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UTILIZAÇÃO DAS REDES SOCIAIS VIRTUAIS NO PROCESSO DE GESTÃO DO CONHECIMENTO: APLICAÇÕES E PRÁTICAS NO CAMPO DAS ORGANIZAÇÕES

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RESUMO

Objetivo do estudo: O presente trabalho tem como objetivo realizar uma revisão sistemática da literatura para esclarecer como as redes sociais virtuais são empregadas com vistas ao desenvolvimento e fortalecimento da gestão do conhecimento nas organizações.

Metodologia/abordagem: Trata-se de uma investigação bibliográfica apoiada em meta-análises de acordo com a técnica de Revisão Sistemática da Literatura conceituada por Kitchenham (2004). No estudo foram levantados todos os artigos no portal Scielo que faziam menção direta a qualquer um dos nomes dentre as oito redes sociais virtuais, aqui, pesquisadas.

Originalidade/Relevância: Consiste a revisão de todas as pesquisas nacionais publicadas em português que abordam a utilização de redes sociais virtuais em ambientes organizacionais, responsável por sintetizar o conhecimento da área.

Principais resultados: Percebe-se a existência ainda incipiente de investigações sobre redes sociais virtuais associadas à gestão do conhecimento. Apesar disso, observa-se um aumento constante nas publicações. Há concentração de artigos publicados nas seguintes áreas de avaliação da Capes: Interdisciplinar e Letras, com predomínio de abordagens qualitativas. A maior parte dos estudos retrata o Facebook como a principal rede utilizada para gerir conhecimento, os principais objetivos de seu uso são aprimoramento da comunicação organizacional, educação corporativa e possibilitar acesso à informação.

Contribuições teóricas/metodológicas: Aponta as pesquisas empíricas sobre gestão do conhecimento e redes sociais virtuais já publicadas em português nas revistas de maior impacto nacional. Apresenta uma aplicação metodológica dos procedimentos sugeridos por Kitchenham (2004).

Contribuições sociais/para a gestão: Sintetiza as práticas de gestão do conhecimento utilizadas por organizações dentro do ambiente das redes sociais virtuais, possibilitando a construção de uma agenda de pesquisas futuras.

Palavras-chave: Gestão do Conhecimento. Redes Sociais Virtuais. Revisão Sistemática.

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USAGE OF SOCIAL MEDIA IN THE KNOWLEDGE MANAGEMENT PROCESS: APPLICATIONS AND PRACTICES IN ORGANIZATIONS

ABSTRACT

Objective of the study: We aim to perform a Systematic Literature Review (SLR) to clarify how Social Media (SM) are used to develop and strengthen Knowledge Management (KM) in organizations.

Methodology/approach: We made a SLR supported by meta-analyses using the technique conceptualized by Kitchenham (2004). In this study, we selected all articles in the SciELO website that directly mentioned any of the names among the eight SM sites researched, then followed the steps described by Kitchenham (2004) from planning to execution and presentation of the results.

Originality/Relevance: We made a review of all national researches published in Portuguese that addresses the use of SM in organizational environments, responsible for synthesizing the knowledge of the area.

Main results: We observed an incipient presence of studies on SM associated with KM. However, there is a gradual increase in the number of publications over the years. We also found a concentration of published papers in the CAPES evaluation fields Interdisciplinary and Languages, with a predominance of qualitative research. Most of the studies found portray Facebook as the main SM used for KM, with the improvement of organizational communication, corporate education, and access to information as the major objective.

Theoretical/methodological contributions: We present the empirical research on KM and SM already published in Portuguese in the journals of greatest national impact. We achieve a methodological application of the procedures suggested by Kitchenham (2004).

Social/management contributions: We synthesize the KM practices used by organizations within the environment of SM, enabling the construction of a future research agenda.

Keywords: Knowledge Management. Social Media. Systematic Literature Review.

1 Introduction

In ancient times, long before the term Knowledge Management (KM) was created, knowledge was valued as a source of positive incremental changes for individuals and society. Although not explicitly, the valuation of knowledge throughout cultural changes can be identified as a factor that promotes distinction between men, institutions, and societies. At the same time, knowledge has become a prominent economic resource – more important than raw material and often even more important than money. Thus, information and knowledge exceed, for example, automobiles or any other industrial product in importance (Stewart, 1998).

Burke (2003, p. 11) argues that "knowledge has also become an important political issue, centered on the public or private character of information, and its mercantile or social nature". As a consequence of the speed of technological change, environments are becoming increasingly known at a higher level of complexity, with large flows of information, and organizations, whether public or private, need to seek efficiency in the management of data, information, and knowledge. In this context, the Internet becomes a vast and fluid technological means of information and knowledge. This medium has provided tools for collecting, storing, and distributing information to both individuals and organizations. Davenport and Prusak (1999) argue that, to meet the challenges of this dynamic environment, organizations need to continually learn, understanding better what they know, what they need to know, and what to do about it. To this purpose, the Internet emerges as a vital tool to develop and

share information and knowledge. Social Media (SM) are the result of advances in web applications. They promote interaction and multiple uses for individuals and organizations. However, the actual application and usefulness of the various SM in organizations and for KM purposes still demands research and consolidation. For this reason, this study aims to conduct a Systematic Literature Review (SLR) on the use of SM, in order to investigate how organizations are employing them to create and manage knowledge, with a view to improving KM in organizations.

This section introduced the topic of the study and the objective to be achieved. The second section covers the theoretical framework, presenting a literature summary that serves as the basis for understanding this research. In the third, the method used, the data collection and the methods of analysis will be presented. The fourth section features the results of the analyses. Finally, the main conclusions, recommendations, and suggestions for future studies will be described.

2 Theoretical framework

2.1 Knowledge Management (KM)

Before defining Knowledge Management (KM), it is necessary to understand the concepts that support it, such as the differences between data, information, and knowledge. According to Beal (2004), data consist of raw records or facts that can be easily structured, transferred, and stored in computers. Information is data with relevance and purpose. In agreement with this, sociologist Peter Burke (2012) compares data, information, and knowledge using the following metaphor by anthropologist Lévi-Strauss:

> It may be useful to think of information as raw, while knowledge has been cooked. Of course, information is only relatively raw, since the "data" are not objectively "given" at all, but perceived by human minds that are full of assumptions and prejudices. However, knowledge is "cooked" in the sense of being processed. (Burke, 2012)

Nonaka and Takeuchi (1997, p. 63) highlight the differences between knowledge and information based on the reasoning the authors call "knowledge as justified true belief", in accordance with the Japanese intellectual tradition, which differs from traditional Western epistemology based on "truth as an essential attribute of knowledge", as:

> Knowledge, unlike information, is about *beliefs* and *commitments*. Knowledge is a function of a particular stance, perspective, or intention. Second, knowledge, unlike information, is about *action*. It is always knowledge "to some end". And third, knowledge, like information, is about *meaning*. It is context-specific, and relational. (Nonaka & Takeuchi, 1997; emphasis in original).

Based on the concepts mentioned, it can be stated that KM should be seen as a key factor for the organization, as it is systematically inserted in the organizational processes and has its methods practiced in order to confer greater efficiency and effectiveness in achieving goals. KM seeks not only to systematize ways of recording and accessing existing knowledge within an organization, making it accessible, but also to implement systems and structures that facilitate the exchange of experiences among employees. Also, according to Davenport and Prusak (1999):

> The goal of [KM tools] is to take knowledge that exists in human heads and paper documents, and make it widely available throughout an organization. The mere existence of knowledge in the company is of little value if it is not accessible and not used as one of its most important resources. The intention with these tools is that knowledge can flow through networks and communities, turning technology into a medium, and knowledge is the capital. (Davenport & Prusak, 1999).

Because our research is about the applicability of organizational KM based on SM, understanding the concept of SM is fundamental to understanding this paper.

2.2 Social Media (SM)

According to Tavares and Paes de Paula (2013), "Social media are relationships between people, mediated or not by computerized systems. These relationships can be affected by interactions that aim at changes in people's lives, for the collective good or even for organizations". Also, according to these authors, these interactions are established for private or common interests. To understand SM, the concept of social communities brings important elements. According to Rheingold (1996), they are

> social aggregations that emerge from the Net when enough people carry on public discussions long enough, with sufficient human feeling, to form webs of personal relationships in cyberspace (Rheingold, 1996).

Social networks may or may not be mediated by information and communication technology. Among their various types are networks called SM on the Internet or virtual social networks, which refer to the forms of sociability and social relations through Internet resources, different from actual physical relationships in terms of objectives and dynamics (Tavares & Paes de Paula, 2015).

This paper will consider SM operated in the virtual environment of the Internet. They have emerged more recently and disseminated for different purposes. Currently, there are several SM, some of them aimed at personal, private use, while others are aimed at the professional environment. Another possible classification is social presence, related to frequency of participation, and self-presentation, which is the level of exposure of one's own image in the virtual environment (Kaplan & Haenlein, 2010). In Brazil, among the main SM used, according to the Brazilian media research, Facebook, WhatsApp, YouTube and Twitter stand out for their popularity; this study also includes LinkedIn and Instagram (Brasil, 2014).

3 Method

The technique guiding this research is the Systematic Literature Review (SLR) described by Kitchenham (2004). Its execution process is summarized in Table 1. This technique was chosen because of its verifiable scientific nature and the ability to systematically condense scattered knowledge, either employing or not meta-analyses, and uses "reproducible, explicit methods, search criteria, and information selection, so that other authors who want to reproduce the same methodology can reach the same content and conclusions" (Atallah & Castro, 1998).

This research begins at its planning, consisting of three steps, while the SLR consists of five steps, the first one being the identification of the research, based mainly on the SLR protocol defined in planning, followed by the selection of the primary studies, conducted on the SciELO website, where strings with the names of the SM were searched.

In compliance with SciELO search criteria, the research was divided into three different parts in order to encompass the eight SM of interest for our study, with no time period limits: (1) whatsapp [All indexes] or facebook [All indexes] or instagram [All indexes], with 76 results; (2) linkedin [All indexes] or twitter [All indexes], with 29 results; (3) youtube [All indexes] or skype [All indexes], with 27 results.

Table 1 - Systematic Literature Review

I. Plan	II. Execution	III. Presentation
(1) Identify Need for Review	(4) Identify Search	(9) Specify Dissemination Mechanisms
	(5) Select Primary Studies	
(2) Specify Research Question	(6) Evaluate Quality	(10) Format Report
	(7) Extract Data	
(3) Develop Review Protocol	(8) Synthesize Data	

Source: Authors (2017), based on Kitchenham (2004).

For the third step (item 6), evaluating the quality of the selected papers, we chose a Brazilian particular method, CAPES (Coordination for the Improvement of Higher Education Personnel) Qualis evaluation (qualis.capes.gov.br), found in the Sucupira website (https://sucupira.capes.gov.br/sucupira/public/consultas/coleta/veiculoPublicacaoQualis/listaConsultaGeralPeriodicos.jsf). The papers are expected to be higher levels of quality because the research was conducted within the SciELO Brazil Collection, which requires the fulfillment of several quality criteria (SciELO Brasil, 2014); results can be observed in Table 7.

Then, data were extracted from a spreadsheet for further synthesis and integration of knowledge based on statistical methods of analysis, with the use of a statistical package software for meta-analysis calculations (Moher, Liberati, Tetzlaff, Altman, & Group, 2009). Finally, Kitchenham (2004) suggests a presentation of research results in two stages, the first consisting in the specification of dissemination mechanisms and strategies, followed by the formatting of a research report that can be published in various media such as a doctoral dissertation section, journal article, or event, as well as technical publications.

4 Results

4.1 Analyses and meta-analyses

After identifying the research *corpus*, we excluded some of the selected texts, at first due to the repetition of studies (Repeated), in order to avoid inadequate quantification and unnecessary work. Several of these studies analyzed multiple SM, and thus have been collected repeatedly in each string search. In short, 15 repeated articles (11.36% of the total) were removed, as well as an editorial and an abstract as these are not types of papers (Other Types of Publication) at the focus of the present study.

The next exclusion criterion is the analysis of papers by reading their titles, abstracts, and keywords. In cases in which the abstract did not allow an adequate understanding of the methodological procedures or any other information necessary to compose the analytical scope of the research, which was frequent, the full text was consulted. The overall number of papers that fit the objective proposed (Inside of Scope) by this paper is approximately 21% (Table 2), a result that shows KM practices are not at the heart of research related to SM.

Table 2 - Article selection overview.

Delimitations	Number of Publications	Percentage of Publications (%)
Other Types of Publication	2	01,52
Repeated	15	11,36
Out of Scope	87	65,91
Inside of Scope	28	21,21
Total	**132**	**100,00**

Source: Authors (2017).

Table 3 summarizes the distribution of papers by CAPES assessment area, with a clear predominance of papers published in the Interdisciplinary stratum (25%), followed by Languages, Literature, and Linguistics (21%), Communication and Information (approximately 18%), Public Administration, Business, Accounting and Tourism (approximately 11%), and Nursing (7%).

Table 3 - Distribution of articles by evaluation area.

Capes Assessment Area	Number of Publications	Percentage of Publications (%)
Interdisciplinary	7	25,00
Languages, Literature, and Linguistics	6	21,43
Communication and Information	5	17,86
Public Administration, and Business, Accounting and Tourism	3	10,71
Nursing	2	07,14
Social Service	1	03,57
Teaching	1	03,57
Law	1	03,57
Environmental Sciences	1	03,57
Anthropology / Archeology	1	03,57
Total	**28**	**100,00**

Source: Authors (2017).

Of the selected papers that fit the research scope, 20 had Facebook as their object of study, with 14 analyzing it in isolation and another 6 together with other SM – all cases with the simultaneous presence of Twitter, which was analyzed individually by only one text, totaling seven papers on this SM. This data is detailed in Table 4.

Skype has a few particularities, appearing in older research and not being analyzed in conjunction with other SM within the scope of our search. In addition, YouTube appeared as often as Skype, four times, but in half of the cases, associated with Facebook and Twitter, and another two times as a single research object. Finally, there were reports of two studies on the Whatsapp app and one on Instagram, yet we found no reports of investigations on KM practices on LinkedIn.

Table 4 - Frequency of SM.

SM	Facebook	Twitter	Skype	Youtube	Whatsapp	Instagram	LinkedIn
Number of Publications	20	7	4	4	2	1	0

Source: Authors (2017).

The first paper on SM that fell within the scope of our research was published in 2009, as shown in Table 5. Regarding the number of papers published per year, no growth trend can be noticed until 2013. Subsequently, there is an increase of approximately one paper per year; however, as the research takes place in 2017, a greater number of publications in later years is possible, but the number already exceeds more than half the initial time series.

When calculating a trend line using the ordinary least squares technique (OLS regression) in order to explain the variation in the number of papers published per year, we found an angular coefficient (β) of 0.8 (p-value = 0.002) and a coefficient of determination (R^2) of 75.45%, justifying the intuitively perceived increase of approximately one new publication per year on our research topic, since the growth is eminently linear.

Despite the restrictions on the population size of the analyzed articles, to validate the model, we checked the presence of normality (Shapiro-Wilk test) and homoscedasticity (White test), as well as the absence of omitted variable bias (Ramsey RESET Test), fundamental issues in OLS regression models.

Table 5 - Number of Publications per Year.

Year of Publication	2009	2010	2011	2012	2013	2014	2015	2016	2017	**Total**
Number of Publications	2	0	2	0	2	4	5	6	7	28
Percentage of Publications (%)	7,14	0,00	7,14	0,00	7,14	14,29	17,86	21,43	25,00	100,00

Source: Authors (2017).

Another analysis perspective was grouping by KM practices, based on similar study purposes. We observed a predominance of two fields in the literature, with the concentration of approximately two thirds of the selected articles: Communication and Training, Development and Education (TD&E), both with nine papers each; thus, these are the two major topics of study of KM practices associated with the use of SM.

The next category, with four studies, was Transparency and Access to Information, closely related to the development of mechanisms in public management. The other practices are less frequent, with only Prediction and Monitoring featuring two papers, and the other categories, Technology Adoption, Work Processes, Recruitment, and Decision Making, having one paper each.

Table 6 - Number of Publications per KM Practice.

KM Practices	Number of Publications	Percentage of Publications (%)
Communication	9	32,14
TD&E	9	32,14

Access to Information and Transparency	4	14,29
Forecasting & Monitoring	2	07,14
Technology Adoption	1	03,57
Workplace Processes	1	03,57
Recruitment	1	03,57
Decision Making	1	03,57
Total	28	100,00

Source: Authors (2017).

Confirming our hypothesis, the results showed that the papers were published in high-quality journals, most of them in the Qualis A1 stratum (57%), followed by 29% published in A2 and a smaller number, totaling four papers (14%), in B1. This result, presented in Table 7, shows that there is room for publications of this type in high-impact national journals, which may favor the growth of the field.

Table 7 - Number of Publications per Qualis/Capes Stratum of Evaluation.

Qualis – Capes	Number of Publications	Percentage of Publications (%)
A1	16	57,00
A2	8	29,00
B1	4	14,00
Total	28	100,00

Source: Authors (2017).

In Table 8, there is a greater publication of qualitative papers, a fact related to the practices mentioned above, because both in the Communication and TD&E categories researchers seek to understand particularities of an individual or of certain individuals participating in a group, with the most common analysis technique being French discourse analysis. In contrast, quantitative research has a more descriptive nature, including the more frequent use of descriptive statistics.

Table 8 - Number of Publications per methodological approach.

Methodological Approach	Number of Publications	Percentage of Publications (%)
Qualitative	16	57,00
Quantitative	7	25,00
Mixed	5	18,00
Total	28	100,00

Source: Authors (2017).

Finally, only one analysis perspective had inconclusive trend assessment, categorization by journals. This can be explained by the dispersion of the texts throughout journals, with the 28 selected papers having been published in 23 different publications. The only ones with more than one paper selected were:

Perspectivas em Ciência da Informação (2), *Revista Brasileira de Linguística Aplicada* (2), *Revista da Escola de Enfermagem da USP* (2), *Trabalhos em Linguística Aplicada* (2), and *Transinformação* (2).

Another factor that may impact this is the evident small amount of published papers, since it is a relatively new field of knowledge, still under development. We expect that in the coming years journals will pay greater attention and open their scope to this topic and that new journals dedicated to discuss this subject emerge, as they have in other countries.

4.2 Analysis of Social Media

The order selected to present SM

analysis results will follow the study frequency shown in Table 4, in which Facebook was the most investigated SM, followed by Twitter, Skype, YouTube, WhatsApp, and Instagram. Since LinkedIn was not mentioned in any of the studies within our research scope, it was removed from this section. Finally, Table 9 summarizes the studies with their corresponding CAPES evaluation fields and Qualis quality strata, SM mentioned, organization type described in the papers, category of KM practice found, and methodological approach regarding nature of the variables. The discussions about the papers will then be broken down into new subsections according to SM studied in an explanation aiming to delve deeper into our research problem.

Table 9 - Summary of Results.

Authors (Year)	Capes Evaluation Area	Qualis	SM	Organization	KM Practice	Methodological Approach
Almeida (2016)	Public Administration, and Business, Accounting and Tourism	A2	Facebook	Marketing Managers Group	Communication	Quantitative
Antunes et al. (2014)	Communication and Information	A1	Twitter	Direct t Public Administration	Forecasting & Monitoring	Quantitative
Aragão (2017)	Languages, Literature, and Linguistics	A1	WhatsApp	Research Group	TD&E	Qualitative
Araújo (2014)	Languages, Literature, and Linguistics	A1	Facebook	Research Group	Communication	Quantitative & Qualitative
Arruda, Girão, e Lucena (2015)	Public Administration, and Business, Accounting and Tourism	A2	Facebook, Twitter, YouTube e Instagram	Financial and Capital Markets	Access to Information and Transparency	Quantitative
Ávila et al. (2011)	Interdisciplinary	A2	Skype	Research Group	TD&E	Qualitative
Bastos et al. (2017)	Languages, Literature, and Linguistics	A1	Facebook	Direct Public Administration	Communication	Qualitative
Bernardi et al. (2015)	Communication and Information	A1	Youtube	Indirect Public Administration	Communication	Qualitative
Costa et al. (2011)	Interdisciplinary	A2	Skype	Research Group	TD&E	Quantitative

Donna e Silva (2014)	Public Administration, and Business, Accounting and Tourism	B1	Facebook	Press, Media and Telecommunications Channels	Communication	Qualitative
Estabel Moro e Santarosa (2012)	Communication and Information	A1	Skype	Library	TD&E	Qualitative
Franco e Castanheira (2016)	Languages, Literature, and Linguistics	A1	Facebook	Research Group	TD&E	Qualitative
Kakushi e Évora (2016)	Nursing	A1	Facebook e Twitter	Research Group	TD&E	Quantitative & Qualitative
Klein, Guidi Neto e Tezza (2017)	Teaching	A1	Facebook e Twitter	Direct Public Administration	Forecasting & Monitoring	Quantitative
Martins, Abreu-Rodrigues e Souza (2015)	Interdisciplinary	B1	Facebook	Health Care Group	Communication	Quantitative
Medeiros, Diniz e Arruda (2016)	Communication and Information	A2	Facebook	Political Parties	Access to Information and Transparency	Quantitative & Qualitative
Mesquita et al. (2017)	Nursing	A2	Facebook, Twitter e WhatsApp	Health Care Group	Workplace Processes	Quantitative & Qualitative
Moretti e Barsottini (2017)	Interdisciplinary	B1	Facebook	Health Care Group	Communication	Qualitative
Oliveira e Raminelli (2014)	Law	A1	Facebook	Direct and Indirect Public Administration	Access to Information and Transparency	Qualitative
Osório (2016)	Anthropology / Archeology	A1	Facebook	Animal Adoption Group	Recruitment	Qualitative
Pereira Neto et al. (2015)	Interdisciplinary	A1	Facebook	Health Care Group	Access to Information and Transparency	Qualitative
Prado et al. (2009)	Interdisciplinary	A2	Skype	Research Group	Communication	Qualitative
Rabello (2015)	Languages, Literature, and Linguistics	A1	Facebook	Research Group	TD&E	Qualitative
Retamar (2017)	Languages, Literature, and Linguistics	A1	Facebook	Research Group	TD&E	Qualitative
Salvador et al. (2017)	Interdisciplinary	B1	Youtube	Health Care Group	TD&E	Quantitative & Qualitative

Serra Júnior e Rocha (2013)	Social Service	A1	Facebook, Twitter e YouTube	Social Movements	Communication	Qualitative
Torres, Medeiros e Freitas (2016)	Environmental Sciences	A2	Facebook	Direct Public Administration	Decision Making	Quantitative
Vieira, Baptista e Cerveró (2013)	Communication and Information	A1	Facebook e Twitter	Library	Technology Adoption	Qualitative

Source: Authors (2017).

4.2.1 Facebook

Of the 20 papers that investigate the use of Facebook addressing KM practices, seven are related to Communication processes (Table 5). In the first one, Donna and Silva (2014) take a more qualitative approach at identifying manifestations of organizational symbolism through content analysis on the profiles of members of a newspaper; nevertheless, they conclude that these people have a certain fear of publishing personal and professional content as they believe, since SM is a public space, that they might be watched.

This partly contrasts the conclusion reached by Martins, Abreu-Rodrigues and Souza (2015), who focused on the analysis of Internet usage patterns of patients recovering from bariatric surgery, with Facebook standing out as a source of information for them. The study concludes and suggests that professionals maintain a more active participation in social media, which may favor postoperative follow-up.

Moretti and Barsottini (2017), as well as Martins, Abreu-Rodrigues and Souza (2015), study how SM can be used in health care, monitoring for three months a Facebook support group for people suffering from fibromyalgia. They have reached conclusions: first that, although there is fragility in the protocols, the initiative was successful, and second that it is possible to expanding the idea to other types of group.

Regarding knowledge dissemination, Almeida et al. (2016) quantitatively analyze the impact of different ways of "viralizing" content generated on Facebook pages and conclude that brand managers should "reproduce content produced by engaged individuals" in order to increase sharing and dissemination of their content.

With another objective, Bastos et al. (2017) analyze publications about homophobia on the Brazilian Secretariat for Human Rights Facebook page in a two-year time window to assess the impact of the repercussions and how an official government website takes a stand on the issue at hand.

Still on social contexts in evidence, Serra Junior and Rocha (2013) discuss the mobilization ability and the role of new information tools, such as Facebook. The authors conclude that social movements are independent, although these mechanisms cannot be considered irrelevant. Finally, Araújo (2014) proposes to study the emerging conceptualizations of the interaction process between professors, scholars, and students in a Facebook discussion group. The study concluded that metaphors are used differently by professors and students.

Another recurring topic about Facebook is the possibility of using it as a device that favors Transparency and Access to Information (Table 5), present in four articles. Among them, Oliveira and Raminelli (2014) argue that the Brazilian

Access to Information Law increases transparency in public administration, and thus they investigate the page of the National Council of Justice (CNJ) and find that the law is not fully enforced, although there is good communication with the profiles that interact on the page.

Similarly, Medeiros, Diniz and Arruda (2016) analyze pages of a public body, focusing on posts that spread unethical information. The result is the existence of three elements in the comments of these publications: aggressiveness, ideological grounding, and humor. Unlike the CNJ, which uses interactive processes, this institution mostly uses its pages as message issuing mechanisms.

On the same topic, but delving into another discussion that encompasses the performance of public bodies, Pereira Neto et al. (2015) study the phenomenon of the "informed patient" in several online groups on Facebook, with the Internet and virtual media being used as a source of information that empowers individuals, a fact that causes occasional conflicts with professionals. Nevertheless, the authors conclude that knowledge derived from scientific knowledge and from empowerment are not mutually exclusive.

Finally, Arruda, Girão and Lucena (2015) analyze whether certain SM affect two aspects of the US and Brazilian financial markets, namely: level of information asymmetry, which can effectively be influenced by the use of SM, and the pricing of shares of publicly traded companies, which only suffers significant influence in the Brazilian market through Facebook.

Another topic as frequent as Transparency and Access to Information is the use of Facebook for Training, Development, and Education (TD&E), also studied in four articles. Next, we will present the first two, which addressed studies in higher education and postgraduate studies. Franco and Castanheira (2016), observing the practices of academic and digital literacy

in a group of teachers and students of a specialization course in Language and Technology that uses Facebook as a Virtual Learning Environment, found characteristics of hybrid writing mixing text genres of a scholar nature and typical of the SM.

Kakushi and Évora (2016) carry out a broad survey of studies on how SM are used in the process of teaching and learning in Nursing. A wide range of benefits for professors was reported, such as "the ability to learn through SM, interact with students, network with other professionals, interact and connect without leaving home in times of financial crisis", as well as for students, such as "better interaction with and among students, being able to be used in academic discussions, enabling connection and interaction with a wider audience, helping students explore identity, and enhancing social and cognitive skills ".

The next two studies discuss the use of Facebook in the school environment aimed at foreign language learning in high school. First, focused on the English language, Rabello (2015), based on the socio-historical comprehension of Vygotsky and Bakhtin, observes that Facebook can be used as a potential resource for the participation of students too shy to express themselves publicly. In addition, it also increases the participation, involvement, and interaction of students in general, since it is a space where young people are inserted.

Continuing the discussion, now aimed at Spanish language learning, Retamar (2017) analyzes with a strong theoretical basis the interaction discourse of the students outside school, with a justification similar to Rabello (2015). Both authors emphasize the importance of "taking school" to the typical and common environment in which students are inserted, a facilitating factor for student learning.

The following topics were the least evident in this research, present only in

one paper each. First, Vieira, Baptista and Cerveró (2013) report that the adoption of SM has been observed in scientific studies in Spanish universities since 2005. Given this maturation time, they conduct an exploratory study on Technology Adoption assessing aspects such as "library profile creation, content publishing, user interaction, user content creation, use and style standard creation, and measurement and evaluation of social indicators to support university library managers."

Klein, Guidi Neto and Tezza (2017) assess the possibility of monitoring cases of public health interest using big data applications in SM. The main study hypothesis is in the repercussion that the case reports in the research are correlated to the records of suspected and confirmed cases, i.e., individuals reflect epistemological patterns in their profiles and virtual interactions. Unlike Kakushi and Évora (2016), which address proposals for education, Mesquita et al. (2017), through integrative review, collect cases in which SM were used in Nursing Work Processes. In their paper, Facebook was mentioned as the most used SM, and the main purposes were researching, teaching, and health care. The authors also consider that ethical aspects related to the theme need to be discussed more frequently.

Osório (2017) mentions that Facebook is the most used SM for Recruitment of volunteers for the rescue, care, and referral of abandoned animals for adoption, activities performed by the organization described in the article, while Torres, Medeiros and Freitas (2016) use the free platform of Facebook to integrate a group of managers and stakeholders of a River Basin Committee.

4.2.2 Twitter

The studies by Antunes et al. (2014) and Klein, Guidi Neto and Tezza (2017) address the same topic, not only because they use SM as a mechanism for Prediction and Monitoring, but also because they include dengue fever as a research problem. In the first paper, certain key profiles are monitored as they may point to epidemic clues. The second paper maintains this proposal; however, it addresses other SM besides Twitter, which was nonetheless the SM with the largest number of reports.

Arruda, Girão and Lucena (2015) studied whether several SM influence information asymmetries and the formation of stock prices in the Brazilian and North American capital markets. However, the results associated with Twitter failed to show any evidence of influence of this SM in Access to Information on the capital market. Meanwhile, Vieira, Baptista and Cerveró (2013) found that Spanish university libraries have both Facebook and Twitter accounts and used this to include this SM in their Technology Adoption model. Serra Junior and Rocha (2013), while recognizing the importance of SM such as Twitter and their dissemination in the social environment, believe that the new processes of social movement articulation are independent from them.

In a study with literature review, Mesquita et al. (2017) found articles in which Twitter has several applications in Nursing Work Processes such as recruitment, research, dissemination of information content, and clinical experience, among others. In the same field, but focusing on TD&E practices, Kakushi and Évora (2016) briefly comment that Twitter "presents itself as a quick way of communicating with students; facilitates virtual discussion; encourages social learning with changes in classroom dynamics; facilitates active, interactive, and reflective learning; […] sharing with the teachers and other students". However, the ability to publish texts up to 140 characters is considered a limiting factor.

4.2.3 Skype

Estabel, Moro and Santarosa (2012) intended to understand how the process of appropriation and interaction of people with special needs works in a virtual learning environment, with Skype being used as an auxiliary tool. The authors conclude that the process of appropriation is affected. Costa et al. (2011) investigate whether a certain group of Nursing students are digitally fluent, reaching a positive conclusion, and Skype is the second most used tool for this purpose. In addition, there is high responsiveness to Virtual Learning Environments.

In their research, Ávila et al. (2011) describe their own experience with the use and implementation of virtual tools in university education. Finally, Prado et al. (2009) describe the methodology employed in the communication of a Nursing research group through Skype, enabling its members to exchange files, manage projects, and hold meetings. The authors conclude that, despite practices having been established, there is still great potential to be developed.

4.2.4 YouTube

YouTube was researched as a means of generating knowledge in the following four articles. The first two bring positive results from SM, while the other two show limiting results. First, Salvador et al. (2017) describe how patient safety is delivered in videos posted on YouTube. This practice can have implications on the formation process of students and professionals, as well as on the awareness of the general public watching the videos. Meanwhile, the focus of the study by Bernardi et al. (2015) is presenting and evaluating the results achieved by the communication activities of Embrapa's Precision Agriculture Network. The authors conclude that the means of dissemination used, such as YouTube, are efficient.

From another perspective, in the research conducted by Arruda, Girão and Lucena (2015), YouTube cannot be considered an influential SM in informational asymmetry, as well as in the pricing of shares of both the Brazilian and the US capital markets. Finally, in the study by Klein, Guidi Neto and Tezza (2017) to predict and monitor cases of dengue, chikungunya and Zika, YouTube was the SM with the least amount of messages on epidemics (0.05% of the total); therefore, it cannot be considered to assist in the predictions and monitoring aimed by the study.

4.2.5 WhatsApp

More recent papers such as Aragão (2017) and Mesquita et al. (2017) have approached WhatsApp as an SM that can collaborate with KM. The first paper is inserted in an educational organization context, classified within the TD&E category (Table 5), and reports a study with similar results to Rabello (2015) with Facebook since it also shows WhatsApp as a tool that provides effective increase in student participation and communication. On the other hand, other groups had difficulty expressing themselves through audio recorded by the app. The authors of the second study mentioned that "this tool provides the use of a virtual space for collaborative practice and information sharing", which are considered two practices strictly related to the management of organizational knowledge.

4.2.6 Instagram

The only paper that featured Instagram as a research object was the one by Klein, Guidi Neto and Tezza (2017), in which it obtained less than 2% of all messages collected to compose a Prediction and Monitoring mechanism for certain epidemic agents such as dengue, chikungunya and Zika, with no impact on the end result.

5 Conclusions

This study has shown several trends, according to our interpretation of the data. The first one is the relatively poor representation of KM practice research in SM literature. The second is the concentration of articles published in the following CAPES evaluation fields: Interdisciplinary; Languages, Literature and Linguistics; Communication and Information; Public Administration, Business, Accounting and Tourism; and Nursing. The third is that most studies use Facebook as their research object. The fourth expresses an increase in the number of publications over time (growth trend of the researched field). The fifth shows that the KM practices involved in SM that are the target of scientific research refer to Communication; Training, Development and Education (TD&E); Transparency and Access to Information, and Prediction and Monitoring. The sixth is the high level of quality of the journals in which these papers are being published. The last trend shows the major use of research with qualitative variables rather than quantitative approaches.

We conclude that there is a large open field for publications in KM and SM. After all, new methods of knowledge sharing emerge frequently, and everyday virtualization processes are an example. Based on our results, the management field is yet to occupy much more space on the Internet, while other fields are already involved and acting strongly, as seen in Nursing and Languages.

Future research options include deepening our research based on internationalization of the same question, aiming to broaden the scope to articles in English present in databases and repositories such as Web of Science, Science Direct, Scopus, and IEEE, among others. The empirical assessment of the implications of SM on KM is another possibility. Another suggestion refers to the implications of the results presented by this study, which can be a basis for creating an analytical tool applicable to organizations that aims to assess and measure the maturity level of the KM practices described in our analysis chapter (Table 6 and Table 9).

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