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How important is the "social" in social networking? A perceived value empirical investigation

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How important is the "social" in social networking? A perceived value empirical investigation

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Abstract

Purpose – The purpose of this paper is to report on a value-based empirical investigation of the adoption of Twitter social networking application. The unprecedented popularity of social networking applications in a short time period warrants exploring theory-based reasons of their success.
Design/methodology/approach – A cross-sectional survey-based study to elicit user views on Twitter was conducted with participants recruited through the web site of a North-American university.
Findings – All facets of perceived value considered in the study (utilitarian, hedonic and social) had a significant and relatively strong influence on consumer intent to use Twitter. Quite surprisingly for a social networking application, though, the social value facet had comparatively the weakest contribution in the use equation.
Research limitations/implications – User value perception might have been influenced by the features of the actual social networking application under scrutiny (i.e. Twitter in this case).
Practical implications – To maximize the chances of success of new social networking applications, developers and marketers of these media should focus on the hedonic and utilitarian sides of their perceived value.
Social implications – Additional efforts are necessary to better understand the reasons and factors leading to a comparatively lower social value perception of a social networking application, compared to its hedonic and utilitarian values.
Originality/value – Overall, the study opens the door for investigating user perceptions on popular social networking applications in an effort to understand the unparalleled success of these services in a short time period.

Keywords Perceptions, Social media, Technology adoption, Social networking, Perceived value, Twitter, User satisfaction

Paper type Research paper

1. Introduction

Social networking applications recorded an unprecedented success in just few of the recent years. For instance, people in the USA have been spending 22 per cent of the time they are online on social media sites while nine million users in Australia have been spending almost nine hours per month, on average, using top social media applications (Wikipedia, 2012). Despite these astonishing figures, the social networking domain is still little understood. Definitions and borders of the social networking (also called social media) phenomenon are still under debate. However, scholars seem to agree that content generated by users is the key feature of any social networking application. For instance, some conceptualization attempts define social media as "a group of Internet-based applications that build on the ideological and technological

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foundations of Web 2.0, and that allow the creation and exchange of User Generated Content" (Kaplan and Haenlein, 2010).

The exponential growth of the number of users and of the frequency of use of these applications together with the still not enough understood influence on various domains of human interaction (Gruzd *et al.*, 2012; Shneiderman *et al.*, 2011) attracted a justified interest from both the business community and the academia. While business decision makers are exploring ways to turn this phenomenon into profits, academia is seeking to investigate through theory-based approaches the reasons for this tremendous success (Abedniya and Mahmouei, 2010; Culnan *et al.*, 2010; Spaulding, 2010; Zhao and Lu, 2012).

As it is well-known from information systems (IS) research that user perceptions are, further than business or technical aspects, the key factor determining the success or failure of any new information technology (IT) application (Venkatesh *et al.*, 2002), an interesting topic of research is to look at social networking applications from a technology acceptance point of view in order to understand their social penetration. Out of several possibilities of theoretical investigation examined by previous research (Al-Debei *et al.*, 2013; Gruzd *et al.*, 2012; Hargittai, 2007; Sinclaire and Vogus, 2011; Turel and Serenko, 2012; Xu *et al.*, 2012), applying perceived value models seems to be particularly interesting since individuals are presumably using an IT application only if this has value for them. Perceived value concept is, thus, broader than business value that captures measurable benefits mainly (Culnan *et al.*, 2010). Furthermore, value perception allows a more granular investigation as it captures and ranks individuals' views from several perspectives. For these reasons perceived value approach has been used in IS research as a possible way to understand the adoption of other new (but fast becoming widely popular) IT artifacts like cell phone value-added services (Turel *et al.*, 2007, 2010).

The research reported here focuses on one of the most popular and frequently used social networking applications, Twitter, available at Twitter.com, in an effort to understand its user success through a theoretical lens. An empirical research investigating the role of a multi-sided perception of Twitter's value in the use of this application was conducted with participants familiar with Twitter that were recruited through the web site of a university in North America. This paper reports on that research as follows: next two sections describe the theoretical background and the proposed research model. Following that, research methodology and main results are presented. A discussion section concludes the paper.

2. Theoretical background

Investigating factors of adoption of new information technologies or applications has been a traditional area of research in IS. In addition to the popular models and theories validated in various studies (for a detailed review, see Venkatesh *et al.*, 2002 study), a relatively newer approach has been to examine the adoption of an IT from a value perspective. This path was adapted from other disciplines like consumer behaviour or economics where value is used to explain why people buy some things or opt to make some expenses (Turel *et al.*, 2010). Value is considered to source from the actual interaction with (or expected use of) a product or service and to reflect an overall perception upon their importance for an individual. Thus, following a rationale borrowed from consumer behaviour, value is captured as a perceived value concept through individual views on the difference between "what is received and what is given" (Zeithaml, 1988).

Although value in marketing was traditionally associated with the perception of the utility of a product or service, more recent research using perceived value in other

disciplines, including IS, acknowledged this construct to be multi-sided (Lee *et al.*, 2002; Turel *et al.*, 2007, 2010). Although the multi-dimensionality seems to better capture the complexity of the concept, there are no unanimous opinions on the actual facets of perceived value. A review of literature stemming from consumer behaviour research shows some of the most popular components of perceived value of an object or service to be the following (Bolton and Drew, 1991; Kim *et al.*, 2007; Sweeney and Soutar, 2001; Sheth *et al.*, 1991):

- functional or utilitarian (i.e. perception of utility associated with the use);
- emotional or hedonic (i.e. state of mood associated with the use);
- monetary or value-for-money (i.e. utility compared to the cost usage involves); and
- social (i.e. self-perception of social status associated with the use).

Due to its complexity and multi-sided approach, perceived value is a possible lens to investigate the adoption of social networking applications that became overwhelmingly popular in recent years. Twitter micro-blogging service, allowing users to post 140-character long messages on their daily activities or opinions (Zhao and Rosson, 2009), is a typical example of success and, hence, an interesting avenue worth researching. Since its launch in 2006 this service grew exponentially thus reaching in early 2011 about 130 million postings (or "tweets") per day and even 3,000 per second during major events worldwide (Wakefield, 2011).

Among various attempts to understand the success of this social media platform from various angles, it would be interesting to investigate the role of the value users perceive in Twitter on their adoption intention as it is well-known in IS research that user perceptions are a key ingredient of the adoption equation. The use of a multi-sided value approach would allow also seeing whether social reasons are the main motivator of social media use, as opinions expressed on the internet often assume. Therefore, this study proposes the following research question:

RQ1. What is the order of importance of the key facets of perceived value that influence the adoption of Twitter social networking application?

3. Research model

To investigate the perceived value of Twitter, this study proposes a multi-faceted perceived value construct sourcing from consumer behaviour and IS research. This multi-dimensional value perception should have a positive influence on the intention to use the social medium since people would use a service if they perceive it as valuable for various reasons (Ho and Ko, 2008). Taking into the account of the above, the following hypothesis is proposed:

H1. The overall perceived value of Twitter social networking application will have a positive effect on the behavioural intention to use this application.

A consistent body of research identified three facets of perceived value, as discussed in the section above: utilitarian, hedonic and social (Brown and Venkatesh, 2005; Kim and Han, 2009; Kim *et al.*, 2005). Some studies also include the monetary side borrowed from consumer behaviour as a distinct facet (Turel *et al.*, 2010) or as a component of the utilitarian side (Rintamäki *et al.*, 2006). As the use of social media, including Twitter, does generally not imply a fee or monetary expense, this research will, hence, consider

only the utilitarian, hedonic and social sides of perceived value as being significant. Therefore, users would perceive a value in this social media application if using it is observed to help accomplish some utility needs, to be a source of entertainment, and to meet social goals. To measure these aspects, following the example of similar work (Turel *et al.*, 2007, 2010), perceived value is conceptualized as a second-order construct with three facets. Accordingly, the following hypotheses are formulated:

H2-1. The utilitarian dimension of perceived value of Twitter social networking application will have a positive effect on the overall perceived value of this application.

H2-2. The hedonic dimension of perceived value of Twitter social networking application will have a positive effect on the overall perceived value of this application.

H2-3. The social dimension of perceived value of Twitter social networking application will have a positive effect on the overall perceived value of this application.

As virtually all discussions in the media presume with consistency that the success of social networking applications reside mostly in their social implications, both in an individual and business context (Lorenzo-Romero *et al.*, 2011), social facet of the perceived value is expected to be predominant in the adoption equation. Accordingly, in the attempt to identify at a granular level the key social aspects in the adoption equation, similar to previous research (Kwon and Wen, 2010), this research looks with magnifying lenses at the social dimension of perceived value. Previous research indicated enhancement of status (i.e. impression the individuals give to others) (Brown and Venkatesh, 2005; Rintamäki *et al.*, 2006) and of self-esteem (i.e. one's concept of self) (Rintamäki *et al.*, 2006) as possible factors influencing perceived social value. These are conceptualized in the present study as image, that is an adaptation from Venkatesh and Davis (2000) and expresses individuals' perception of their status in the social network.

Another social aspect of using the IT put in light by previous research is group integration (i.e. socialization by belonging to groups) (Lee *et al.*, 2002). Theoretical reasoning shows this feeling is captured partially through image and partially through perceived social presence. This latter is defined as individuals' ability "to project themselves socially and affectively into a community" of users (Rourke *et al.*, 1999), was taken into account in earlier IS research on traditional media (Yoo and Alavi, 2001) and is thought to be important for social media (Xu *et al.*, 2012).

It is believed that the above two factors would capture the enhancement of status sourcing from the individual perspective of the social environment. In addition to the above, to complete the picture, we suggest that two other factors may determine perceived social value by capturing the enhancement of self-concept because of the influence of the social environment on an individual: critical mass and social norm. Perceived critical mass, understood as a minimum level of users adopting an IT innovation after which "its further rate of adoption becomes self-sustaining" (Van Slyke *et al.*, 2007), was shown to be an important factor of the adoption of the new IT (Hsu and Lu, 2004; Kumar and Benbasat, 2006). Since perceived critical mass depends on the number of users already using the system (hence this is an indicator of the social "success" of a system), it is considered as an antecedent of the perceived social value. Social norm (or subjective norm) is the social influence regarding the use of a new system. This represents "the degree to which an individual perceives that important

others believe he or she should use the new system" (Venkatesh *et al.*, 2003) and is an essential side of the social aspects of using a new IT (Dickinger *et al.*, 2008). Taking into the account all of the above, the following hypotheses are formulated:

H3-1. Image of users of Twitter social networking application will have a positive effect on the social dimension of the overall perceived value of this application.

H3-2. Perceived social presence of users of Twitter social networking application will have a positive effect on the social dimension of the overall perceived value of this application.

H3-3. Perceived critical mass of users of Twitter social networking application will have a positive effect on the social dimension of the overall perceived value of this application.

H3-4. Social norm exerted on users of Twitter social networking application will have a positive effect on the social dimension of the overall perceived value of this application.

The theoretical model and associated hypotheses are captured in Figure 1.

4. Methodology

Model and hypotheses were tested through a cross-sectional experiment comprising an online survey. To ensure reliable psychometric properties, survey questions measuring the items of the latent variables were adapted from measures previously validated in consumer behaviour and IS research, as reported in top publications (Cyr *et al.*, 2009; Kim and Han, 2009; Turel *et al.*, 2007; Van Slyke *et al.*, 2007; Venkatesh and Davis, 2000). Survey measures and their related constructs are presented in the Appendix.

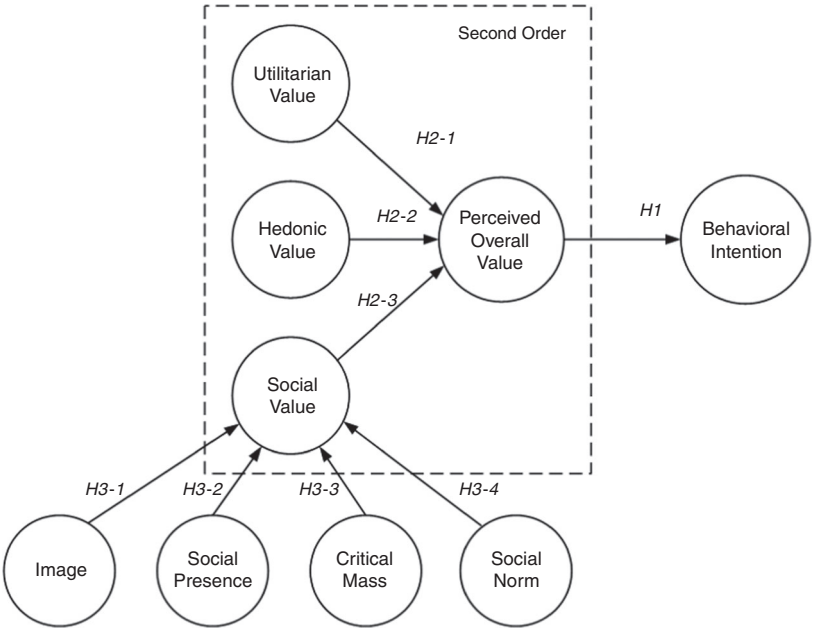


Figure 1.
Theoretical model and hypotheses

Participants were recruited through announcements posted on the main web page of the Faculty of Business of a North-American university. Including conditions required interested participants to be at least 18 years old and be familiar with Twitter without necessarily having an account with this service. Participation was anonymous and respondents were not compensated for completing the survey.

The survey was offered online to all individuals who self-reported meeting the including conditions and were willing to participate. As the research targeted a dynamic IT domain, in order to ensure homogeneity of the data collected the survey instrument were available online for three months in the first half of the year 2012. This survey was part of a larger data collection process conducted in the same setting.

5. Main findings

A total of 134 valid responses were recorded at the end of the three-month data collection. A demographic analysis indicated that respondents were 39.0 years old on average, 60.8 per cent female and 39.2 per cent male. Participants reported having an average experience with Twitter of 1.6 years and checking the service 20.1 times a week, on average. A per cent of 61.2 of the respondents reported having a Twitter account, 28.4 per cent not having an account, while the rest of 10.4 per cent preferred to not answer this question. Participants having an account reported posting 10.2 messages per week, on average. They were following (i.e. subscribing to the posts of) 84.8 accounts and were having 82.7 followers, on average. All 134 participant valid responses were subjected to the data analysis.

Data collected were first subjected to a test for non-response bias. Following the example of previous research, this test was performed by comparing the key demographics of early to those of late responders (Dimoka *et al.*, 2012; Sun *et al.*, 2009). Averages for age, gender, Twitter experience and activity did not significantly differ between the two groups and, therefore, non-response bias was not considered an issue.

A second step in the assessment of the quality of the data collected were to test on the existence of common method variance (CMV). Tests to, possibly, identify CMV appeared necessary since all variables in the model were measured through self-reported data collected in the same one-step survey (Sharma *et al.*, 2009). A Harman's one-factor test was conducted following Podsakoff *et al.* (2003). All measured items of the theoretical model were subjected to an exploratory factor analysis with no rotation in SPSS. The solution produced four factors with eigenvalues larger than 1.0, with the smallest one being 1.183. These four factors accounted for 76 per cent of the variance, with the first factor alone explaining 57 per cent, hence variables in the model load on more than one factor. A second test to detect possible CMV was conducted according to Pavlou *et al.* (2007). Thus, a visual inspection of the correlations of the model variables indicated the highest value to be 0.84 (Table IV), hence below the threshold of 0.90. Results of these two tests allow some confidence that there is no systematic CMV bias in the data (Turel and Serenko, 2012).

Main data analysis were done with partial least squares (PLS) modelling method as this is suitable for small sample size exploratory models (Bontis, 1998), including those containing formative indicators (Thomas *et al.*, 2005). Perceived overall value was measured as second-order latent variable using a repeated indicators approach (Lohmoller, 1989).

5.1 Measurement model evaluation

Evaluation of the measurement model was done with SmartPLS (Ringle *et al.*, 2005). A first run of the software indicated the necessity to eliminate two items (pertaining to utilitarian value and social value, respectively) out of the total of 29 of the entire

model due to poor item-to-construct loading values. After re-running the program, all reflective constructs for both samples displayed composite reliability and Cronbach's α values above 0.7 and average variance extracted (AVE) values above 0.5, as indicated in Table I. All first-order factor loadings were above 0.7, all items were significant at a level better than 0.05 (since t-value > 1.96), and all item errors were generally small, as Table II shows. Thus, based on the results captured in Tables I and II, the measurement

Table I.
Reliability measures for first-order constructs

Construct	Composite reliability	Cronbach's α	AVE
Behavioural intention	0.992	0.984	0.984
Perceived critical mass	0.921	0.884	0.744
Hedonic value	0.965	0.954	0.845
Image	0.919	0.868	0.791
Perceived social presence	0.939	0.918	0.754
Social value	0.966	0.947	0.904
Social norm	0.965	0.928	0.933
Utilitarian value	0.979	0.968	0.939

Table II.
Item loading and significance levels for first-order constructs

Component	Factor loading	SE	t-Statistic
BI1←behavioural intention	0.992	0.004	239.790
BI2←behavioural intention	0.992	0.005	218.917
HV1←hedonic value	0.935	0.014	65.185
HV2←hedonic value	0.934	0.018	52.779
HV3←hedonic value	0.854	0.049	17.494
HV4←hedonic value	0.937	0.016	59.081
HV5←hedonic value	0.935	0.016	58.848
I1←image	0.901	0.023	40.036
I2←Image	0.920	0.019	48.708
I3←image	0.845	0.064	13.130
PCM1←perceived critical mass	0.877	0.029	30.815
PCM2←perceived critical mass	0.926	0.022	41.786
PCM3←perceived critical mass	0.791	0.058	13.730
PCM4←perceived critical mass	0.850	0.047	18.192
PSP1←perceived social presence	0.904	0.025	35.654
PSP2←perceived social presence	0.825	0.071	11.677
PSP3←perceived social presence	0.830	0.048	17.403
PSP4←perceived social presence	0.912	0.018	50.444
PSP5←perceived social presence	0.868	0.038	23.069
SN1←social norm	0.969	0.008	118.585
SN2←social norm	0.962	0.013	74.850
SV1←social value	0.931	0.022	41.677
SV2←social value	0.963	0.012	78.133
SV4←social value	0.958	0.012	79.605
UV2←utilitarian value	0.975	0.009	109.164
UV3←utilitarian value	0.980	0.005	180.789
UV4←utilitarian value	0.952	0.014	68.311

Notes: PSP, perceived social presence; SN, social norm; I, image; PCM, perceived critical mass; UV, utilitarian value; HV, hedonic value; SV, social value; BI, behavioral intention. 1-5, item number

model was considered to have appropriate reliability and convergent validity (Bontis, 2004; Fornell and Larcker, 1981; Jarvenpaa *et al.*, 2004).

The following test consisted of examining the matrix of loadings and cross-loadings for first-order constructs produced by SmartPLS. As this matrix shows (Table III), the measurement model has appropriate discriminant validity because items load more on the latent variables they pertain to than on the other constructs (Gefen and Straub, 2005). This conclusion is reinforced by a visual inspection of the matrix in Table IV that displays the square root of AVEs for all first-order constructs on the diagonal and the construct correlations off diagonal. Since diagonal numbers are larger than all off diagonal numbers on the respective rows and columns, the condition for appropriate discriminant validity is met (Gefen and Straub, 2005).

To test for possible multicollinearity problems, a variance inflation factor (VIF) was calculated for all relevant constructs by regressing each independent variable on the remaining antecedents of an endogenous variable. Since the VIFs for the four antecedents of social value were below 2.5 and those for the perceived overall value components did not exceed 4.5, hence below the threshold value of 5 (Hair *et al.*, 2009), multicollinearity is not considered an issue for the measurement model. Confidence in appropriate discriminant validity is further increased by all AVE values being above 0.5 (Table I) and all inter-construct correlations being below 0.9 (Table IV) (Pavlou *et al.*, 2007).

	Behavioural intention	Perceived critical mass	Hedonic value	Image	Perceived social presence	Social value	Social norm	Utilitarian value
BI1	*0.992*	0.589	0.845	0.539	0.572	0.642	0.480	0.788
BI2	*0.992*	0.563	0.828	0.507	0.550	0.612	0.441	0.774
HV1	0.806	0.635	*0.935*	0.538	0.637	0.608	0.496	0.846
HV2	0.807	0.592	*0.934*	0.557	0.618	0.655	0.551	0.828
HV3	0.717	0.507	*0.854*	0.391	0.490	0.534	0.283	0.735
HV4	0.793	0.581	*0.937*	0.565	0.527	0.739	0.537	0.729
HV5	0.749	0.534	*0.935*	0.468	0.517	0.673	0.475	0.677
I1	0.417	0.567	0.479	*0.901*	0.524	0.730	0.660	0.530
I2	0.570	0.577	0.506	*0.920*	0.625	0.697	0.645	0.561
I3	0.417	0.541	0.490	*0.845*	0.505	0.549	0.518	0.466
PCM1	0.419	*0.877*	0.459	0.572	0.622	0.546	0.439	0.526
PCM2	0.498	*0.926*	0.559	0.515	0.601	0.488	0.380	0.586
PCM3	0.693	*0.791*	0.647	0.545	0.568	0.514	0.424	0.661
PCM4	0.381	*0.850*	0.471	0.538	0.503	0.444	0.467	0.456
PSP1	0.599	0.630	0.581	0.540	*0.904*	0.542	0.488	0.643
PSP2	0.418	0.501	0.423	0.427	*0.825*	0.421	0.301	0.519
PSP3	0.532	0.560	0.579	0.468	*0.830*	0.492	0.378	0.592
PSP4	0.454	0.610	0.534	0.629	*0.912*	0.617	0.534	0.554
PSP5	0.453	0.592	0.513	0.602	*0.868*	0.519	0.491	0.574
SN1	0.449	0.497	0.506	0.673	0.518	0.647	*0.969*	0.455
SN2	0.449	0.460	0.484	0.659	0.473	0.584	*0.962*	0.477
SV1	0.548	0.535	0.654	0.705	0.571	*0.931*	0.598	0.504
SV2	0.630	0.588	0.665	0.730	0.596	*0.963*	0.639	0.577
SV4	0.624	0.535	0.676	0.701	0.553	*0.958*	0.584	0.582
UV2	0.777	0.606	0.786	0.561	0.625	0.549	0.477	*0.975*
UV3	0.754	0.635	0.794	0.563	0.632	0.547	0.453	*0.980*
UV4	0.758	0.648	0.833	0.581	0.670	0.599	0.471	*0.952*

Table III.
Loadings and cross-loadings for first-order constructs

5.2 Structural model evaluation

As the measurement model evaluation indicated appropriate reliability and construct (i.e. convergent and discriminant) validity levels for all first-order constructs, evaluation of the structural model came next. Results of this evaluation are depicted in Table V and Figure 2.

Table V and Figure 2 indicate that five out of the eight hypotheses made were confirmed. Perceived overall value is a key antecedent of the intention to use the social networking application explaining 72.8 per cent of the variance of the latter. All three facets of perceived value are significant components in the second-order construct (at a level p-value < 0.001) with moderately high values of the path coefficients: between 0.26 and 0.51. Analysis of the total effects of first-order constructs on the behavioural intention provided by SmartPLS and captured in Table VI confirms that hedonic value is the most important value facet in the adoption equation: its total effect coefficient is 0.438 compared with 0.275 for the utilitarian value and 0.226 for the social value.

All demographic characteristics collected about the sample respondents were tested as possible control variables by assessing their path coefficients to the endogenous variables of the model. Each variable was added to the model and SmartPLS was rerun every time. No changes in the measurement model were noticed. Structural changes were noticed in only two situations:

(1) having a Twitter account had a path coefficient of 0.106 (significant at the 0.01 level) to the behavioural intention and increased the R^2 of this latter from 0.728 to 0.739; and

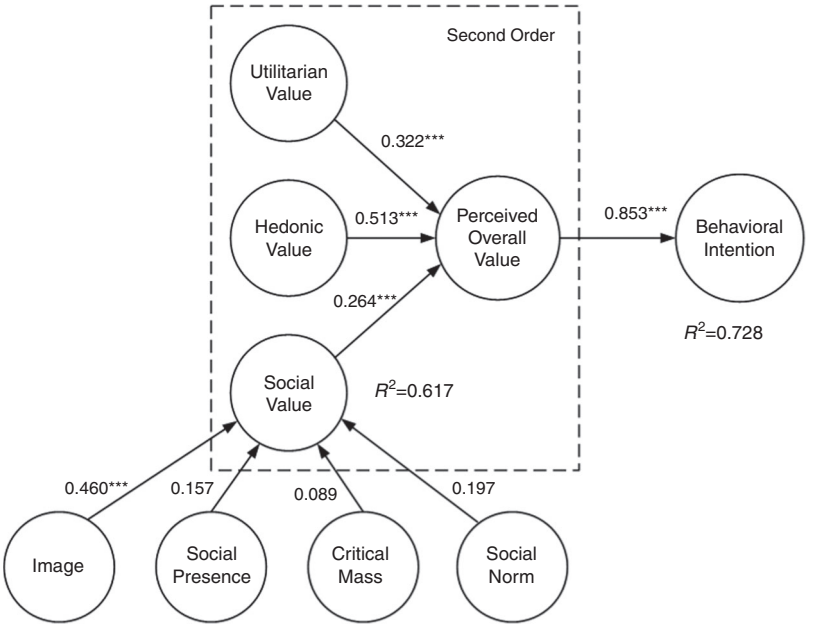
	BI	PCM	HV	I	PSP	SV	SN	UV
BI	*0.992*							
PCM	0.581	*0.863*						
HV	0.843	0.621	*0.919*					
I	0.528	0.631	0.551	*0.889*				
PSP	0.566	0.669	0.608	0.621	*0.868*			
SV	0.632	0.582	0.700	0.749	0.603	*0.951*		
SN	0.464	0.496	0.513	0.690	0.514	0.639	*0.966*	
UV	0.788	0.650	0.831	0.587	0.663	0.584	0.482	*0.969*

Table IV. Square-root AVEs and correlation coefficients for first-order constructs

Notes: PSP, perceived social presence; SN, social norm; I, image; PCM, perceived critical mass; UV, utilitarian value; HV, hedonic value; SV, social value; BI, behavioural Intention

Hypothesis	Path	Path coefficient	SE	*t*-Statistic	*p*-Value
H1	Perceived value→behavioural intention	0.853	0.036	23.761	< 0.001
H2-1	Utilitarian value→perceived value	0.322	0.014	23.016	< 0.001
H2-2	Hedonic value→perceived value	0.513	0.017	30.757	< 0.001
H2-3	Social value→perceived value	0.264	0.014	19.119	< 0.001
H3-1	Image→social value	0.460	0.134	3.420	< 0.001
H3-2	Perceived social presence→social value	0.157	0.118	1.335	0.184
H3-3	Perceived critical mass→social value	0.089	0.109	0.816	0.416
H3-4	Social norm→social value	0.197	0.124	1.583	0.116

Table V. Path coefficients, standard errors and significance levels



Note: Significant level: ***=0.001

Figure 2.
Results of structural evaluation

Antecedent construct	Total effect coefficient	SE	*t*-Statistic	*p*-Value
Utilitarian value	0.275	0.015	18.027	< 0.001
Hedonic value	0.438	0.021	21.174	< 0.001
Social value	0.226	0.014	15.825	< 0.001
Image	0.104	0.032	3.283	< 0.001
Perceived social presence	0.036	0.026	1.346	0.181
Perceived critical mass	0.020	0.025	0.805	0.422
Social norm	0.044	0.028	1.606	0.111

Table VI.
Total effects of first-order constructs on behavioural intention

(2) the frequency of checking Twitter had a path coefficient of 0.180 (significant at the 0.05 level) to the perceived social value and increased the R^2 of this latter from 0.617 to 0.647.

To further investigate the possible influence of not having a Twitter account, responses from this category of participants were removed from the initial sample and the entire analysis described above was repeated for the resulting sample of 96 participants. Following that, a path-by-path comparison was done by evaluating a *t*-statistic of the absolute difference between the corresponding path coefficients in the two cases – i.e., full sample and reduced sample (Ahuja and Thatcher, 2005; Chin, 2000):

$$t = (Path1 - Path2)/[Spooled \times sqrt\,(1/N1 + 1/N2)]$$

where *Path*1 and *Path*2 are the corresponding path coefficients in the two analyses and *N*1 and *N*2 are the respective sample sizes.

Spooled is the pooled estimator for the variance assessed with the formula:

$$Spooled = sqrt\{[square\ of(N1-1)/(N1+N2-2)] \times square\ of\ Se1 + [square\ of\ (N2-1)/(N1+N2-2)] \times square\ of\ Se2\}$$

where *Se*1 and *Se*2 are the standard errors of the path coefficients in the two analyses.

Results depicted in Table VII do not show any statistically significant difference between the model run with the full sample and that with the Twitter account holders' sample.

All other demographic factors (age, gender, experience with the application, number of messages posted per week and number of accounts followed or of followers) did not have an influence over the model as possible control variables. Small increases in R^2 of the endogenous constructs were noticed but no significant paths to these constructs were recorded.

6. Discussion and conclusions

The objective of this paper has been to propose a value-based theoretical model to explain the adoption of Twitter, a very popular social networking application. A model based on consumer behaviour and IS literature findings as well as on theoretical reasoning was built and tested empirically with 134 North-American respondents recruited online.

The research question asked was: What is the order of importance of the key facets of perceived value that influence the adoption of Twitter social networking application? Similar to previous research, perceived value was considered as a second-order construct with three salient facets: utilitarian, hedonic and social. As in previous research, all facets were found to have a significant and relatively strong influence (Rintamäki *et al.*, 2006; Turel *et al.*, 2007). However, as a surprise for a social media application, though, the social side had comparatively the weakest contribution to the overall perceived value (path coefficient of 0.26). Hedonic value was by far the strongest component of the overall value (path coefficient of 0.51), followed by the utilitarian side (path coefficient of 0.32). This shows that people see enjoyment-type value followed by the utilitarian perception as the most important factors that would make them use the social media platform and this also confirms findings of

Table VII. Model comparison between full sample (134 Respondents) and twitter account holders' sample (96 respondents)

Hypothesis	Path	Full sample path coefficient	Account holders' sample path coefficient	Path coefficient absolute difference	*p*-Value of the difference
H1	Perceived value→behavioral intention	0.853	0.823	0.030	0.95
H2-1	Utilitarian value→perceived value	0.322	0.341	0.019	0.56
H2-2	Hedonic value→perceived value	0.513	0.528	0.015	0.88
H2-3	Social value→perceived value	0.264	0.253	0.011	0.59
H3-1	Image→social value	0.460	0.432	0.028	0.94
H3-2	Perceived social presence→social value	0.157	0.145	0.012	0.62
H3-3	Perceived critical mass→social value	0.089	0.101	0.012	0.96
H3-4	Social norm→social value	0.197	0.207	0.010	0.40

previous research on the significance of these factors (Han and Windsor, 2011; Kim *et al.*, 2011; Lin and Lu, 2011; Turel and Serenko, 2012). Only lastly users see this application as a valuable social tool. Overall, seeing value in Twitter is by itself a sufficiently strong reason for adoption ($R^2 = 0.728$).

Of the hypothesized antecedents of the social side of the value, only the perception of enhancement of social status (conceptualized as image) proved to be significant and moderately strong (path coefficient of 0.46). Hence, people would see improving their image as the only reason of using Twitter from a social point of view and this is confirming previous research on social networking (Kim *et al.*, 2011). The study did not show a significant effect of the influence from significant others (captured as social norm), of perceived social presence (of their peers) or of critical mass (of users). A possible explanation of these findings is that Twitter, despite its relative newness, already reached maturity in terms of social penetration due to an exponential increase of the adoption rate, so the user popularity and online activeness are not an issue. Therefore, when considering social reasons for using Twitter, people are looking only at improving the social status among their peers.

6.1 Contributions to research

This study proposed a comprehensive theoretical model of the adoption of a popular social networking application (Twitter). The model relies on a multi-sided perceived value concept adapted from consumer behaviour research. Further, as a significant theoretical contribution, for the in-depth investigation of the social reasons to adopt a social networking application, the study integrated theoretically four antecedents of the social dimension of the perceived value: image, perceived social presence, perceived critical mass and social norm. We found that five of the eight hypotheses proposed were supported at the statistical level of 0.001 or better and the corresponding path coefficients were moderately high. Of the four antecedents of the social value hypothesized, only image was statistically significant but, nonetheless, it explained a moderately high per cent of the variance of social value: 61.7 per cent. Overall, since the majority of the hypotheses were supported and R^2 values of the endogenous variables were relatively high for the IS domain research (e.g. 72.8 per cent for the behavioral intention), the theoretical model could be termed as appropriate (Bontis *et al.*, 2000). Therefore, the model proposed by this study is suitable in reflecting viewpoints on adopting Twitter social networking application from a user value perspective.

6.2 Contributions to practice

Our results indicated that, surprisingly, the social dimension of the value perception of this popular social media application is, comparatively, the weakest reason for its adoption, following the perception of enjoyment and utility values. Therefore, individuals and businesses seeking to use Twitter for social networking should have enjoyment and utility of their posts as primary objectives in order to be effective in broadcasting their messages to a large number of users. Despite its relatively weaker contribution, social value is a significant contributor to use intent and should not be neglected. Perception of Twitter's social value is significantly enhanced by a bi-directional image construct capturing both status (through impression individuals think they make on others) and self-esteem (through concept of self). Therefore, individuals and businesses using such a social networking application should consider the image they are promoting through the network on one side and, also, that other contributors to the network are acknowledging the importance of their image too.

6.3 Limitations and future research

This study involved also limitations, as virtually any empirical research on IT adoption. Respondents self-selected after seeing the invitation to participation posted on a faculty's web site. The perceived value may be also influenced by the features of that social networking application (i.e. Twitter in this case). As the experiment was limited in time to three months, the sample size was moderately low but, nonetheless, 20 per cent more than the minimum sample size required by PLS methodology (Jarvenpaa and Todd, 1996). Since the recruitment process was not controlled, the valid sample resulted as being slightly biased towards female respondents (60.8 per cent female and 39.2 per cent male). However, gender was not found to have a significant influence in the theoretical model at a statistical level of 0.05 or better when tested as a potential control variable. As in virtually any empirical research, there is also the question of the generalizability of the findings. Since the research was open online to anyone meeting the including conditions, without being restricted to a location or category of users of the IT, it is believed the results are applicable to any individual 18 years or older and familiar with Twitter. Overall, these limitations are not uncommon to IS research and were considered acceptable for an incipient study in a new direction.

Structural tests also revealed the influence of some control variables. Thus, it appears that having an account and checking Twitter more often make people see more value in Twitter and want to continue using this networking application. This may open the door for interesting questions on the value users would see over time or over the increased frequency of use of the social networking. Future research should look in more detail at whether the more use would still mean the better value. That research should also confirm whether the social side is indeed the least important part of the value perceived in a social networking platform (compared to enjoyment and utility) while trying to enrich the picture with antecedents of the utilitarian and hedonic facets.

Overall, this study attempted to conduct a scientific investigation on the user reasons to adopt a popular social networking application, Twitter, based on perceived value theory. It opened the door for investigating the same application in other research contexts or other popular social networking applications from the user perspective in an effort to understand the unprecedented success of these services in just a few years' time.

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Appendix. Survey questions for each theoretical model construct

Perceived social presence

There is a sense of human contact in using Twitter.
There is a sense of personalness in using Twitter.
There is a sense of sociability in using Twitter.
There is a sense of human warmth in using Twitter.
There is a sense of human sensitivity in using Twitter.

Social norm
People who influence my behavior think that I should use Twitter.
People who are important to me think that I should use Twitter.

Image
People among my peers who use Twitter have more prestige than those who do not use it.
People among my peers who use Twitter have a high profile.
Using Twitter is a status symbol among my peers.

Perceived critical mass
Many people I communicate with use Twitter.
The people I communicate with will continue to use Twitter in the future.
The people I communicate with using Twitter will continue to use Twitter in the future.
Of the people I communicate with regularly, many use Twitter.

Utilitarian value
As it is free, the use of Twitter offers a good value for the money.
Compared to the effort I need to put in, the use of Twitter is beneficial to me.
Compared to the time I need to spend, the use of Twitter is worthwhile to me.
Overall, the use of Twitter is delivering me good value.

Hedonic value
Twitter is a social media that I enjoy.
Twitter is a social media that makes me want to use it.
Twitter is a social media that I feel relaxed about using.
The use of Twitter makes me feel good.
The use of Twitter gives me pleasure.
The use of Twitter helps me feel acceptable.

Social value
The use of Twitter improves the way I am perceived.
The fact I use Twitter makes a good impression on other people.
The use of Twitter gives me social approval.

Behavioural intention
Assuming I have access to Twitter, I intend to use it in the future.
Given that I have access to Twitter, I predict that I would use it in the future.

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