

## Factors which motivate the use of social networks by students

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### Abstract

**Background:** The aim of this research was to identify those factors which motivate the use of social networks by 4th year students in Secondary Education between the ages of 15 and 18. **Method:** 1,144 students from 29 public and private schools took part. The data were analysed using Partial Least Squares Structural Equation Modelling technique. **Results:** Versatility was confirmed to be the variable which most influences the motivation of students in their use of social networks. The positive relationship between versatility in the use of social networks and educational uses was also significant. **Conclusions:** The characteristics of social networks are analysed according to their versatility and how this aspect makes them attractive to students. The positive effects of social networks are discussed in terms of educational uses and their contribution to school learning. There is also a warning about the risks associated with misuse of social networks, and finally, the characteristics and conditions for the development of good educational practice through social networks are identified.

**Keywords:** social networks, secondary education, students, motives for use.

### Resumen

**Factores que motivan el uso de las redes sociales por los estudiantes.**

**Antecedentes:** el objetivo de esta investigación fue identificar aquellos factores que motivan el uso de redes sociales por parte del alumnado de 4º curso de Educación Secundaria Obligatoria con edades entre los 15 y 18 años. **Método:** participaron 1.144 estudiantes de 29 centros educativos públicos, privados y concertados. Se utilizó un método de encuesta y los datos fueron analizados en base a la técnica de ecuaciones estructurales "Partial Least Squares". **Resultados:** se constata que la versatilidad es la variable que más influye en la motivación de uso de las redes sociales por parte de los estudiantes. También resulta significativa la relación positiva entre la versatilidad en el uso de las redes sociales respecto a la utilidad educativa. **Conclusiones:** se analizan las características de las redes sociales en cuanto a su versatilidad y cómo ello las hace atractivas a los estudiantes. Se discuten los efectos positivos de las redes sociales en cuanto a su utilidad educativa y su contribución al aprendizaje escolar. Se alerta sobre los peligros que pueden derivarse de un empleo inadecuado de las redes sociales y se identifican los rasgos y condiciones para el desarrollo de buenas prácticas educativas mediante redes sociales.

**Palabras clave:** redes sociales, educación secundaria, alumnado, motivos de uso.

The spectacular increase in the number of users of social networks and in particular their widespread use among the youngest population has led researchers to identify the motivations for using this type of technology in young people's daily lives (Colás, González, & De Pablos, 2013; Ellison, Steinfield, & Lampe, 2007; Notley, 2009) and to look for possible relationships among the motives for use, patterns of activity (type of activity performed) and social adjustment (Yang & Brown, 2013). Along with these issues, research has also been carried out on the frequency and type of use of social networks by young people (Zhen & Cheok, 2011; Sánchez & Martín; Molero et al., 2014), the dangers and risks arising from inappropriate or abusive use (Vanderhoven, Schellens, & Valcke, 2014; Christofides, Muise, & Desmarais, 2012) and the impact of using such networks on behaviour (Hayta, 2013).

At the same time as these psychological and sociological studies, research has been carried out into the adoption of social networks in the field of education. Some authors (e.g., Donlan, 2014; Junco, 2015; Mazman &

Usluel, 2010; Sánchez, Cortijo, & Javed, 2014) have analysed the motivation for the educational use of social networks. Both teachers and students recognize the benefits that social networks can bring as an educational resource. (Bicen & Uzunboylu, 2013; Hamid, Waycott, Kurnia, & Chang, 2015). Moreover, the introduction of social networks is associated with the most innovative methodologies which promote active and collaborative learning (Al-Kathiri, 2015; Long, 2015; Kim, Holman, & Gooreau, 2015; Wodzicki, Schawammlein, & Moskaliuk, 2012), improved classroom atmosphere, and group social cohesion (Asterhan & Rosenberg, 2015).

Manasijevic, Zivkovic, Arsic and Milosevic (2016) independently analysed the purposes of Facebook usage and its educational utility as a social network. The results confirmed the findings of previous studies which identified motivations of use associated with social development (Ellison et al., 2007), leisure activities and information (Sharma, Joshi, & Sharma, 2016). In terms of the educational purposes of Facebook usage, the results confirmed the ideas put forth by Mazman and Usluel (2010) and Sánchez, Cortijo and Javed (2014), which detected 3 dimensions: communicate, collaborate and share materials. Manasijevic et al. (2016) concluded their study by recommending research with structural models which can reveal the possible relationships between the purposes of use of social networks and educational motives. In this way, we could see how to integrate them effectively in educational contexts.

Research to date has dealt separately, in a fragmented manner, with factors associated with the use of social networks, and therefore, the

Received: April 19, 2016 • Accepted: January 26, 2017  
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available information about the possible interrelationships between them, is still limited. This makes it difficult to achieve the necessary holistic view that would help to better understand this phenomenon (Burrow-Sánchez, Call, Zheng, & Drew, 2011; Colas et al., 2013). In particular, from the conceptualization of social networks as tools for educational purposes, it is essential to identify their potentialities in order to improve teaching processes (Hamid, Waycott, Kurnia, & Chang, 2015), as well as to reveal those factors which make them attractive in order for them to be successfully included (Mazman & Usluel, 2010). As a result, studies from an integrating perspective are required, addressing both motives for use of social networks and their analogies with educational purposes (Manasijevic et al., 2016).

In accordance with these approaches, a quantitative transversal study has been carried out following a model based on structural equations, the main aim of which is to analyse the motives that explain the use of social networks and especially their educational utility for students in the 4<sup>th</sup> year of Secondary Education.

## Method

### Participants

Convenience sampling was performed. The final year of compulsory education was chosen to ensure that the age of the students was higher than the minimum allowed (art. 13 RD 1720/2007). Around 1,144 surveys from 29 institutions were collected out of a population of 1,792 students in the 4<sup>th</sup> year of Secondary Education attending 31 schools (both public and private) in the city of A Coruña. With a statistical level of confidence of 95% and in the event of maximum indeterminacy ( $p=q=50$  and  $K=2$ ) the margin of error was  $\pm 1.74$ . In terms of gender, 47.2% ( $n=540$ ) were boys and 52.8% ( $n=604$ ) girls. The students were aged between 15 and 18. The age distribution was 41.8% ( $n=478$ ) 15-year-olds, 45.2% ( $n=517$ ) 16-year-olds, 10.6% ( $n=121$ ) 17-year-olds, and finally, just 2.4% ( $n=28$ ) were 18 years old.

### Instrument

An ex post facto design based on the survey method was used (McMillan & Schumacher, 2010), applying a questionnaire of 251 items created *ad hoc* and organized in 5 thematic blocks related to Internet usage and social networks in adolescence. The initial instrument was validated by a panel of 5 experts in research methodologies and implementation of technology in education who evaluated aspects such as the uniqueness, relevance and importance of each item. A second version was also tested on a pilot group and, after making any suggested changes, the definitive questionnaire was designed.

In addition, the corresponding item-total correlation tests were performed, which indicate that the items have a homogeneous relationship with the scale they belong to. Cronbach's Alpha was used to measure reliability, which gave an overall result of .937.

For the current study, just 27 items dealing with social networks were taken from the questionnaire (see Table 1). The students completed a Likert-type scale using these five items; 1 (never), 2 (hardly ever), 3 (sometimes), 4 (nearly always), and 5 (always).

### Procedure

The questionnaires were given out by the researchers during school hours, having obtained prior consent from the school. They were previously informed of the purpose of the investigation and guaranteed confidentiality.

### Analysis of data

With the objective of responding to the subject under research, a multivariable analysis was carried out through the development of a

structural equation model based on the Partial Least Squares technique (hereafter PLS). This technique is interesting not only for contrasting models from a solid theoretical basis, but also as a means for exploration (Barclay, Higgins, & Thompson, 1995), as in this study. Statistical treatment of data was done using SPSS 19 and SmartPLS software.

As with any SEM methodology "Structural Equation Modeling", the use of PLS needs the development of a measurement model and a structural model (Tenenhaus, Vinzi, Chatelin, & Lauro, 2005).

A factorial analysis of the principal components of each construct was performed, in order to confirm that the indicators in each latent variable were one-dimensional.

To ensure relevance in the development of the factorial analysis, the variables were subjected to "Barlett's test of sphericity". The Kaiser-Meyer-Olkin index (KMO) was also used. Reliability was evaluated using Cronbach's Alpha test, as well as composite reliability. Authors such as Bagozzi and Yi (1989) say that the indices of composite reliability higher than .50 confirm the internal reliability of the construct.

Evaluation of convergent validity was performed via Average Variance Extracted (AVE). In order to analyse discriminant validity, the matrix of factor loadings and cross-loadings was obtained. Another criterion to verify the discriminant validity is the square root of the AVE for the construct being larger than the correlation between that construct and the others (Chin, 1998).

After having verified that the measures of the constructs were reliable and valid, the structural model was evaluated, analysing to what extent the predictor variables contributed to the explained variance of endogenous variables. In addition,  $R^2$  was used to discover how much of the variance of endogenous variables was explained by the constructs which predict them.

In order to examine the stability of the parameter estimates offered by PLS, "Bootstrap" was used to calculate standard error in parameters, and Student t values. In order to evaluate the goodness-of-fit model, the proposal by Tenenhaus et al. (2005) was followed, through the application of the indicator "Goodness-of-fit" (GOF).

## Results

### Preliminary analysis

An identification of each construct making up the model is included in Table 1, together with reflective indicators taken to appropriately measure each of the latent variables specifying their mean score and standard deviation.

Results relating to the measurement model and its internal consistency, and key factors such as unidimensionality of constructs, reliability and convergent validity are shown in Table 2. Barlett's test of sphericity and the KMO index (Kaiser-Meyer-Olkin) supported the need for a factorial analysis.

In column A of Table 2, the Eigenvalue of the first two principal components are shown (after discarding indicators which did not promote unidimensionality). Column B of Table 2 shows the percentage of variance explained by the first two principal components. In this case, the first component is expected to be the one which explains most of the variance, which is in fact the case.

The high reliability of each of the constructs can be seen in column C and D of Table 2, being over .70, as suggested by Nunnally (1978) for early stages of research.

As column E in Table 2 shows, the AVE (Average Variance Extracted) in the five constructs is higher than the value of .50 recommended by Fornell and Lacker (1981). Another important issue to take into account is the aspect of the loads, through which the loads or correlations between the different indicators and their constructs can be seen. Following Falk and Miller (1992), the level of acceptance in loads has been set as greater than or equal to .505. As can be seen in column F of Table 2, this limit is exceeded.

Regarding the matrix of factor loadings and cross-loadings, the factor loadings were seen to be greater than the cross-loadings. That means

Table 1  
Reflective indicators used for measuring latent variables

Construct/ Latent variable	Reflective indicators	Description	Mean	SD
Versatility in the use of social networks	VU1	I use social networks to communicate with former friends	4.16	1.192
	VU2	I use social networks to communicate with current friends	3.59	1.352
	VU3	I use social networks to follow actions or opinions of the people I am interested in	4.02	1.228
	VU4	I use social networks to send messages	4.18	1.087
	VU5	I use social networks to share music	4.29	1.118
	VU6	I use social networks to read commentaries and news	3.76	1.206
	VU7	I use social networks to see/share photos	4	1.169
Dangers/Worries	D1	I am concerned that my parents scold me or get angry with me because of using social networks	1.66	1.086
	D2	I am afraid that social networks create dependency	1.99	1.246
	D3	I am worried about not having time to use all the social networks I am registered	1.69	1.081
	D4	I am worried about the risk of cyberbullying	2.29	1.419
Educational usage	U1	I communicate and/or share information and resources related to my classes with my colleagues in the centre	3.1	1.358
	U2	I communicate and/or share information and resources related to my classes with the students I know from other centres	2.49	1.972
	U3	I communicate and/or share information and resources related to my classes with students I don't know	1.69	1.147
	U4	I create groups to do the tasks, homework, classroom projects, etc.	2.07	1.292
	U5	By using social networks I help my classmates	2.68	1.247
Valuations in school learning	VS1	The use of social networks in each subject would make them more attractive	3.34	1.374
	VS2	By using social networks I learn different things	3.3	1.265
	VS3	Teachers should use social networks in their classes	2.76	1.338
Motivations for using social networks	MU1	Social networks allow a fast communication	4.18	1.087
	MU2	Social networks let me be permanently in contact with my friends	4.29	1.118
	MU3	I connect to social networks to be up to date	4.16	1.192
	MU4	I like to use social networks because the communication is free of charge	3.59	1.352
	MU5	Social networks are easy to use	3.76	1.206
	MU6	I connect to social networks because it is fun	4	1.169
	MU7	I registered on social networks to share photos and videos	3.69	1.311
	MU8	Through social networks I can make plans	3.9	1.245

that the indicators are more strongly correlated with their own construct than with others. Table 3 shows the correlation coefficients between the constructs, and the square root of AVE can be seen in the diagonals.

#### Model specification

The modeling process was based on identifying the factors which explain motivation when using social networks, that is, the elements that drive teenagers to apply the different utilities of social networks. As a first step, a summary of the model proposed is shown in Figure 1.

After testing the reliability and validity of the constructs, the relationships between the variables which form the structural model were analysed. To do this, the  $\beta$  coefficient (path coefficient) was calculated, which should be at least .20, according to Chin (1998). As can be seen in Figure 2, this assumption is confirmed by the relationship between the constructs "Versatility-Motives for use ( $\beta = .621$ )" and "Versatility-Educational uses ( $\beta = .394$ )".

With reference to the amount of variance in the endogenous variables which is explained by the constructs that predict them, the  $R^2$  obtained was .496 for motivation of use and .152 for educational use. In both cases and following the criteria proposed by Falk and Miller (1992), the values are greater than .10.

To evaluate the degree of fit of the model, the index "Goodness of fit" (GOF) was used, the resultant value of which was .417, greater than the value of .36 suggested by Chin (1998). Therefore, it can be said that the proposed model has good predictive quality.

The results are displayed graphically (Figure 2) in order to visualize the relationships between the different constructs of the model PLS more clearly.

The results show that versatility in the use of social networks is the most important variable and the one which has the greatest impact on

motivation for using these technological tools by teenagers. Furthermore, the positive influence between versatility in the use of social networks and its educational usage is also meaningful. On the contrary, neither dangers nor worries arising from the use of social networks, or even their educational utility have a negative influence on the use of social networks.

#### Discussion

Social networks are a very complex, changing phenomenon. For this reason, it is necessary to go beyond the numerical data shown by employment statistics, which -as suggested by Zheng and Cheok (2001), need to be regularly updated- to move towards a holistic view, which would let us assess the incidence of variables using social networks with educational purposes.

In response to this question, this study identifies 5 constructs, which groups 27 variables regarding the use of social networks. The construct "Motivation for the use of social networks" includes eight variables connected with the four components proposed by Notley (2009), and gathers the psychological, sociological and cognitive factors present in other studies, which as shown by Colás et al. (2013), analyse each of these aspects independently. One major difference to note is that this construct also contains variables related to specific characteristics of social networks (free-of-charge, speed) through which the individual perspective is increased and people gain added external factors which come into play in their position on technology.

The results show that versatility is the variable which is of greater importance when explaining the motives for using social networks. As Delgado (2013) points out, social network analysis allows us to connect micro-behaviours and macro-behaviours of the population to which it belongs. In this respect, "versatility", as an explanatory and predictive

*Table 2*  
Unidimensionality, reliability and convergent validity of indicators and model constructs

Constructs and indicators	Unidimensionality		Reliability		Convergent validity		
	(A) Eigenvalue For the first and second component	(B) Explained variance for the first and second component	(C) Cronbach's Alpha	(D) Composite reliability	(E) AVE (Average variance extracted)	(F) (Loadings)	
<i>Versatility in the use of social networks:</i>	4.334	.942	48.156%	10.468%	.835	.876	.506
VU1							.639
VU2							.677
VU3							.618
VU4							.764
VU5							.698
VU6							.752
VU7							.813
<i>Dangers/Worries:</i>	2.027	.766	50.664%	19.143%	.674	.800	.501
D1							.722
D2							.738
D3							.738
D4							.629
<i>Educational usage:</i>	2.565	.827	51.296%	16.548%	.760	.833	.504
U1							.815
U2							.646
U3							.598
U4							.698
U5							.771
<i>Valuations in school learning:</i>	1.996	.608	66.530%	20.272%	.747	.850	.656
VS1							.857
VS2							.881
VS3							.678
<i>Motives for using social networks:</i>	4.971	.923	49.715%	9.230%	.872	.899	.528
MU1							.744
MU2							.745
MU3							.730
MU4							.707
MU5							.691
MU6							.765
MU7							.709
MU8							.724

*Table 3*  
Coefficient of correlation between constructs

	Motives for use	Dangers/Worries	Educational usage	Valuations in school learning	Versatility
Motives for use	(.711)*				
Dangers/Worries	.188	(.707)*			
Educational usage	.334	.268	(.709)*		
Valuations in school learning	.349	.161	.274	(.809)*	
Versatility	.689	.235	.394	.324	(.726)*

\* Square root AVE construct

construct of motivation for the use of social networks, addresses issues which exceed the personal level and refers to a general perspective. The 7 variables included in the construct called “Versatility” point out the flexible character of social networks to facilitate, emphasize and enrich connections and relationships at different levels and for many purposes.

It also highlights the importance of interaction as a key element from which activities are enhanced, such as those related to information and communication, previously recognized in other research about social networks. Topaloglu, Cildibi and Oge (2016) conclude that the aims of social network users are to follow (people, news, events...) and share

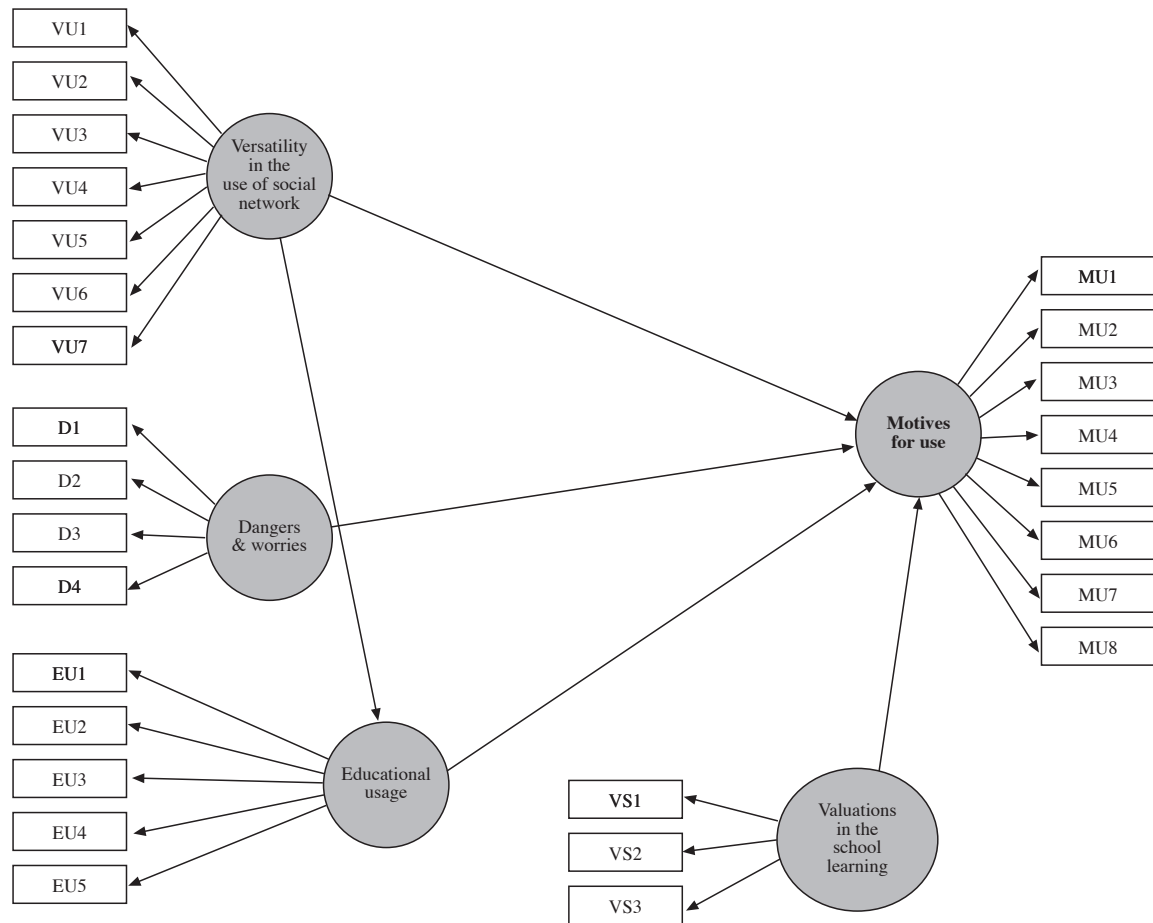


Figure 1. Graphic representation of the model. Hypotheses and relationships between latent and observable variables

(information, photos, videos...). All of which are actions related to the presence of the individual in the social scene and their social influence (Cheung, Chiu, & Lee, 2011), actions which reinforce the links with content, individuals and/or groups, as far as their capital and well-being is ensured (Greenhow & Burton, 2011).

Another noteworthy result is that the variables included in the construct “Dangers and worries” associated with social networks do not have a negative impact on motivation for the use of social networks. It seems that young people are unaware of the risks arising from the misuse of social networks (Vanderhoven et al., 2014) or do not take precautions to face possible threats (Livingstone, 2008).

The five variables included in the construct called “Educational usage” have little influence on the motives for use. This reveals students’ limited experience in the educational use of social networks. Therefore, their use is not explained for academic purposes. However, students recognize the potential of social networks because the construct “Assessments for school learning” is associated with motives for use and it should be viewed in a positive light. The binomial education-social networks is positively reinforced, if one considers that the results show that the versatility of the construct is, in fact, what has an impact on educational usage. So, the changing and adaptable aspect of social networks is one of the main attributes that enables their introduction and enhances their use in the educational sphere.

Duffi (2011) warns us not to bring social networks directly into the

classroom and his recommendation to create a new scenography to place them didactically, is essential to deal with the transfer from the social sphere, where young people use social networks, to the formative-cognitive sphere, which requires learning achievement. Besides, the integration of social networks in academic activities should be based on the characteristics of versatility highlighted in this study which include all the psychological, social and cognitive aspects to be taken into account in all learning processes (Ellison et al., 2007; Junco, 2015; Mazman & Usluel, 2010).

The analysed constructs and the relationships that have been found allow us to move towards a map of social networks from which their possibilities for education can be seen. As shown by other authors (e.g., Yang & Brown, 2013), the motives for use have a major influence on the type of activity done and the results.

Therefore, knowing the motives for use of social networks lets us understand the factors that could encourage young people to use these tools in their daily school activity (Sánchez, Cortijo, & Javed, 2014). It could also be good for the teachers by helping them engage students to use social networks in education, for example through collaborative learning processes (Lisette, 2014).

In conclusion, making “the features of the social networks help students improve their personal growth with active, creative and cooperative learning experiences and increased interaction with people” (Topaloglu et al., 2016, p. 355).

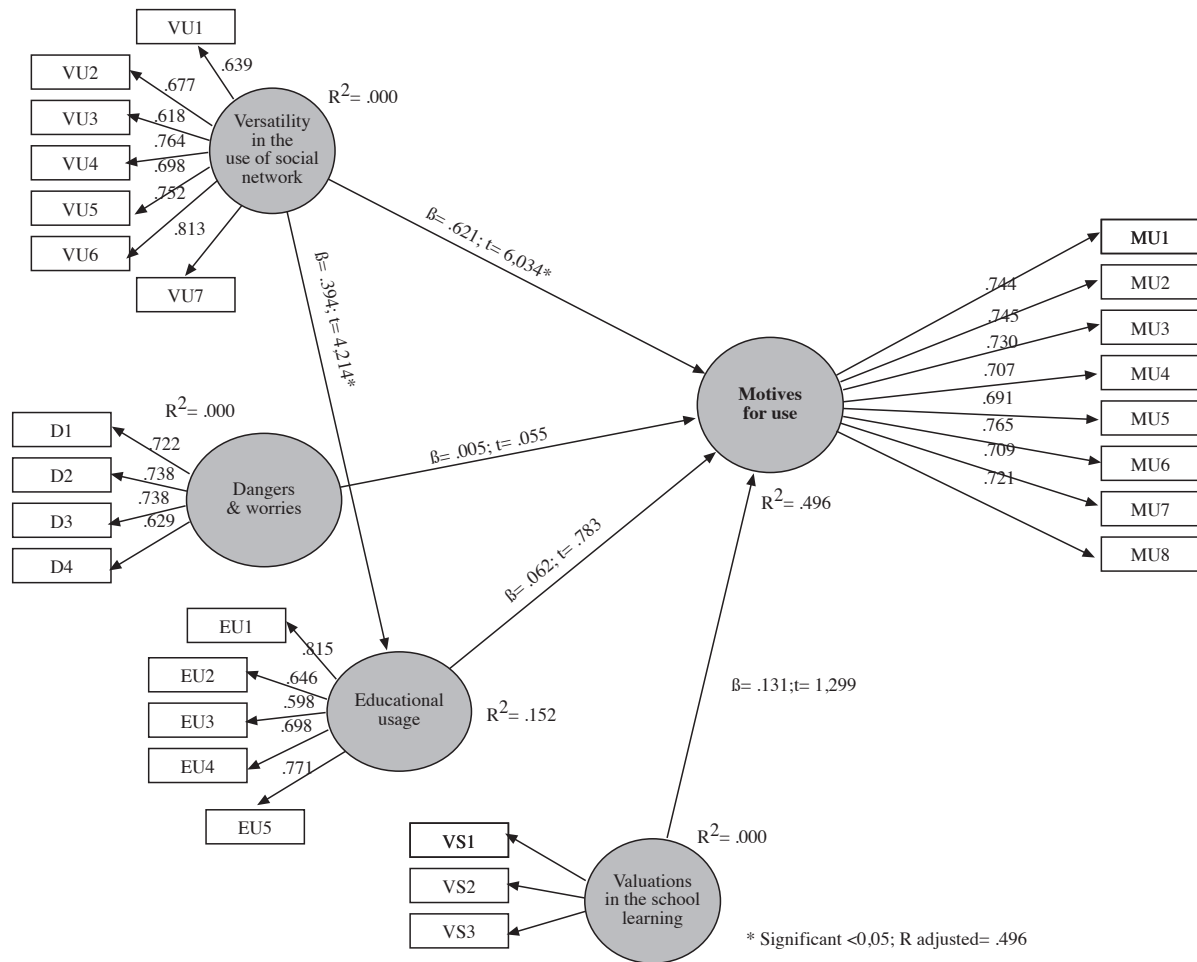


Figure 2. Results of the structural model based on PLS

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