

DIFFERENCES BETWEEN PERCEIVED USEFULNESS OF SOCIAL MEDIA AND INSTITUTIONAL CHANNELS BY UNDERGRADUATE STUDENTS

Leandro Sumida Garcia¹ and Camila Mariane Costa Silva²

¹*Universidade Federal do ABC, Av. dos Estados, 5.001 – Santo André – Brazil*

²*Faculdade de Tecnologia Termomecanica, Estrada dos Alvarengas, 4.001 – São Bernardo do Campo – Brazil*

ABSTRACT

Social media technologies were introduced among the modern society and are part of its routine in many ways – knowledge acquisition and sharing, interpersonal relationships, media diffusion – sometimes complementing and even substituting tools that were specifically designed for similar activities. This research compares social media sites and institutional communication channels by confronting elements that construe perceived usefulness and system satisfaction. It has been shown that students see more usefulness in social media technologies when performing academic activities than in information systems provided by their university, mainly due to the ease of use of the former technology. Thus it is expected to contribute to students and education institutions in order to attain the better use of available IT tools.

KEYWORDS

Social media, Higher Education technologies, Technology perceived usefulness

1. INTRODUCTION

Social media technologies are currently an important tool for power decentralization. Actions that are typically organized and controlled by small groups (such as governmental agencies, labour unions, student unions and other institutions) start to be disseminated to everyone that is involved. It enables new roles to emerge naturally, without regulated or legal processes (Mackenzie 2013). Thus, social media allows information to be generated, shared and to be potentially accessible for anyone.

Academic communities from education institutes are susceptible to the changes provoked by social media as well as companies, due to their effect on decreasing power restrictions, time and distance. Virtual communities – Facebook and WhatsApp groups, YouTube channels – emerge with or without institutional leaders' acknowledgement or consent. In such groups, students share information about the institution, academic materials (Pimmer, Linxen, Gröhbiel 2012) and opinion about teachers' performance and student services (Otto, Sanford, Ross 2008). Moreover, the use of such nonregulated virtual spaces may affect the grades of students that perform this use (Bennet et al. 2008).

As the use of social media by students is not usually controlled or even known, and that this use can potentially replace formal electronic tools – e.g. Virtual Learning Environments such as Moodle or Blackboard – the institution is prone to waste resources or not reap the benefits from freely available information. When considering that a Higher Education Institution invests human and financial resources in the implementation and maintenance of structures for supporting its activities (teaching materials, proper spaces for students' assignments, systems for faculty's evaluation and institutional e-mail boxing), the organization's strategy for undergraduate students' interactions in virtual environments may not have considered some of the necessities of these students.

Thus, this study investigates factors that could have made students prefer a social media tool when performing educational activities over formal channels that have been made available by the university. The goal is to identify factors associated with satisfaction and perceived usefulness of social media technologies and of formal channels from their educational institution. Then we compare the students' preference between both options for conducting their academic activities.

2. SOCIAL MEDIA

The evolution of applications and Internet's possibilities resulted in the rising and in the improvements of technologies that are more interactive and accessible. Such evolution was once defined in 1999 and later promoted by Tim O'Reilly as Web 2.0 at O'Reilly Media's conference in 2004 (O'Reilly 2005). This wide term essentially comprehends the technologies that allow anybody to create and share content dynamically as well as discuss it with all the users (O'Reilly 2005; Tuten, Marks 2012).

This phenomenon was characterized by the rising of social media. This technology represents a paradigm shift in relation to the predominant way of Internet use at its beginning. When it started to be widely used, the world's computers network was smaller and just a reduced amount of people, who had high technical knowledge, were able and available to spread content. Then, most of common people were just "receptors" of this content (Armstrong, Franklin 2008; Hargadon 2010). Finally, social media technologies enable a massive sharing and self-content building of most of their users.

2.1 Social Media in Education

The variety of social media tools and the growth of its popularity open several possibilities in new forms of use of this technology. The opportunities for collaboration and participative generation of content may improve results, as educational activities (Wankel 2009). Academic research has studied social media in the educational context. These studies comprehend from formal educational systems, which brings the interactions between professor and students, to models with free collaborative learning environments supported by social media platforms. Dabbagh and Kitsantas (2012) reviewed theoretical studies about the potential of social media tools in education and effective applications of them. Bennet et al. (2012), McCorkle and McCorkle (2012), Pimmer, Linxen and Gröhbiel (2012), Tyagi (2012) studied cases of social media sites and tools that are focused in learning processes.

In general, these studies investigate actions that were or could be done for social media use as a learning resource, difficulties and possible results after implementation. After proposing a three-level framework, Dabbagh and Kitsantas (2012) suggest actions for educators to help them use social media as self-regulated teaching support. In an increasing complexity, the levels are "Personal information management", "Social interaction and collaboration", and "Information aggregation and management". They have to be implemented one after another by pedagogical instructors. The intention is to encourage students to build an individual and collective learning environment through social media. This framework is an adaptation from the study of Zimmerman (2000). This author approaches stimulus to individual study regulation, emphasizing the students' role as the main educational agent in social media (Dabbagh, Kitsantas 2012).

3. INFORMATION SYSTEM ADOPTION

Fishbein and Ajzen (1975) have identified *intention* as a reliable predictor that leads to a certain behaviour, and have shown this relation in the Theory of Reasoned Action (TRA). Such intention is influenced by an individual's attitude to a given behaviour and his/her subjective norms concerning how other people would perceive that action. Davis, Bagozzi and Warshaw (1989) have used TRA as a basis for their Technology Acceptance Model. The authors propose perceived usefulness and perceived ease of use as preceding variables for the intention to use a given technology. Despite being a very robust model, some variables may escape its reach (Davis, Venkatesh, 1996) as social and cultural aspects (Bagozzi, 2007) and the very correlation between the two variables (Turnet et al., 2010).

DeLone and McLean (1992) developed the model for Information System Success and refined it later on (DeLone, McLean 2003). The latter presents three dependent variables: Intention to Use, Effective Use and User Satisfaction, as well as Net Benefits, which both influences and is influenced by the other three variables. Information Quality, System Quality and Service Quality are the preceding variables that affect intention to use and user satisfaction. Figure 1 shows the interaction between the variables:

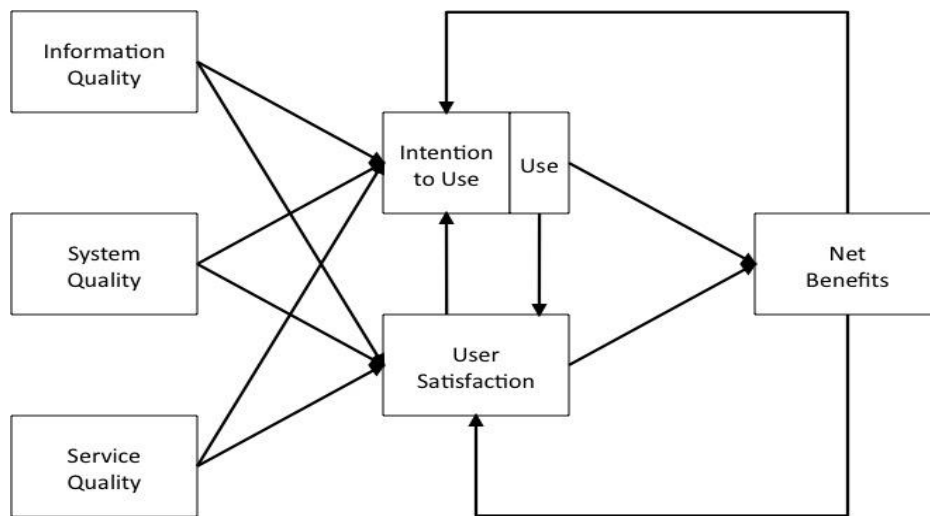


Figure 1. Information System Success (DeLone and McLean, 2003)

DeLone and McLean (2013) proposed a feedback cycle that makes the satisfaction and the received benefits reinforce a continuous use intention as the systems is used. Nevertheless, it is necessary that there were previous elements for the first use of a system. Then, unidirectional causalities may be used as possible approaches to measure this model (Seddon, Kiew 1996; Lin, Wang 2012; Tsai et al. 2012).

System Quality refers to the performance of a system, the hardware efficiency and the processing power. This construct is measured by users' evaluation of the technical capacity and the usability of a system (DeLone, McLean 1992). It is possible to visualize two main categories that define this quality: flexibility and sophistication. The former is the resources' availability and useful tools instead of unnecessary ones, when the latter is related to usability and technology novelty and documentation (Gorla, Somers, Wong 2010).

Information Quality represents how much useful are the system outputs to its users (DeLone, McLean 1992). This construct may present four basic characteristics: information completeness, which means that the system offered all necessary information; format adequacy; updated information; and correct or precise information (Wixom, Todd 2005). Moreover, the information has to be reliable in a way that individuals may consider it useful (Chen, Xu, Whinston 2011).

Service Quality was added in the updated model (DeLone, McLean 2003). The authors used concepts and indices from the model of service quality measuring SERVQUAL (Parasuraman, Zeithaml, Berry 1988) that describes quality as the difference between consumers' expectative from a service and what is really gave to them. Thus, services evaluated as having superior quality are the ones that address or overcome their expected results.

3.1 Adoption of Social Media in Education

An individual could motivate him/herself to adopt a social media by the expectative of meeting someone and resources that may help him/her to solve a problem. An individual could be also influenced to adopt it by family or friends. Chou et al. (2009) described a case of American users of a social media that collaborated in an online group to support people with cancer. The group aimed to help people with experiences sharing among users in similar situations, even if they did not have too much in common or knew each other. According to Quan-Hasse and Young (2010), the necessity of sharing problems is one of the predictors to social media adoption.

In the context of education, a user may use a social media to disclose complaints or to get information more quickly (Xia 2013). Therewith, a student would interact via social media with his/her university and other students to expose problems thinking that he/she is pressuring the institution to solve problems with urgency (Lala, Priluck 2011). This situation may also occur when the university does not offer a good system to receive and manage the students' complaints.

Quality of information is one of the factors that influence the adoption of a new technology (DeLone, McLean 2003) and it is a students' concern when they are deciding to use a social media (Kim, Sohn, Choi 2011). Additionally, a student values an agile exchange of quality information inside of the learning process (Rinaldo, Tapp, Laverie 2011). The characteristics of a system that was offered by the educational institute are critical to students' decision of using it or not. Among the key factors of success to the implementation of a university's system are: access facility, confidence in the technological infrastructure and service support (Selim 2007).

We may also consider that a student will search for remote means of communication to contact people that are close to him/her (Lin, Liu 2011) and will avoid exchanging information with the ones who transmit the idea of authority and hierarchy. This behavior was observed by Dahlstrom (2012) in social media. It was demonstrated that the student does not feel comfortable to communicate with professors and instructors through this technology. Likewise, the strong presence of faculty in a social media may limit its use (Hanson et al. 2011).

Students may resist adopting the virtual learning environment from their universities, as previous experience and appropriate training are expected in order for this adoption to happen. The lack of these factors probably hinders the usage (Venkatesh, Goyal 2010). When, in the other hand, there is the massive popularity of social media sites like Facebook, which overpassed a billion of users with a great public aging between 13 and 24 years old (CheckFacebook 2013). It seems that an undergraduate student probably has a profile and knows how these social media sites work. Thus, in this scenario, a student does not have to learn a new system's functionalities, when he/she could use platforms that he/she already comprehends to develop academic tasks. It is simpler for students to adopt an additional use purpose in a technology that they have experienced (Venkatesh, Goyal 2010).

4. STUDY MODEL AND HYPOTHESES

In this study we measure quality in users' satisfaction with educational technologies, perceived ease of use and perceived usefulness in social media technologies and in formal channels from an educational institution. Thus, in order for a student to be satisfied with a given system, it is necessary for the system to present availability, reliability and speed (Sun et al. 2008). Furthermore, the system's access ought to be simple and free of technical fails (Manzoor et al. 2012). With that in mind we could propose that:

H1a: The quality of the social media system positively influences the information quality of the social media

H2a: The quality of the social media system positively influences the service quality of the social media

H3a: The quality of the social media system positively influences the perceived ease of use of the social media

H4a: The quality of the social media system positively influences the perceived usefulness of the social media

H1a: The quality of the social media system positively influences the users' satisfaction with the social media

H1b: The quality of the institutional formal system positively influences the information quality of the institutional formal channels

H2b: The quality of the institutional formal system positively influences the service quality of the institutional formal channels

H3b: The quality of the institutional formal system positively influences the perceived ease of use of the institutional formal channels

H4b: The quality of the institutional formal system positively influences the perceived usefulness of the institutional formal channels

H1b: The quality of the institutional formal system positively influences the users' satisfaction with the institutional formal channels

Even if the communication channels are appropriate and fulfil students' expectations, the information released has to be useful to them. Thus, a system has to provide functionalities that support services to students, as instructions to solve problems or ways to receive them (Kim, Sohn, Choi 2011). Additionally, according to Rinaldo, Tapp and Laverie (2011) great part of the undergraduate students' satisfaction, by using social media, is due to useful information sharing from colleagues – information that was outside of formal institutional channels of their universities. Then, we assume the hypotheses:

H6a: The quality of information in social media positively influences the quality of service of social media

H7a: The quality of information in social media positively influences the perceived ease of use of social media

H8a: The quality of information in social media positively influences the perceived usefulness of social media

H9a: The quality of information in social media positively influences users' satisfaction of social media

It is still necessary that the service has a friendly and organized interface. The service's performance can modify the students' expectations of effort (Saeed, Abdinnour-Helm 2008), as well as the level of support to the electronic institutional channels are critics to students' satisfaction (Selim 2007). Then, we propose that:

H10a: The quality of service of social media positively influences the perceived ease of use of social media

H11a: The quality of service of social media positively influences the perceived usefulness of social media

H12a: The quality of service of social media positively influences users' satisfaction of social media

H6b: The quality of information in the institutional formal channels positively influences the quality of service of the institutional formal channels

H7b: The quality of information in the institutional formal channels positively influences the perceived ease of use of the institutional formal channels

H8b: The quality of information in the institutional formal channels positively influences the perceived usefulness of the institutional formal channels

H9b: The quality of information in the institutional formal channels positively influences users' satisfaction of the institutional formal channels

H10b: The quality of service of the institutional formal channels positively influences the perceived ease of use of the institutional formal channels

H11b: The quality of service of the institutional formal channels positively influences the perceived usefulness of the institutional formal channels

H12b: The quality of service of the institutional formal channels positively influences users' satisfaction of the institutional formal channels

The influence of the perceived ease of use predicts that, the lower the effort to use a technology, the higher is are the benefits to its users (Davis, Bagozzi, Warshaw 1989). Then, the easier the usage of a social media site or an institutional channel, the more convenient they would be to students when performing any actions. Thus, we have:

H13a: The perceived ease of use of social media positively influences the perceived usefulness of academic tasks in a social media

H13b: The perceived ease of use of the institutional formal channels positively influences the perceived usefulness of academic tasks in institutional formal channels

By intending to compare the perceived usefulness and users' satisfaction found through social media technologies and formal institutional channels, we propose four other hypotheses. First, a specific technology applied in educational context, when useful to students, may influence the perceived usefulness of technologies that support academic tasks. When students' performance in these tasks improve by the use of a technology, they are likely to use technologies in general, like social media tools (Luckin et al. 2009) and systems offered by their universities (Pérez, López, Ariza 2011).

H14a: The perceived usefulness of social media positively influences the perceived usefulness of academic tasks in information systems in general

H14b: The perceived usefulness of the institutional formal channels positively influences the perceived usefulness of academic tasks in information systems in general

Satisfied students with a system may tend to appeal to technologies in general looking for problems solution. As already described, a student can use certain social media to share complaints in their networks to pressure their educational institution to give them answers (Lala, Priluck 2011; Xia 2013). Then, we assume that:

H14a: The satisfaction related to social media positively influences the perceived usefulness of academic tasks in information systems in general

H14b: The satisfaction related to institutional formal channels positively influences the perceived usefulness of academic tasks in information systems in general

Research has been applied with users of a Virtual Learning Environment – VLE – from a higher education institution. The VLE holds functionalities like agenda, forum, content sharing by professors (e.g. classes plan, videos, audio, and bulletins), and upload of content. Whereas this tool is integrated with academic and administrative systems' environment, some information as grades' release, school transcripts,

and enrolment; are synchronized and updated. It is important to mention that this tool is optional to support classes. Professors can choose if they will use it or not, though the grades must be registered through the tool.

The data gathered for this research was analysed quantitatively. The dependent variable, “Perceived usefulness of information systems” is influenced by the variables “Perceived usefulness” of social media and formal channels of information of higher education institutions. These variables were similarly proposed by Davis, Bagozzi and Warshaw (1989) in TAM, and DeLone and McLean (2003) in the Model of Information System Success. We applied the indicators suggested in studies that also based their researches in these models, mainly the study of Xu, Benbasat and Cenfetelli (2013).

The terms used in this study were based in the analysis of interviews previously executed to undergraduate students, and the comments registered after the application of the first version of our questionnaire. Thus, it was possible to increase the concepts comprehension in the next version. Also, the reactions from statements in the questionnaire were presented in a 6-point scale: 1. totally disagree; 2. considerably disagree; 3. little disagree; 4. little agree; 5. considerably agree; and 6. totally agree.

The constructs “Perceived usefulness” and “Perceived ease of use” from TAM (Davis, Bagozzi, Warshaw 1989) were operationalized through four indicators from Xu, Benbasat and Cenfetelli (2013) that were contextualized and adapted to this study. The constructs “Quality of system”, “Quality of information”, “Quality of service”, and “Users’ satisfaction” were gathered from the Model of Information System Success (DeLone, McLean 2003). Users’ satisfaction was measured by four indicators, while each of them was measured through seven indicators.

We printed 120 questionnaires that were distributed in an university campus during three days in December 2013. Just 108 questionnaires were used in the analysis, because seven were not delivered back and five were not completed. Then, composing the population of this study we have: gender - 40 females and 68 males; age – 50 between 18-20 years old, 39 between 21-23 years old, and 19 between 24-26 years old; and area of major – 93 enrolled in Science and Engineering, and 15 in Humanities.

Data collected was analysed with the technic of structural equations modeling - SEM (Hair Jr et al. 2009). We also used the Partial Least Squares - PLS 2.0.M3 in the analysis. This tool presents reliability and strength (Goodhue, Lewis, Thompson 2012). The indicators’ significance was verified by applying Bootstrap using 1000 sub-sets for testing. We also used the software SmartPLS for both models.

Therefore, the analysis was conducted with two independent structural models: the social media and the institutional formal channels. After the partial verification of each model, a simultaneous comparison was made. The contribution of both options was analysed over their general usefulness for academic activities. After that, the scores obtained to usefulness and to satisfaction were compared by means comparison technics. Therewith, T-test was applied in the comparison of means, looking for differences in means with paired or dependent observations (Hair Jr et al. 2011).

4.1 Model Tests

Aiming to validate the variables and the constructs selected to this study, we tested the data in two different ways:

- The convergent validity demonstrates how the scales correspond to constructs measures. The average variance extracted (AVE) has to be greater than 0.5 for each construct (Hair et al. 2009). In the tests all the constructs reached the requisites, since the AVE values varied from 0.6237 to 0.8222, and the composed reliability indexes varied from 0.8323 to 0.9398. This demonstrates that the questions used in the questionnaires were appropriate to measure the constructs.
- The discriminant validity demonstrates if the indicators proposed do not measure their correspondent variables.

Besides that, we verified the factorial load for each indicator in its variable. The values obtained should be greater than 0.70 and also greater than the load of the others variables (Xu, Benbasat, Cenfetelli 2013). Finally, we obtained loads in variables greater than the others and over 0.70. In the Appendices we bring tables with the values obtained for convergent validity, discriminant validity and factorial load.

Figures 2, 3 and 4 show the values of R² from latent variables and the effects in each relationship between constructs – non-statistically significant relations were omitted from the model. Respectively, we presented the model for social media, for formal institutional channels and the general usefulness. We use: * = $p < 0.5$, ** = $p < 0.01$, and *** = $p < 0.001$.

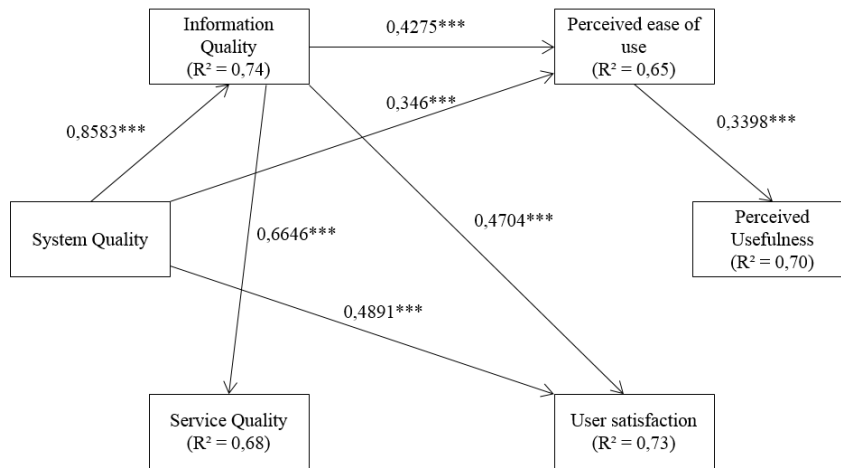


Figure 2. Results from Social Media

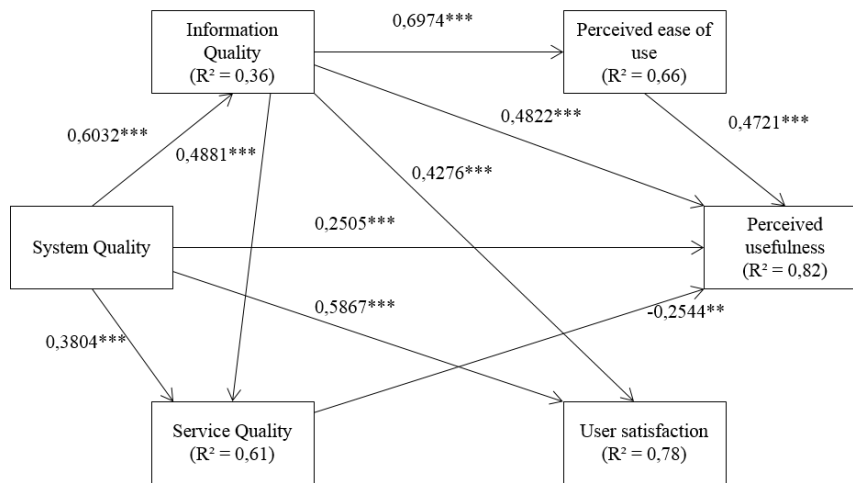


Figure 3. Results from Formal Institutional Channels

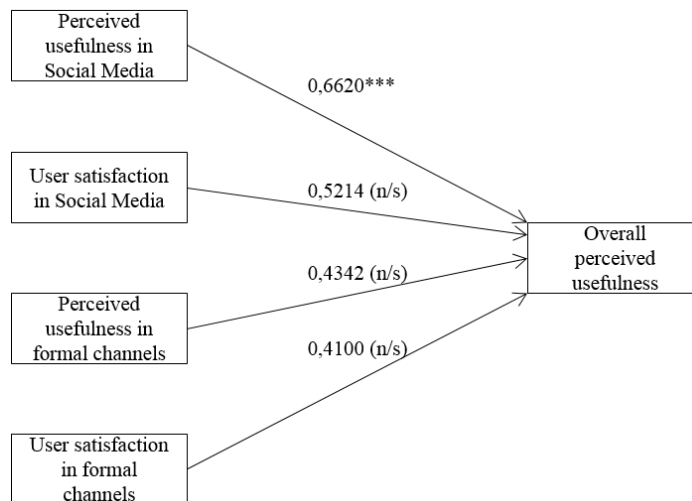


Figure 4. Overall perceived usefulness model

By comparing the models for social media and for institutional channels, we can visualize that the impacts of Service Quality over the Perceived Ease of Use and over User Satisfaction were nonsignificant in any case. In the Social Media model only Information Quality showed significant relation to Service Quality. Perceived Usefulness is impacted only by Perceived Ease of Use, which is influenced for System Quality and Information Quality. In the model for institutional channels of the university, the impact of System Quality and Perceived Ease of Use were nonsignificant. According to the model of Overall Perceived Usefulness, only the relation between Perceived Usefulness in Social Media and the Overall perceived usefulness was significant.

4.2 Comparison of Means

We executed a Student’s *t*-test to compare the two means from paired sets, in a way to match users’ satisfaction and perceived usefulness related to social media and to institutional channels. Thus, Table 1 presents the results of this test.

Table 1. Tests comparing two means

		Paired differences			t	Sig. (2-tailed)
		Mean	Std. Deviaton	Std. Error Mean		
Pair 1	General usefulness for social media – General usefulness for inst. channels	0.44986	0.92049	0.08857	5.079	0
Pair 2	General users’ satisfaction for social media – General users’ satisfaction for inst. channels	0,71671	1.0659	0.10257	6.988	0

Therefore we may verify that there is statistical significance between the factors’ means. The Perceived usefulness for social media is greater than Perceived usefulness for institutional channels by its mean. Similarly, the mean for users’ satisfaction with social media is greater than users’ satisfaction with institutional channels. The difference between the means is about 0.45. Even if both means are over 4, we can realize that the students see social media as more useful to academic activities than formal systems and tools from their university. This finding may concern the university administration, since investments have been done in resources acquisition, development and maintenance to provide these institutional channels – while students do not value them as alternative technologies.

On the other hand, the educational institution could take advantage of this scenario by developing strategies to use social media to support academic processes. Perceived ease of use was the factor that impacted significantly the perceived usefulness of social media, so we can understand that students may make the best of this tool by knowing to use it well. Nevertheless it is important to notice that this ease of use is not necessarily related to advanced resources. According to Bennet et al. (2012) reports that not always frequent users of social media will know how to execute activities of high complexity. Therewith, if the university chooses to incentive the use of these resources, it will be necessary to train both students and the employees that will assist them, in accordance with the expected difficult in activities.

The difference between users’ satisfaction with social media and with institutional channels is greater (0.716), wherein the satisfaction with social media exceeds the other. It might happen due to the questions’ approach, in the questionnaire, about the general users’ satisfaction with social media sites and not specifically focused in academic activities. Anyway, there is room for experience improvement of students when using formal institutional channels.

5. CONCLUSION

Analyzing the model for social media, the relations derived from quality of system were similar to the ones that were proposed by Xu, Benbasat and Cenfetelli (2013). Similarly to the results obtained by these authors, quality of information affects positively the quality of service (0.665 to $p < 0.001$). Nonetheless, the

influences of quality of information and of quality of service over perceived usefulness were not confirmed in this study. Also, the quality of system did not impact quality of service significantly.

The model for general usefulness presented a single statistical significant impact, the perceived usefulness of social media over the perceived usefulness of institutional channels that remained in $R^2 = 0.44$. Although this relation is tacitly expected in studies like the ones did by Selwyn (2009) and Stanciu, Mihai and Aleca (2012), it was not proposed yet. Thus, future research could consolidate this hypothesis and identify other factors that could be used to explain the general perceived usefulness variable.

It was possible to notice that the students in general feel themselves capable to use better technological resources that they are familiarized with, instead of specific systems that were developed to attend academic activities. Thus, we raise the possibility of students do not wait to need technical support in the future, so it would not be determinant in their general experience and in the usefulness of any of the systems. Therefore, the focus remains in the regular availability, quality of information and intuitive use.

Given the results, the educational institution could adopt one of three lines of action, considering its resources and reality. The first is keeping the divisions between formal channels and informal media, looking for improvement in the quality of systems, their information and TI management. Thus, just spontaneous activities would occur inside of social media sites (Pimmer, Linxen, Gröhbiel 2012). One of the positive sides of this action is that the university may control more its data, against copyright violation, for instance.

The second line of action is to develop mechanisms to integrate the two channels, focusing the participative education and the self-regulated learning through social media as a tool to support the university's politics and systems (Dabbagh, Kitsantas 2012). The advantage is the technics' versatility brought to the institution that would count on a greater number of learning tools, besides students' engagement.

Lastly, the third line of action is the effective appropriation of social media, like virtual learning environments and standards channels for communication with the academic society within the university. Functionalities like forum, teleconferences, instant messages exchange, and archives repository, for instance, could be delivered in this social media (Rinaldo, Tapp, Laverie 2011; Bennet et al. 2012). The advantages of this action are the reduction of costs and the necessity of technical management, whereas systems' reliability risks and data security are assumed by the educational institution. A concern that may arise is the need for constant updating routines to adapt the systems with the institution's operations and in case of obsolescence.

Future research can approach the dependent variables "ease of use" and "perceived usefulness", besides of verify if there is a negative relationship between the quality of service in institutional channels and its perceived usefulness. Deepen the comprehension of general usefulness of educational information systems is another possibility of study, as well as searching for additional variables to explain it.

One of this study's limitations was the low variability of the age group and the questionnaires' application being applied in just one university. Considering that some of the constructs remained with three indicators, it is possible to propose more questions to increase the explanation power of the models.

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