectations of an individual with regard to his own behavior [27–29].

The group's social norms tend to present social pressures to an individual. Research shows that the pressure to bend to normative influence increases for actions performed in public, whereas this pressure decreases for actions done in private [30,31]. In recent years, a number of studies [19,32] were conducted to build and validate a model of IT acceptance around a subjective norm, a construct conceptually close to social norms. For example, these studies each presented a model of e-commerce adoption to identify the factors including subjective norm that can predict a buyer's attitude, and then purchase intention. However, most of these studies did not go beyond subjective norm to extend the model further.

2.3.2. Informational Social Influence

According to Deutsch and Gerard [28], informational social influence is defined as an influence to accept information obtained from another as evidence about reality. An informational social influence would be accepted if it is perceived as being instrumental to the solution of some problem confronting the individual, or because it supports or adds to what the individual already believes about some salient aspect of his environment [29]. A lack of information, an ambiguous situation, or premature demands for action or decision lead the person to substitute seemingly competent information from others for his own search for direct evidence [33]. When making a purchase decision, a consumer is likely to accept informational social influence if he/she determines that information from others (e.g., product reviews) helps achieve the cost reduction goal [34].

When the situation is uncertain to the extent that it is hard to make a right choice, the decision-maker may follow the decision of another person instead of making a decision using the information he/she has gained [11]. This phenomenon is also called herding, social learning, or the information cascade [12]. The information cascade concept has emerged from the studies including Banerjee [35] and Bikhchandani, Hirshleifer and Welch [11]. Information cascades occur when Internet users start passing on information they assume to be true, but cannot know to be true, based on information on what other users are doing. Although an individual could decide by direct analysis

of the alternatives to choose from, this can be costly and time-consuming. Thus, a plausible solution to this problem would be to rely on the information of others. When a consumer is puzzled by the overwhelming amount of information in the market and believes that his/her personal decision is not solid enough to beat the decision made by a multitude, he/she would likely find it useful to abandon his/her own information and follow the multitude's decision [33]. Thus far, a variety of human tasks have been examined to observe the effect of information cascades including software/IT adoption [12,13] and product evaluation [33,36,37] among others.

3. Research Model and Hypotheses

3.1. Research Model

The primary purpose of this research is to develop a conceptual model to predict the behavioral intention to use a SNS. A SNS is a web-based information system exhibiting the characteristics of an information technology. Thus it would be reasonable to construct a research model based on technology acceptance theories such as TPB and TAM. As we noted in the literature review, TPB is useful in identifying factors influencing the intention to use an information technology, while TAM is typically used to explore the antecedents to attitudes, one of such factors. On the other hand, the social influence theory focuses on explaining how an individual's behavior is affected by others' acts.

Therefore, we will use these three theories to identify the antecedents to the behavioral intention to use SNS services and develop a nomological network to explain the relationships between the behavioral intention and these antecedents. First of all, we used TPB to identify attitudes, subjective norm, and perceived behavioral control as antecedents to the behavioral intention to use a SNS. Furthermore, we employed the social influence theory to specify normative and informational social influence as predictors of the behavioral intention. Earlier, in the Literature Review, we noted that subjective norm [10,38,39] is regarded as a normative social influence. In addition, the information cascade [11,37,40] is conceptualized as an informational social influence. Therefore, we incorporated information cascades and subjective norm into our research model to highlight the role of social dimensions in the acceptance of a SNS. In addition, we included perceived usefulness and perceived ease of use as personal antecedents to attitudes toward using a SNS based on TAM. The above identified antecedents to the intention to use a SNS can be divided into personal dimensions and social dimensions. Attitude and perceived behavioral control are personal factors formed by a user's own cognitive process, whereas subjective norm and information cascade are social factors perceived as a result of observing others' behaviors around the user. The research model is presented in Figure 1.

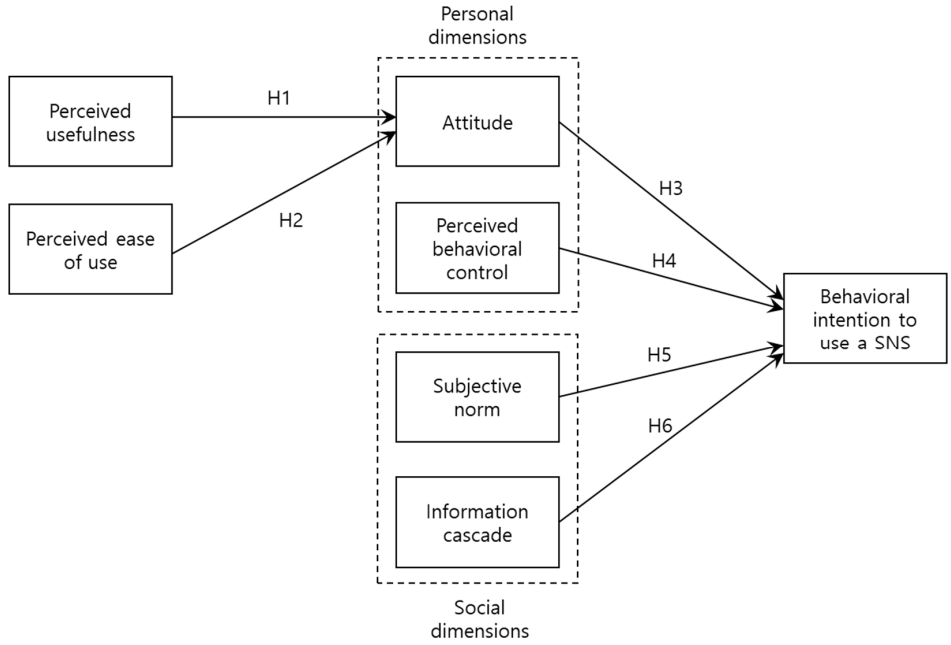

Figure 1. The Research Model.

3.2. Research Hypotheses

3.2.1. Antecedents to Attitude

Attitude, one of the constructs central to our research model, refers to the attitude toward performing a behavior, not one toward the behavior per se. Attitude is a key personal dimension influencing the behavioral intention to adopt and use a SNS. TAM fundamentally rooted in the theory of reasoned action postulates that an attitude can be predicted by a user's perceptions about a technology: namely, perceived usefulness and perceived ease of use. Numerous studies have been conducted to explore antecedents to attitude toward IT acceptance. The theoretical perspective of TAM would suggest that when a user perceives that the Facebook use may improve social relations with others and facilitates information sharing with others, the user is likely to develop a positive attitude toward using Facebook. Furthermore, if the user believes that minimal effort is needed to learn how to use Facebook, then the user will likely form a favorable attitude toward using Facebook. Based on the above line of reasoning, we propose the following hypotheses that predict that perceived usefulness and perceived ease of use will likely have a positive influence on attitude:

Hypothesis 1 (H1). *Perceived usefulness concerning a SNS will be positively related to attitude toward SNS use.*

Hypothesis 2 (H2). *Perceived ease of use concerning a SNS will be positively related to attitude toward SNS use.*

3.2.2. Antecedents to Behavioral Intention

TPB postulates that attitude, subjective norm, and perceived behavioral control are antecedents to behavioral intention. This theory has been widely applied and cited in numerous studies focusing on the prediction of behavioral intention. First, in social psychology attitude is an evaluation of an attitude object (e.g., person, object, event, activity, and idea) ranging from extremely negative to

extremely positive [41]. Attitude is an important determinant of an individual's emotion and behavior. In particular, the effect of attitude on intention and behavior is a central theme in TRA, TPB, and TAM. These theories posit that an individual performs a behavior associated with attitude. That is, when a person holds a positive attitude toward a given behavior, he or she ends up performing the behavior [17]. Then it would suggest that a user's attitude toward using a SNS will likely have a positive influence on behavioral intention to use the SNS. Based on these theoretical grounds, we propose the following hypothesis:

Hypothesis 3 (H3). *Attitude toward SNS use will be positively related to behavioral intention to use a SNS.*

Second, perceived behavioral control is a concept originating from Bandura's self-efficacy theory. Bandura defined self-efficacy as the conviction that one can successfully execute the behavior required to produce the outcomes [42]. According to Bandura [42], self-efficacy is the most important precondition for successful behavioral change. Similarly, perceived behavioral control is an individual's perceived ease or difficulty of performing a particular behavior [10]. According to Ajzen [43], perceived behavioral control refers to people's perceptions of their ability to perform a given behavior. Perceived behavioral control is determined by the total set of accessible control beliefs, i.e., beliefs about the presence of factors that may facilitate or impede performance of the behavior. Hence, perceived behavioral control is known to be a key antecedent to behavioral intention [44]. In a recent study by Kang, et al. [45], it was found that perceived behavioral control has a significant effect on online search attitude and behavioral intention to use e-coupons. Likewise, an individual who has a firm belief that he/she has the knowledge and competence necessary to use Facebook or another SNS is likely to perceive that the actual usage is under his/her own control. Therefore, perceived behavioral control is expected to have an influence on behavioral intention to use Facebook. This line of reasoning prompts us to formulate the following hypothesis.

Hypothesis 4 (H4). *Perceived behavioral control concerning a SNS will be positively related to behavioral intention to use a SNS.*

Third, subjective norm is a concept that grew out of social norms widely studied by social psychologists. In sociology a norm is a shared expectation of behavior that connotes what is considered culturally desirable and appropriate [46]. Social norms are informal understandings that govern the behavior of members of a society. Likewise, subjective norms refer to the belief that an important person or group of people will approve and support a particular behavior [17]. Subjective norms are determined by the perceived social pressure from others for an individual to behave in a certain manner and their motivation to comply with those people's views [44]. For that reason, the higher the perceived expectations from the acquaintances, the stronger the subjective norm, and the stronger the subjective norm, the stronger the intention to perform that behavior. This line of reasoning leads us to formulate the following hypothesis.

Hypothesis 5 (H5). *Subjective norm concerning a SNS will be positively related to behavioral intention to use a SNS.*

Finally, an information cascade occurs when it is optimal for an online user, having observed others' actions, to follow the adoption decision of the preceding individual without regard to his/her own information [12]. This is likely to be a case when the user faces an uncertain situation. Here the chief motivation is to obtain knowledge from a credible source and reduce uncertainty [34]. Hence the user's reasonable choice would be to observe the social fad associated with SNS use and follow the fad to jump on the bandwagon. This "jumping on the bandwagon" phenomenon appears to be particularly evident with young adults. Since it is becoming increasingly hard for youngsters to maintain relationships with friends without using Facebook, Instagram, or other SNSs, there

exists a very strong peer pressure leading a young user to use a SNS. Traditionally, the bandwagon effect in technology adoption has been examined by economists from the perspective of network externalities [47]. A network externality refers to the positive effect that an additional user of a good or service has on the value of that product to others. When network externalities are present, the value of a product or a service increases according to the number of others using it [48]. Online social networks existing on today's popular SNSs such as Facebook or Instagram increase in value to each member as more users join. For that reason, network externalities can create a bandwagon effect as the network becomes more valuable and more people join, resulting in a positive feedback loop [49]. Thus there will exist strong pressures that push offline social network friends who are already on an online social network to invite other members to join the online network using the SNS that they use. Based on these theoretical grounds, we propose the following hypothesis.

Hypothesis 6 (H6). *Information cascade concerning a SNS will be positively related to behavioral intention to use a SNS.*

3.3. Measures

All the measures employed in this study were rated on a five-point Likert-type scale that ranged from 'strongly disagree' to 'strongly agree'. Table 1 shows the measures, their definitions, and their respective measuring items.

Table 1. Measures.

Measure	Definition	Items	Sources
Perceived usefulness	The extent to which a user believes that using Facebook would enhance his or her social relationships with other people	• Improves my sociability • Facilitates information sharing • Enhances my quality of life	[21]
Perceived ease of use	The extent to which a user believes that using Facebook would be free from effort and easy to use	• Easy to use • Easy to learn how to use • Easy to be skillful at my tasks	[21]
Attitude	A predisposition or tendency to respond positively or negatively towards using Facebook	• Bad/good • Unpleasant/pleasant • Unfavorable/favorable	[50,51]
Perceived behavioral control	Perceived ease or difficulty of using Facebook	• I have control over using Facebook • I have necessary resources & knowledge about Facebook • I feel confident about using Facebook	[44,52]
Subjective norm	Perceived social pressure to comply with a behavior expected of a user by important referents	• Support my Facebook use • Understand my Facebook use • Expect my Facebook use • Find it necessary to use Facebook	[34,51,53]
Information cascade	Perceived social pressure to conform to the behaviors of others as a consequence of exposure to their online behaviors on Facebook	• I use it to follow others' recommendations about Facebook • I use it because of positive feedback about Facebook • I want to jump on Facebook bandwagon	[34–36]
Behavioral intention	Perceived likelihood that a user will use Facebook in the near future	• I intend to use Facebook • I plan to use Facebook in the near future • I intend to recommend Facebook	[21,25,53]

First, perceived usefulness is defined as the extent to which a user believes that using a SNS would enhance his or her social relationships with other people. Second, perceived ease of use refers to the extent to which a user believes that using a SNS would be free from effort and easy to use. Third, attitude is defined as a predisposition or tendency to respond positively or negatively towards using a SNS. Fourth, subjective norm is defined as perceived social pressure to comply with a behavior

expected of a user by important referents. Fifth, information cascade is defined as perceived social pressure to conform to the behaviors of others as a consequence of exposure to their online behaviors on a SNS. Sixth, perceived behavioral control is defined as perceived ease or difficulty of using a SNS. Finally, behavioral intention refers to perceived likelihood that a user will use a SNS in the near future.

4. Research Method and Analysis

4.1. Data Collection and Research Method

A preliminary survey was conducted using Facebook users before the main survey to ensure that the questionnaire items are properly phrased. We used the survey results to revise and fine-tune the individual items that are either unclear or redundant.

The main survey was conducted for the duration of two weeks. A questionnaire has been distributed to a randomly chosen sample of 251 undergraduate and graduate students. A total of 228 valid responses have been received and used for data analysis. A five-point Likert scale was used to capture answers to survey questions. Data were analyzed for statistical tests of the measurement model and hypotheses using IBM SPSS Statistics 20.0 and IBM Amos Graphics 20.0. Amos Graphics is a visual statistical program specially used for Structural Equation Modeling, path analysis, and confirmatory factor analysis.

Table 2 shows the profile of the sample. Males represented nearly 50% of the total respondents. As to the duration of Facebook use, 47.8% were 1~2 years, 24.1% were 2~3 years, and 12.7% were less than 1 year. This indicates that Facebook use is increasing among Korean college students. The device most widely used to run Facebook was a smartphone (92.2%), followed by a desktop/laptop computer (6.14%), then a tablet PC (1.71%). It implies that the recent widespread use of smartphones contributed to the increase of Facebook users in Korea.

Table 2. The Profile of the Sample.

Response Options		Frequency	Percentage (%)
Gender	Male	113	49.99
	Female	115	50.01
Duration of Facebook use	<1 year	29	12.71
	1–2 years	109	47.80
	2–3 years	55	24.12
	3–4 years	24	10.52
	>4 years	11	4.82
Device used to access a SNS	Smartphone	210	92.10
	Desktop/laptop PC	14	6.14
	Tablet PC	4	1.75

4.2. Reliability and Validity of the Measurement Model

The scale reliability test is designed to evaluate internal consistency that refers to the degree to which a set of items of a scale are closely related as a group. Scale reliability is measured by Cronbach's alpha (or α). According to Nunally [54], a scale whose Cronbach's alpha is 0.7 or above is considered to be reliable. In this research, the lowest and highest Cronbach's alphas are 0.754 (information cascade) and 0.921 (perceived ease of use), respectively. Thus, scale reliability does not appear to be an issue.

The validity test was conducted to assess two types of validity, including convergent validity and discriminant validity. Convergent validity refers to the degree of convergence seen when two attempts are made to measure the same construct through maximally different methods. Convergent validity is generally said to be supported if standardized factor loadings are 0.5 or above (preferably 0.7 or above), critical ratios are 2 or above, and average variances expected (AVE) are 0.5 or above [55]. Our measures satisfy the recommended thresholds as shown in Table 3, and therefore convergent validity can be claimed.

Table 3. Scale reliability and convergent validity test.

Construct	Variable	UC	SE	CR	*p*	SC	Cronbach's α	AVE	COR
Perceived usefulness	PU1	0.993	0.098	10.084	0.001	0.768	0.764	0.754	0.781
	PU2	0.788	0.092	8.556	0.001	0.635			
	PU3	1.000	-	-	-	0.725			
Perceived ease of use	PEOU1	0.977	0.052	18.901	0.001	0.875	0.921	0.910	0.911
	PEOU2	0.976	0.051	19.137	0.001	0.882			
	PEOU3	1.000	-	-	-	0.917			
Attitude	ATT1	1.000	-	-	-	0.784	0.826	0.827	0.816
	ATT2	1.119	0.089	12.637	0.001	0.835			
	ATT3	0.849	0.082	10.324	0.001	0.689			
Perceived behavioral control	PBC1	1.069	0.115	9.256	0.001	0.874	0.794	0.825	0.822
	PBC2	1.044	0.114	9.135	0.001	0.700			
	PBC3	1.000	-	-	-	0.699			
Subjective norm	SN1	0.796	0.070	11.320	0.001	0.728	0.874	0.887	0.888
	SN2	0.976	0.077	12.728	0.001	0.805			
	SN3	1.038	0.076	13.575	0.001	0.861			
	SN4	1.000	-	-	-	0.795			
Information cascade	IC1	1.372	0.176	7.882	0.001	0.747	0.754	0.726	0.725
	IC2	1.431	0.182	7.782	0.001	0.858			
	IC3	1.000	-	-	-	0.568			
Behavioral intention	BI1	1.000	-	-	-	0.795	0.885	0.868	0.849
	BI2	1.046	0.084	12.433	0.001	0.829			
	BI3	0.957	0.087	10.966	0.001	0.728			

Note: UC: unstandardized coefficients; SE: standard error; CR: critical ratio (*t*-value); *p*: probability value; SC: standardized coefficients; AVE: average variance extracted; COR: construct reliability.

Discriminant validity tests whether concepts or measurements that are not supposed to be related are actually unrelated. We assessed discriminant validity by examining the correlation coefficients among the constructs under investigation, as shown in Table 4. Hair, et al. [56] suggest that a model meets discriminant validity, provided that the minimum of average variance extracted (AVE's) is larger than the squares of between-construct correlation coefficients. As shown in Table 3, the smallest AVE, 0.754, is for perceived usefulness, and its square root is 0.868. Meanwhile, the maximum between-construct correlation coefficient in Table 4 is 0.842, the correlation between attitude and perceived usefulness. Therefore, it was confirmed that the square root of AVE obtained for each construct was larger than was the correlation of the construct with each of the remaining constructs, confirming discriminant validity. Based on the results of these three validity tests, it was found that the validity of research constructs used in our study was acceptable.

Table 4. Correlations.

Measure	PU	PEOU	ATT	SN	IC	PBC	BI
PU	1						
PEOU	0.408	1					
ATT	0.842	0.404	1				
SN	0.667	0.195	0.659	1			
IC	0.681	0.280	0.721	0.617	1		
PBC	0.395	0.551	0.429	0.161	0.220	1	
BI	0.811	0.422	0.805	0.636	0.802	0.429	1

Note: PU: perceived usefulness; PEOU: perceived ease of use; ATT: attitude; SN: subjective norm; IC: information cascade; PBC: perceived behavioral control.

4.3. Hypotheses Testing

In order to validate the measurement model, we constructed a structured equation model and tested it using the Amos program. The result of the goodness of fit test turned out to be Chi-Square = 333.374, d.f = 188.023, Chi-Square/d.f = 1.773, GFI = 0.879, AGFI = 0.837, NFI = 0.897, and RMSEA = 0.058. Although some indices were below the recommended thresholds, the measurement

model as a whole was acceptable (the following thresholds have been applied: Chi-Square/d.f = 3.0 or below; GFI = 0.9 or above; AGFI = 0.8 or above; NFI = 0.9 or above; RMSEA = 0.1 or below).

We conducted a path analysis for individual hypotheses. First, the results indicated that perceived usefulness (significance level: 0.001) and perceived ease of use (significance level: 0.01) each had a significant positive effect on attitude toward SNS use. Thus the hypotheses H1 and H2 were supported. Second, the three antecedents, namely attitude (significance level: 0.01), perceived behavioral control (significance level: 0.001), subjective norm (significance level: 0.001), and information cascade (significance level: 0.001) had a positive significant influence on behavioral intention to use a SNS. So hypotheses H4, H5, H6, and H7 were all supported. As a result, it was found that the all the six hypotheses were supported. The R^2 values denoting the extent to which a dependent variable is accounted for was computed to be 0.777 (attitude) and 0.661 (behavioral intention). The detailed results of research hypotheses testing are given in Table 5 and Figure 2. The hypothesis path (or pathway) in Table 5 refers to the causal relationship between the two variables involved in a hypothesis.

Table 5. Hypotheses Test.

Hypothesis Path	Path Coefficient	*t*-Value	*p*-Value	Result	R^2
PU → ATT	0.868	9.173	0.001	supported	0.777
PEOU → ATT	0.135	3.099	0.01	supported	
ATT → BI	0.527	3.170	0.01	supported	0.661
SN → BI	0.167	8.071	0.001	supported	
IC → BI	0.573	3.384	0.001	supported	
PBC → BI	0.223	6.168	0.001	supported	

Note: PU: perceived usefulness; PEOU: perceived ease of use; ATT: attitude; SN: subjective norm; IC: information cascade; PBC: perceived behavioral control.

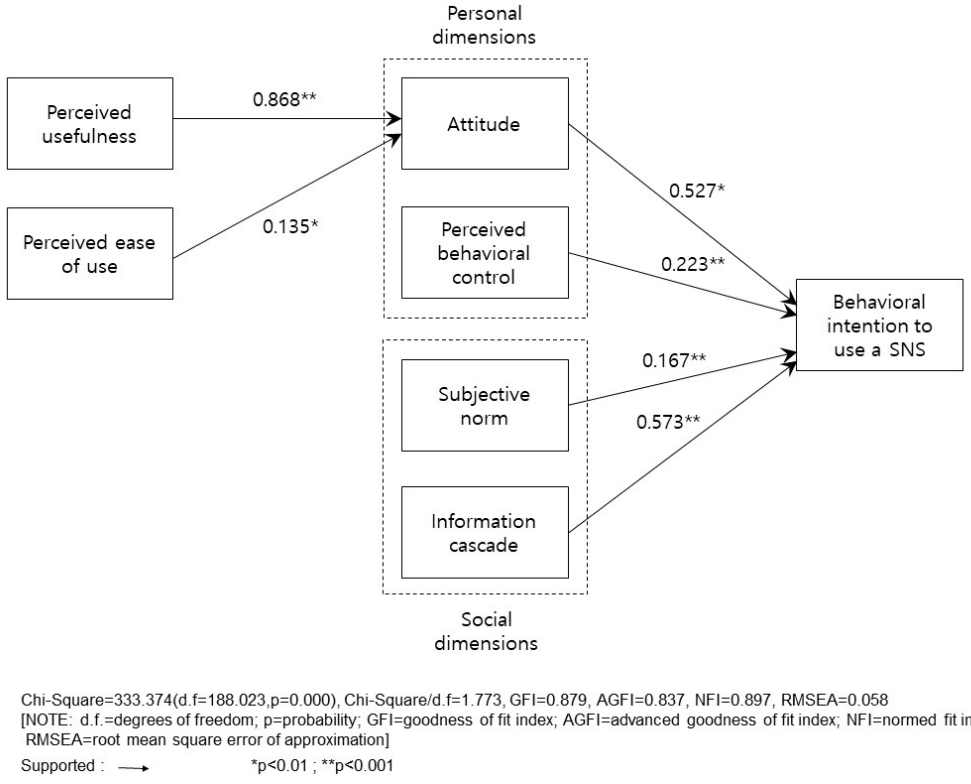

Figure 2. Path Analysis.

4.4. Discussion

4.4.1. Attitude and Its Antecedents

In general, the ability of an information technology to enhance the work performance and quality of living for a potential user is increasingly becoming the basis for the adoption of the technology. The primary aim of using a SNS is to build and maintain social relationships with acquaintances in a more effective manner. Hence, potential and actual users of a SNS like Facebook would perceive that the use of a SNS may help to maintain favorable relationships with their acquaintances. This perception is likely to lead to the formation of a positive attitude toward using the SNS on the part of the user. When it comes to using a SNS like Facebook, perceived usefulness refers to the degree to which the SNS adequately supports the user's social relationships with friends. Thus, our finding that perceived usefulness positively affects attitude reflects the expected aim of the SNS. Furthermore, as shown in the survey results, most Facebook users employ a mobile app to connect to social networks. Mobile phones are characterized by their mobility and portability. They enable a user to connect to a social network at any place at any time for information search and sharing. With rapid advances in smartphone hardware and software technologies, various user-friendly interfaces are increasingly emerging. It implies that today people can use new technologies with minimal learning requirements. That is, use of a SNS like Facebook would facilitate the user's sociability, thereby allowing the user to improve relationships with existing friends and to make more friends. Recent smartphone apps provide numerous features that make it easier than ever to use a SNS, and reinforce users' perceptions on ease of use. Therefore, our finding is consistent with the recent trend in mobile app technologies.

4.4.2. Behavioral Intention and Its Antecedents

It was found that attitude, subjective norm, information cascade, and perceived behavioral control all have a positive effect on behavioral intention to use Facebook. This finding is consistent with those of related studies. First, intention to use Facebook was found to be influenced by attitude formed after predicting and evaluating the outcome of using Facebook. That is, attitude towards Facebook use is a predictor of behavioral intention to use Facebook, and this is theoretically in line with TRA [57]. Second, intention to use Facebook was found to be affected by social pressures. A huge magnitude of changes introduced by information technology in recent years are making a profound impact on our day-to-day activities. Today, people are using the Internet and smartphones to build relationships with another individual or with a community at any place at any time [15]. For that reason, one needs to acquire and use a new technology or device to initiate and maintain social relationships. This digital capability required of an individual is no longer considered an option but a must imposed by social pressures. As a member of our society, an individual is subject to a social influence. Thus social pressures such as the subjective norm and information cascade appears to have affected intention to use Facebook. In particular, the information cascade was found to have a stronger effect on behavioral intention. This finding is consistent with that of Lin and Lu [58] who found positive relationships between network externalities constructs and continued intention to use a SNS. Use of a SNS used and recommended by a number of acquaintances would add to the network effect and enhance the quality of interpersonal relationships. Such perceptions of a user may have resulted in the finding that social pressures have a positive effect on the intention to use a SNS. Third, personal beliefs regarding the ability to use Facebook were found to have a positive influence on behavioral intention. It is a must to understand and learn to use information technology including desktop PC's, laptops, smartphones, and tablets in order to take advantage of Facebook and other SNSs. Today a majority of SNS users grew up with the Internet, Web, and mobile devices, and they are familiar with and confident about using the information technology. Such sense of personal confidence provides a user with an assurance that he/she is capable of securing and utilizing the resources and opportunities necessary to use the SNS. Therefore, a user's personal confidence and assurance concerning SNS use appears to have been reflected in the finding that perceived behavioral control has a positive effect on behavioral intention.

5. Conclusions

This research aims at identifying personal and social dimensions as antecedents to behavioral intention to use a SNS. To this end, we have conducted an empirical study using Facebook, a popular SNS. We formulated an integrative research model for SNS adoption, and tested the model using an online survey with a sample of 228 university students in Korea. We used the structured equation modeling technique to test our hypotheses.

The results of the empirical analysis point to the following answers to our research questions. First, RQ1 (What are the antecedents to intention to use a SNS?) can be answered in terms of personal and social influence dimensions. Personal dimensions were identified to be attitude toward SNS use and perceived behavioral control, whereas social influence dimensions include subjective norm as a normative social influence and information cascade as an informational social influence. Meanwhile, RQ3 (How do social and personal dimensions each affect intention to use a SNS?) may be answered by stating that personal and social factors all have a positive significant influence on behavioral intention.

The findings of this research suggest a few academic implications. First, this study proposed an integrative conceptual model of SNS use. Our model has incorporated subjective norm and information cascade as social influence dimensions as well as attitude and perceived behavioral control as personal dimensions. While in a related study, Kim [59] focused on the role of subjective norm in the continued use of a SNS, this research incorporated information cascades in addition to subjective norm as key social influences. This perspective is important in that an Oriental culture values social bonds more than a Western culture. Such a finding is expected to make a significant contribution to studies examining social and cultural characteristics of SNS's.

There are some practical implications to be drawn from the findings. The first implication is associated with perceived usefulness and perceived ease of use concerning the use of a SNS. Today a user-friendly interface is recognized as a central element in a user's successful adoption and use of an information system. Therefore, practitioners in a SNS business need to ensure that a user-friendly screen layout, an easy-to-use menu structure, and efficient navigation are in place. Furthermore, perceived usefulness of a SNS is closely related to the number of the SNS users. The greater the number of active users of the SNS, the more potential friends exist for dynamic information-sharing and thus the greater the value of the SNS. This will be enabled by the network effect that we examined earlier in developing a hypothesis related to information cascade. From the standpoint of a user, such benefits of joining and using a SNS are likely to function to increase perceived usefulness. Second, practitioners should keep in mind that an adoption and continued use of a SNS requires a user to satisfy both personal and social influence criteria: a positive attitude toward SNS use, strong subjective norm, perceived information cascade, and perceived behavioral control. Since it was found that behavioral intention is determined by social influence as well as personal factors, SNS businesses such as Facebook, Twitter, Instagram, and so forth need to come up with a marketing strategy taking into account social influences.

Despite the aforementioned implications, this research suffers from a few limitations. First, the sample of this study was confined to university students (both undergraduate and graduate), and thus it will be necessary to exercise care in interpreting the findings and discussing their generalizability. The youth in their twenties tend to exhibit collective behavior, and are subject to social influences. Therefore, we might have discovered different findings if we employed survey respondents in their forties or beyond. It will be desirable that future studies focus on uncovering the differences in behavioral responses to social influences between generations or between cultures. Second, it is suggested to rethink the antecedents to SNS use intention. Some of recent studies are introducing such measures as perceived enjoyment and perceived security in addition to perceived usefulness and perceived ease of use as antecedents of technology acceptance. In future studies, it would be worthwhile to identify drivers of behavioral intention in light of changes in the social and cultural environment, and test the drivers through an empirical analysis. Finally, the present study did not take into consideration the general characteristics of the sample that may have affected the intention to

use a SNS. In order to render research findings more trustworthy, it would be desirable to include in the research model control variables such as gender, duration of Internet use, devices used, etc.

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References

1. Statistica. *Most Famous Social Network Sites Worldwide as of January 2018*; Statistica: Hamburg, Germany, 2018.
2. Wang, J.-C.; Chiang, M.-J. Social interaction and continuance intention in online auctions: A social capital perspective. *Decis. Support Syst.* **2009**, *47*, 466–476. [CrossRef]
3. Lin, K.-Y.; Lu, H.-P. Intention to continue using Facebook fan pages from the perspective of social capital theory. *Cyberpsychol. Behav. Soc. Netw.* **2011**, *14*, 565–570. [CrossRef] [PubMed]
4. Suki, N.M.; Ramayah, T.; Ly, K.K. Empirical investigation on factors influencing the behavioral intention to use Facebook. *Univers. Access Inf. Soc.* **2012**, *11*, 223–231. [CrossRef]
5. Ellison, N.B.; Steinfield, C.; Lampe, C. The Benefits of Facebook "Friends:" Social Capital and College Students' Use of Online Social Network Sites. *J. Comput.-Mediat. Commun.* **2007**, *12*, 1143–1168. [CrossRef]
6. Jackson, L.A.; Wang, J.-L. Cultural differences in social networking site use: A comparative study of China and the United States. *Comput. Hum. Behav.* **2013**, *29*, 910–921. [CrossRef]
7. Qiu, L.; Lin, H.; Leung, A.K.-Y. Cultural differences and switching of in-group sharing behavior between an American (Facebook) and a Chinese (Renren) social networking site. *J. Cross-Cult. Psychol.* **2013**, *44*, 106–121. [CrossRef]
8. Hofstede, G. Dimensionalizing Cultures: The Hofstede Model in Context. *Online Read. Psychol. Cult.* **2011**, *2*, 8. [CrossRef]
9. Hossain, L.; de Silva, A. Exploring user acceptance of technology using social networks. *J. High Technol. Manag. Res.* **2009**, *20*, 1–18. [CrossRef]
10. Ajzen, I. The theory of planned behavior. *Organ. Behav. Hum. Decis. Process.* **1991**, *50*, 179–211. [CrossRef]
11. Bikhchandani, A.; Hirshleifer, D.; Welch, I. Learning from the Behavior of Others: Conformity, Fads, and Informational Cascades. *J. Econ. Perspect.* **1998**, *12*, 151–170. [CrossRef]
12. Duan, W.; Gu, B.; Whinston, A.B. Informational cascades and software adoption on the Internet: An empirical investigation. *MIS Q.* **2009**, *33*, 23–48. [CrossRef]
13. Li, X. Informational cascades in IT adoption. *Commun. ACM* **2004**, *47*, 93–97. [CrossRef]
14. Wikipedia.org. Social Networking Service (SNS). 2018. Available online: https://en.wikipedia.org/wiki/Social_networking_service (accessed on 11 August 2018).
15. Boyd, D.M.; Ellison, N.B. Social network sites: Definition, history, and scholarship. *J. Comput.-Mediat. Commun.* **2007**, *13*, 210–230. [CrossRef]
16. Smith, G. Social Software Building Blocks. nForm. 2007. Available online: http://nform.com/ideas/social-software-building-blocks/ (accessed on 11 August 2018).
17. Fishbein, M.; Ajzen, I. *Belief, Attitude, Intention and Behavior: An Introduction to Theory and Research*; Addison-Wesley: Reading, MA, USA, 1975.
18. Pavlou, P.A.; Gefen, D. Building Effective Online Marketplaces with Institution-Based Trust. *Inf. Syst. Res.* **2004**, *15*, 37–59. [CrossRef]
19. Herrero Crespo, Á.; Rodríguez Del Bosque Rodríguez, I.A. Explaining B2C e-commerce acceptance: An integrative model based on the framework by Gatignon and Robertson. *Interact. Comput.* **2007**, *20*, 212–224. [CrossRef]
20. Merikivi, J.; Mantymaki, M. Explaining the continuous use of social virtual worlds: An applied theory of planned behavior approach. Presented at the 42nd Hawaii International Conference on System Sciences (HICSS'09), Waikoloa, HI, USA, 5–8 January 2009.
21. Davis, F.D. Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Q.* **1989**, *13*, 319–340. [CrossRef]
22. Agarwal, R.; Prasad, J. A conceptual and operational definition of personal innovativeness in the domain of information technology. *Inf. Syst. Res.* **1998**, *9*, 204–215. [CrossRef]

23. Moore, G.C.; Benbasat, I. Development of and Instrument to Measure the Percetions of Adopting an Information Technology Innovation. *Inf. Syst. Res.* **1991**, *2*, 192–222. [CrossRef]
24. Venkatesh, V.; Davis, F.D. A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies. *Manag. Sci.* **2000**, *46*, 186–204. [CrossRef]
25. Venkatesh, V.; Morris, M.G.; Davis, G.B.; Davis, F.D. User acceptance of information technology: Toward a unified view. *MIS Q.* **2003**, *27*, 425–478. [CrossRef]
26. Aronson, E.; Wilson, T.D.; Akert, R.M.; Sommers, S.R. *Social Psychology*, 9th ed.; Prentice Hall: Upper Saddle River, NJ, USA, 2016.
27. Kelman, H. Compliance, identification, and internalization: Three processes of attitude change. *J. Confl. Resolut.* **1958**, *2*, 51–60. [CrossRef]
28. Deutsch, M.; Gerard, H.B. A study of normative and informational social influences upon individual judgement. *J. Abnorm. Soc. Psychol.* **1955**, *51*, 629–636. [CrossRef]
29. Burnkrant, R.E.; Cousineau, A. Informational and Normative Social Influence in Buyer Behavior. *J. Consum. Res.* **1975**, *2*, 206–215. [CrossRef]
30. Bicchieri, C.; Muldoon, R. Social norms. In *The Stanford Encyclopedia of Philosophy*; Stanford University, Center for the Study of Language and Information: Stanford, CA, USA, 2011.
31. Asch, S.E. Studies of independence and conformity: A majority of one against a unanimous majority. *Psychol. Monogr.* **1956**, *70*, 70–79. [CrossRef]
32. Pavlou, P.A.; Fygenson, M. Understanding and Predicting Electronic Commerce Adoption: An Extension of the Theory of Planned Behavior. *MIS Q.* **2006**, *30*, 115–143. [CrossRef]
33. Cohen, J.B.; Golden, E. Informational social influence and product evaluation. *J. Appl. Psychol.* **1972**, *56*, 54–59. [CrossRef]
34. Lee, J.; Hong, I.B. Predicting Positive User Responses to Social Media Advertising: The Roles of Emotional Appeal, Informativeness, and Creativity. *Int. J. Inf. Manag.* **2016**, *36*, 360–373. [CrossRef]
35. Banerjee, A.V. A simple model of herd behavior. *Q. J. Econ.* **1992**, *107*, 797–817. [CrossRef]
36. Huang, J.H.; Chen, Y.F. Herding in Online Product Choice. *Psychol. Mark.* **2006**, *23*, 413–428. [CrossRef]
37. Pincus, S.; Waters, L.K. Informational Social Influence and Product Quality Judgments. *J. Appl. Psychol.* **1977**, *62*, 615–619. [CrossRef]
38. George, J.F. The theory of planned behavior and Internet purchasing. *Internet Res.* **2004**, *14*, 198–212. [CrossRef]
39. Ajzen, I. From intentions to actions: A theory of planned behavior. In *Action-Control: From Cognition to Behavior*; Kuhl, J., Beckman, J., Eds.; Springer: Heidelberg, Germany, 1985; pp. 11–39.
40. Kauffman, R.J.; Li, X. Payoff externalities, informational cascades and managerial incentives: A theoretical framework for IT adoption herding. Presented at the 2003 INFORMS Conference on IS and Technology, Atlanta, GA, USA, October 2003.
41. Wikipedia.org. Attitude (Psychology). 2018. Available online: https://en.wikipedia.org/wiki/Attitude_(psychology) (accessed on 11 August 2018).
42. Bandura, A. Self-efficacy: Toward a Unifying Theory of Behavioral Change. *Psychol. Rev.* **1977**, *84*, 191–215. [CrossRef] [PubMed]
43. Ajzen, I. Perceived behavioral control, self-efficacy, locus of control, and the theory of planned behavior. *J. Appl. Soc. Psychol.* **2002**, *32*, 665–683. [CrossRef]
44. Ajzen, I.; Madden, T.J. Prediction of Goal-Directed Behavior: Attitude, Intentions and Perceived Behavioral Control. *J. Exp. Soc. Psychol.* **1986**, *22*, 453–474. [CrossRef]
45. Kang, H.; Hahn, M.; Fortin, D.R.; Hyun, Y.J.; Eom, Y. Effects of perceived behavioral control on the consumer usage intention of e-coupons. *Psychol. Mark.* **2006**, *23*, 841–864. [CrossRef]
46. Scott, J.; Marshall, G. *Oxford Dictionary of Sociology*; Oxford University Press: Cary, NC, USA, 2015.
47. Katz, M.L.; Shapiro, C. Technology adoption in the presence of network externalities. *J. Political Econ.* **1986**, *94*, 822–841. [CrossRef]
48. Shapiro, C.; Varian, H.R. *Information Rules: A Strategic Guide to the Network Economy*; Harvard Business Press: Boston, MA, USA, 1998.
49. Wikipedia.org. Network Effect. 2018. Available online: https://en.wikipedia.org/wiki/Network_effect (accessed on 11 August 2018).

50. Ayeh, J.K.; Au, N.; Law, R. Predicting the intention to use consumer-generated media for travel planning. *Tour. Manag.* **2013**, *35*, 132–143. [CrossRef]
51. Ajzen, I.; Fishbein, M. *Understanding Attitudes and Predicting Social Behavior*; Prentice Hall: Upper Saddle River, NJ, USA, 1980.
52. Shepherd, S.; Kay, A.C. On the perpetuation of ignorance: System dependence, system justification, and the motivated avoidance of sociopolitical information. *J. Pers. Soc. Psychol.* **2012**, *102*, 264. [CrossRef] [PubMed]
53. Lam, T.; Hsu, C.H. Theory of planned behavior: Potential travelers from China. *J. Hosp. Tour. Res.* **2004**, *28*, 463–482.
54. Nunnally, J.C. *Psychometric Theory*, 2nd ed.; McGraw-Hill: New York, NY, USA, 1978.
55. Fornell, C.R.; Larcker, D.F. Evaluating structural equation models with unobservable variables and measurement error. *J. Mark. Res.* **1981**, *18*, 39–50. [CrossRef]
56. Hair, J.F.; Anderson, R.E.; Tatham, R.L.; Black, W.C. *Multivariate Data Analysis with Readings*, 4th ed.; Prentice Hall: Upper Saddle River, NJ, USA, 1995.
57. Barki, H.; Benbasat, I. Contributions of the theory of reasoned action to the study of information systems: Foundations, empirical research, and extensions. Presented at the 4th European Conference on Information Systems, Lisbon, Portugal, 2–4 July 1996.
58. Lin, K.-Y.; Lu, H.-P. Why people use social networking sites: An empirical study integrating network externalities and motivation theory. *Comput. Hum. Behav.* **2011**, *27*, 1152–1161. [CrossRef]
59. Kim, B. Understanding antecedents of continuance intention in social-networking services. *Cyberpsychol. Behav. Soc. Netw.* **2011**, *14*, 199–205. [CrossRef] [PubMed]