The users adoption and usage of social network sites: an empirical investigation in the context of Italy

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Abstract

Objectives – In recent years, Social Networking Sites (SNS) have been considered as a new communication tools between people and organizations. Due to the growing importance of SNS and the many advantages they offer to companies, the main objective of this research is to investigate the users adoption and usage of SNS applying and extended Technology Acceptance Model (TAM) which takes into account two added pivotal dimensions, that is trust and perceived risk towards SNS. To achieve this aim, Italy was chosen as the research site for this study.

Methods – This study is based on an empirical and quantitative investigation that was carried out by online survey on a sample of 675 Italian SNS users from 16 to 74 years old. The sample was developed using a non-probability method by quota sampling, thus ensuring that the various subgroups of the population are represented in the sample with regard to gender, age and region.

Results – Findings reveal that the extended TAM is able to explain the adoption of SNS by Italian SNS users. As a consequence, it is appropriated when used to predict the acceptance of voluntary-use technologies focused on social relationships. Among other things, results report trust affecting positively and directly the attitude toward SNS, the perceived usefulness and perceived ease of use. However, perceived risk only influences negatively the intention to use. Otherwise, ease of use has a negative influence on perceived risk. Moreover, trust on SNS is a determinant of perceived risk in SNS. However, perceived risk of SNS does not influence significantly the perceived usefulness and the intention to continue using them.

Conclusion – Results support the positive relationships and influences between variables of the Extended Technology Acceptance Model, thus adding to the growing literature in the field of users adoption and usage of SNS. Further, they reveal that product/service providers should stimulate users trust by facilitating transactions, installing firewalls, using authentication mechanisms and ensuring the protection of privacy and information.

Keywords: Social Networking Sites, Extended Technology Acceptance Model, Structural Equation Model, Italy

1. Introduction

Social Networking Sites (SNS) are second generation web applications which have contributed to the creation of online communities and social networks, thus increasing the numbers of contacts between users sharing common interests and passions. SNS attract hundreds of millions of users and these numbers are growing fast, becoming one of the most popular online activities. For example, in February 2010 Twitter (one of the several SNS we could consider) attracted an average of 21 million unique visitors over the month, and sent about 50 million tweets every day (TechCrunch.com, 2010).

SNS are considered of great importance both for individuals and businesses, since they support the maintenance of existing social ties and the formation of new connections between users (Boyd and Ellison, 2007). Businesses increasingly acknowledge the potential role of the SNS as marketing tools (Constantinides, Lorenzo, and Gómez-Borja, 2008; Hogg, 2010) and also as tools allowing observing and analyzing users behavior (Donath, 1998).

Specifically, the opportunities offered by SNS go far beyond enhancing connections and knowledge sharing both between consumers and between companies and their customers. For instance, some research carried out in the context of tourism sector, and generalizable also to other type of businesses, included customer acquisition, customer engagement, customer services, customer profiling, brand awareness and reinforcement, reputation and image building, monitoring and management, development of new products/services, quality control, enhancement of visitor/customer satisfaction through improvement of services, analysis of competitive strategies, and these tools also mean that companies can respond quickly and more efficiently to the market, they can enhance the creation and synthesis of data and, finally, permit better filtering of information (Del Chiappa, 2011).

The objective of this paper is to examine the users adoption and use of SNS in the context of Italy, where, in our best knowledge, no published paper do exist aims at assessing such a topic via a Technology Acceptance Model (TAM) which consider also two added dimensions: perceived risk and trust. Specifically, this article is structured as follows: section 2 discusses some literature on SNS adoption and usage and then articulate the research hypotheses, section 3 explains the methodology and research design used. Sections 4 presents the structural model analysis whereas section 5 discusses findings and limitations of the study, thereby setting out the direction of future research and highlighting some managerial implications.

2. Literature review and research hypotheses

Social networking applications started in 1997 when SixDegrees.com was launched (Boyd and Ellison, 2007). It was only later, specifically in 2004, that Tim O'Reilly and Dale Dogherty coined the term Web 2.0.

Although many definitions exist, they all share the idea that "Web 2.0 is a set of economic, social, technology trends that collectively form the basis for the next generation of the internet – a more mature, distinctive medium characterised by user participation, openness and network effects" (Musser and O'Reilly, 2006). Karakas (2009) has described Web 2.0 through five C's, that is: creativity, connectivity, collaboration, convergence and community (Karakas, 2009). That said it is evident that in the Web 2.0 environments users are not just simple consumers of content created by professionals but they are also able to generate, edit and disseminate content (O'Reilly, 2005).

Web 2.0 includes different applications such as media and content syndication (RSS-feeds), mashups, tagging, wikis, web forum, customer rating and evaluation systems, podcasting, blogs, photo sharing, video sharing, microblogging, etc. SNS are one of the main application types available in the Web 2.0 environment (Constantinides et al., 2008).

Know and Wen (2010) define SNS as "websites that allow building relationships online between persons by means of collecting useful information and sharing it with people. Also, they can create groups which allow interacting amongst users with similar interests". According to data from ComScore (2011), human interaction through SNS has become one of the most popular and faster growing Internet activities. By the end of 2010, SNS penetration in Europe reached 84.4% of all Internet users, representing a 10.9% point gain –the highest of any region. The reach of SNS in Italy was 82.5% whose growing versus 2009 was 4.2 points.

SNS, next to the networking possibilities they offer to users, can also empower them as consumers. It could be argued that this occurs because SNS offer users the possibility to obtain more information about companies, brands and products and make better buying decisions (Lorenzo, Constantinides and Gómez-Borja, 2009). Moreover, Lin and Lu (2011) show that enjoyment is the most influential factor in people's continued use of SNS, followed by number of peers, and usefulness. The number of peers and perceived complementarity have stronger influence than the number of members on perceived benefits (usefulness and enjoyment).

Regarding the potential of SNS as marketing tools, these can play different roles as a part of marketing strategy (Hogg, 2010): 1) creating social networking environments and motivating customers and prospects to use them leads to engagement with the customers and increasing customer trust and loyalty; 2) customer information available in SNS voluntarily uploaded by the users allows companies to obtain a great amount of information about their customers, their personality and lifestyle; 3) companies can use SNS as source of customer voice for the development or testing of new products; 4) companies can selectively inform their customers even on personalized level, about their products or services, providing them with useful information.

2.1. Technology acceptance model and hypothesis formulation

Technology Acceptance Model (TAM) is the suitable model used to explain the adoption of SNS because of the efficacy of this model to predict the adoption of any technology (Gefen *et al*., 2003), and the possibility of extending it including other constructs, but there is so far very limited research attention focused on TAM in the adoption of SNS.

The relationship between attitude and intention to use an online system has been analyzed by various researchers in different contexts: information technology (e.g. Davis, Bagozzi, and Warshaw, 1989), Web (e.g. Fenech, 1998), e-commerce (e.g. Gefen and Straub, 2000), e-mail (e.g. Segars and Grover, 1993), even virtual community (Shin, 2008) and SNS (Shin, 2010). So, it is probable the same mechanics will operate in the relationship between attitude and intention to use SNS. Then:

> H1: *Attitude toward SNS has a positive and significant effect on intention to continue using these websites.*

In the TAM the perceived usefulness directly affects to the use through the intention to use (Davis *et al*., 1989). Lee *et al*. (2003) indicate that the relationship between perceived usefulness and intention to use in the context of the TAM is statistically supported, since there are 74 studies that show a significant relationship between both variables. The relationship between perceived usefulness and intention to use is based on the idea that people create their intentions toward the use thinking about how to improve the performance of their work, beyond the positive or negative feelings that may have toward their use (attitude). Therefore:

> H2: *Perceived usefulness of SNS has a positive and significant effect on intention to continue using them.*

Davis (1989) suggests an indirect relationship between perceived ease of use and the intention to use, mediated by the perceived usefulness. However, recent empirical studies have found

that perceived ease of use has a positive and significant effect on the intention to use, defined as wish to use (e.g. Pavlou, 2003). When the interaction with the technology is easier, the feeling of efficiency by the user should be greater and hence the intention to use it should be greater. Thus, we propose:

H3: Perceived ease of use of SNS has a positive and significant effect on intention to continue using them.

The ease of use has a double impact on the attitude, because of self-efficacy and instrumentality. The efficiency is one of the factors of intrinsic motivation for a person. Therefore this effect of the ease of use is directly related to the attitude. On the other hand, the ease of use can also be instrumental, contributing to increase the performance. This increase means less effort, thanks to the ease of use, allowing getting more work done with the same effort. This instrumental effect occurs via perceived usefulness. Furthermore, this effect has been amply demonstrated in empirical studies (e.g. Davis, 1989). Therefore:

H4: Perceived ease of use of SNS has a positive and significant effect on attitude.

H5: Perceived ease of use of SNS has a positive and significant effect on perceived usefulness of using them.

In the TAM, the ease of use and the perceived usefulness are considered beliefs that are postulated a priori, and they are considered constructs which determine the attitude (Davis *et al*., 1989). Furthermore, there is empirical evidence of these relationships, even in the SNS (Shin and Kim, 2008). Therefore, we propose:

H6: Perceived usefulness of SNS has a positive and significant effect on attitude.

Some studies have included the trust construct in research about the adoption of electronic services (e.g. Pavlou, 2003; Gefen *et al*., 2003; Shin, 2010). Trust in a website is important to attract new users, which will affect in the adoption and use (Gefen *et al*., 2003). Moreover, several authors (see Gefen *et al*., 2003) raise that trust is an indirect determinant of intention to use, and it has a direct effect through attitude. This relationship has been empirically demonstrated by several authors, even in the SNS context (Shin, 2008, 2010). Therefore:

H7: Trust towards SNS has a positive and significant effect on attitude.

The more consumers trust in a website, the less effort they have to make to scrutinize the details of the site to assess the benevolence of the merchant. On a trusted site, consumers will not spent time and cognitive effort browsing across the website, reading the privacy policy, etc., and therefore they will perceive it as easier to use (Pavlou, 2003; Shin, 2008). Several authors have demonstrated that trust influences in perceived usefulness and in the perceived ease of use (Pavlou, 2003; Shin, 2008). So, we propose the following hypotheses:

H8: Trust towards SNS has a positive and significant effect on perceived usefulness.

H9: Trust towards SNS has a positive and significant effect on perceived ease of use.

We consider necessary to include perceived risk within the TAM, as individuals, consciously or unconsciously, perceive risk when evaluating the adoption and/or use of online services. Use of the Internet also adds uncertainty by its nature. There is empirical evidence that perceived risk decreases the perceived usefulness and the intention to continue using (Featherman and Pavlou, 2003; Pavlou, 2003). Therefore, we propose:

H10: Perceived risk towards SNS has a negative and significant effect on perceived usefulness of these websites.

H11: Perceived risk towards SNS has a negative and significant effect on intention to continue using them.

The perceived ease of use toward a service is likely to affect the perceived risk. Services that are perceived as complex can be considered risky. The complexity of a system reduces the intention to use and decreases the perceived ease of use. The perceived ease of use is perhaps a construct similar to usability, which can reduce the perceived risk (Featherman and Pavlou, 2003). Because highly usable electronic services are less likely to generate concerns about the use, perceived ease of use can function as an important factor to reduce the risk. Therefore:

H12: Perceived ease of use of SNS has a negative and significant effect on perceived risk.

Studies of interpersonal exchange situations confirm that trust is a precondition for self-disclosure, as it reduces the perceived risks involved in the relationship of private information. Trust reduces the perceived risk, and this relationship has been demonstrated in several studies. In general, trust improves user's beliefs about the website, diminishing the degree of perceived risk associated with the activity (Pavlou, 2003). Therefore:

H13: Trust towards SNS has a negative and significant effect on the perceived risk.

3. Methodology

3.1. Sample and data collection

The sample consisted of 675 Italian SNS users from 16 to 74 years old, using a non-probability method by quota sampling, to ensure that the various subgroups of the population are represented in the sample with regard to gender, age and region based on the statistical national institute. Based on these quotes, a snowball sampling method was applied. The field work was developed from July until September 2011. An online questionnaire to Internet users from Italy was used, and the constructs used were adapted from previous studies and measured by multiple items five-point Likert scales. With regard the data analyses, two

software have been used: SPSSv.15 for reliability and unidimensionality test of the scales and EQS v.6.1 for analyzing our model by means of structural equation modeling (SEM).

3.2. Measures validation

A confirmatory factor analysis (CFA) was estimated using the robust maximum likelihood method because data showed evidence of non-normal distribution (Mardia's coefficient normalized estimate=52.96). We deleted seven items (IU3, PR1- PR4, T1 and T5) based on loading estimates lower than 0.6. The results of the final CFA (see Table 1) suggest that our re-specified measurement model provides a good fit to the data. Although the chi-square value was statistically significant, it is very sensitive to sample size and departures from multivariate normality (James *et al.*, 1982), the other indicators show values greater than the recommended 0.9 on the Normed-Fit Index (NFI), Non-Normed-Fit Index (NNFI) and the Comparative Fit Index (CFI), and the Root Mean Square of Error Approximation (RMSEA) took values less than 0.06, indicative of an acceptable fit (Hair *et al.*, 2006).

Reliability of the constructs is presented in Table 1.

Table 1 - Internal consistency and convergent validity

Variable	Indicator	Factor loading	Robust *t*-value	Cronbach's alpha	Composite reliability (CR)	Average Variance Extracted (AVE)
Perceived Usefulness	PU1	0.861	30.607	0.897	0.878	0.707
	PU2	0.743	24.189			
	PU3	0.783	23.877			
	PU4	0.932	35.150			
Perceived Ease of Use	PEU1	0.781	14.421	0.923	0.935	0.705
	PEU2	0.794	18.270			
	PEU3	0.832	15.567			
	PEU4	0.892	20.183			
	PEU5	0.841	21.350			
	PEU6	0.767	15.641			
Attitude	A1	0.862	30.064	0.930	0.930	0.728
	A2	0.875	28.405			
	A3	0.876	27.384			
	A4	0.814	26.499			
	A5	0.837	30.178			
Intention to Use	IU1	0.897	22.803	0.828	0.864	0.685
	IU2	0.912	30.327			
	IU4	0.646	20.416			
Perceived Risk	PR5	0.611	16.152	0.845	0.845	0.584
	PR6	0.642	19.564			
	PR7	0.873	34.768			
	PR8	0.889	32.172			
Trust	T2	0.770	21.257	0.867	0.868	0.687
	T3	0.870	27.872			
	T4	0.843	26.555			

Robust goodness of fit index: $\chi^2(260df)=1016.97$; $\chi^2/df=3.9$; NFI=0.900; NNFI=0.916; CFI=0.927; RMSEA=0.059.

Cronbach's alpha and composite reliability (CR) exceeded the recommendation of 0.7, and the average variance extracted (AVE) are greater than 0.5 (Fornell and Larcker, 1981).

In Table 1, the *t* scores obtained for the coefficients indicate that all factor loadings were significant (*p*<0.01). Moreover, the size of all the standardized loadings are higher than 0.60 and the average of the item-to-factor loadings are higher than 0.70 (Hair *et al*., 2006). This finding provides evidence supporting the *convergent validity* of the indicators.

Evidence for *discriminant validity* of the measures was provided in two ways (Table 2). None of the 95% confidence intervals of the individual elements of the latent factor correlation matrix contained a value of 1 (Anderson and Gerbing, 1988), and the shared variance between pairs of constructs was always less than their AVE (Fornell and Larcker, 1981). Therefore, construct validity was verified by assessing the convergent and discriminant validity.

Table 2. Discriminant validity of the theoretical construct measures

	Perceived Usefulness	Perceived Ease of Use	Attitude	Intention to Use	Perceived Risk	Trust
Perceived Usefulness	**0.707**	[0.226,0.402]	[0.601,0.761]	[0.575,0.719]	[-0.261,-0.085]	[0.316,0.496]
Perceived Ease of Use	0.098	**0.705**	[0.334,0.514]	[0.374,0.554]	[-0.221,-0,037]	[0.040,0.244]
Attitude	0.464	0.180	**0.728**	[0.748,0.852]	[-0.298,-0.122]	[0.504,0.660]
Intention to Use	0.419	0.215	0.640	**0.685**	[-0.311,-0.143]	[0.393,0.557]
Perceived Risk	0.030	0.017	0.044	0.052	**0.584**	[-0.309,-0.129]
Trust	0.165	0.020	0.339	0.226	0.048	**0.687**

The diagonal represents the AVE, while above the diagonal de 95 per cent confidence interval for the estimated factors correlations is provided, below the diagonal, the shared variance (squared correlations) is represented.

All the items included in the scale have been analyzed in the literature on Internet in academia and for this reason we consider that *content validity* is ensured.

Nomologycal validity can be tested by performing a chi-square difference test in which the theoretical model is compared to the measurement model. Therefore, the resulting chi-square difference value is 1018.09–1016.97=1.12 (see Tables 1 and 4).

The degrees of freedom for the test are equal to the difference between the degrees of freedom for the two models, in this case 262-260=2. The critical chi-square value with 2 degrees of freedom is 13.82 (p<.001).

 Therefore, as 1.12<13.82, scales show nomological validity of the constructs, that is, the theoretical model is successful in accounting for the observed relationships between the latent constructs (Anderson and Gerbing, 1988).

4. Results: structural model analysis

With the objective of testing the proposed hypothesis we developed a structural equations model (SEM). The results are reported and depicted in Figure 1.

The overall fit of the model is acceptable because the goodness of statics are satisfactory. The results show that all the hypotheses were supported, except hypotheses 10 (perceived risk – perceived usefulness) and 11 (perceived risk – intention to use). However, is worth to note that the negative relationship between perceived risk and intention to continue using is significant at 10%, so we could consider its not rejection.

Figure 1. Estimation of research model (**=p<0.01, *p<0.05)
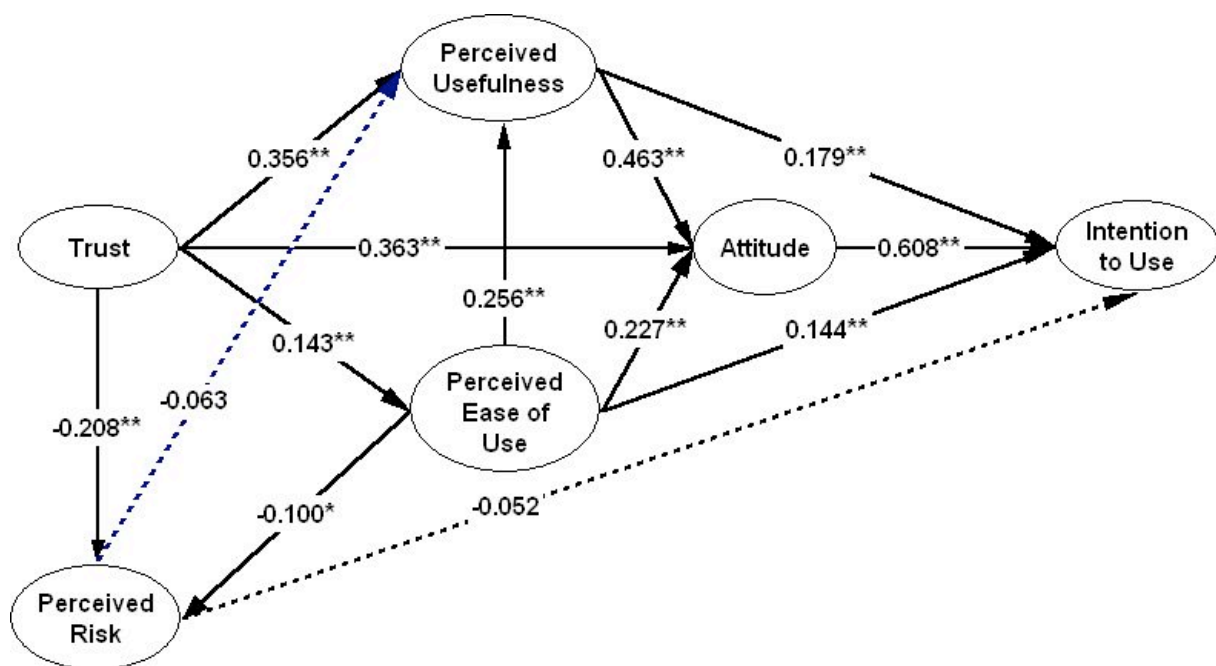
Robust goodness of fit indices: χ^2 (262 df) = 1018.09; S-Bχ^2/df=3.8; NFI= 0.900; NNFI= 0.917; CFI=0.927; RMSEA=0.058

Rejection of significant relationship between perceived risk and perceived usefulness of SNS is consistent with results of some TAM research. In fact, a lot of works, aware of their non-significance, did not formulate this hypothesis, because they considered that the perceived risk only is an antecedent of behavioral intention (e.g. Pavlou and Gefen, 2004).

Thus, our model explains that perceived ease of use and perceived usefulness of SNS, have a direct impact on intention to continue using them, and indirectly through attitude. In turn, perceived ease of use influences perceived usefulness. With regard to how affects trust and perceived risk in this process of acceptance, we can conclude that trust affects positively and directly to the attitude that we have toward SNS, the perceived usefulness and perceived ease

of use. However, perceived risk only influences negatively on the intention to use them. Otherwise, ease of use has a negative influence on perceived risk. Moreover, trust on SNS is a determinant of perceived risk in SNS. However, perceived risk of SNS is not a significant determinant of how useful is perceived the SNS and the intention to continue using them.

5. Discussion and conclusions

In recent years the most notable development in internet applications has been in the area of user generated content (UGC) and peer-to-peer applications, the so-called Web 2.0. The Social Web has offered users with new and innovative opportunities to enhance interaction and peer to peer communication, knowledge sharing, their empowerment against businesses and companies and, finally, to take advantage of several emotional and practical benefits (Rashtchy and Kessler, 2007).

Based on previous works related to technology adoption and due to the current growing of the social web phenomenon, the present study has used the same framework (TAM) within SNS context in order to analyze if specific characteristics of SNS users (perceived usefulness and ease of use) influence on their attitude towards this new social technology and, in turn, if attitude influences on the intention and use of SNS, taking into account the perceived risk and trust to the SNS, creating in consequence an Extended TAM model. To achieve this aim, the present study was carried out on a sample of 675 Italian SNS users from 16 to 74 years old, using a non-probability method by quota sampling, thus ensuring that the various subgroups of the population are represented in the sample with regard to gender, age and region.

On the whole, based on our proposed model, it could be argued that the integration of trust and perceived risk (respectively related to a behavioral and environmental uncertainty) in the TAM is coherent and able to explains the adoption of SNS by Italian SNS users. As a consequence, it appear to be appropriated when use to predict the acceptance of voluntary-use technologies focused on social relationships whilst prior research were reporting TAM work properly when used to investigate the adoption and usage of technologies in a work environment.

The findings of this study revealed that the attitudes of SNS users are important in predicting intention to use. To attract the participation in the SNS, businesses and SNS providers need to develop strategies to cultivate positive attitudes toward the use of SNS. Establishing trust in the SNS and providing user-friendly websites able to reduced the consumers' perception of risk, are pivotal characteristic able to support the creation of positive consumers' attitudes.

This study is relevant both for researchers and hospitality managers. From a theoretical perspective, the study adds to the growing literature in the field of users adoption and usage of SNS and offer a snapshot of the Italian context where, in our best knowledge, no published paper has yet analyzed this topic. Indeed, only a handful of papers have addressed this issue, and they are confined largely to literature reporting opinions, anecdotes and the collective experience and conventional wisdom of those working in the industry. Further, our findings reveal that the extended TAM is appropriate when used to predict consumers adoption and usage of SNS thus broadening the variables that should be investigated/considered when analyzing such a topic.

On the other hand, the findings showing the influence of trust on perceived usefulness, perceived ease of use and attitude and on reduction of consumers perception of risks, indicates that product/service providers should stimulate users trust by ensuring that their services are conducted in accordance with the users expectations. Considering that trust has essentially two goals, trust in the other party and trust in control mechanisms (Pavlou, 2003), managers of SNS can substantially influence on trust toward the infrastructure by several ways, such as facilitating transactions, installing firewalls, using authentication mechanisms and ensuring the protection of privacy and information (Benassi, 1999; Cassell and Bickmore, 2000). In addition, SNS providers need to establish a trusted relationship with consumers through the development and promotion of general rules and ensuring that participants (both individuals and companies) adhere to these standards. Therefore, SNS need explicit policies and data protection mechanisms to provide the same social level of social privacy that is in the offline environment (Shin, 2010).

Although this study helps fill a gap in existing knowledge in literature and does offer some implications for practitioners, there are some limitations pertaining to it that should be solved in further works. The main limitation is that the survey was carried out exclusively in the context of Italy, thus its findings cannot be generalized. It could be argued that further research in different countries is needed to analyze the data through multi-group analysis (Bentler, 1996) thus showing whether differences based on the cultural background do exist and should be investigated via cross-cultural comparison when studying users adoption and usage of SNS (Kima *et al.*, 2011). Moreover, as future research we propose a segmentation analysis of sample in order to observe the differences respect to gender (Lin and Lu, 2011), age, education, economic situation, and so on.

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