BOBCATSSS 2019

**Information and technology transforming lives: connection, interaction, innovation**

# PROCEEDINGS

JOSIP JURAJ STROSSMAYER UNIVERSITY OF OSIJEK
FACULTY OF HUMANITIES AND SOCIAL SCIENCES

UPPSALA UNIVERSITET

Linnæus University

THE HAGUE UNIVERSITY OF APPLIED SCIENCES

# THE PRESENCE OF RESEARCHERS AND PROFESSORS OF P. PORTO IN DIGITAL PLATFORMS

Susana Martins
Associate Professor, Department of Information Systems - Porto Accounting and Business School - Polytechnic Institute of Porto, Matosinhos, Portugal
susanamartins@iscap.ipp.pt

Milena Carvalho
Associate Professor, Department of Information Systems - Porto Accounting and Business School - Polytechnic Institute of Porto, Matosinhos, Portugal

## Abstract

*Digital platforms are now an indispensable tool for the vast majority of the working population, the same is true for higher education teachers and researchers. In fact, they currently use a variety of digital platforms with the aim of resorting to repositories and platforms that can go further, offering features that allow peer collaboration and enhance digital communication and its presence and its institutions in the virtual world. The proposed communication focuses on a study aimed at characterizing the presence of the Porto Politécnico faculty on some of these platforms (Linkedin, Research Gate, Academic, Academic and Mendeley), taking into account the differences between them, which required the use of different search criteria. This communication presents itself as original in that it intends to make known how the teachers and researchers of P. Porto use these platforms. It was found that of the P.Porto universe, only researchers and teachers of 3 schools have a more marked presence in these platforms, so the present study allows the different schools of P. Porto to better manage and increase the presence and visibility of their teachers and researchers in these platforms, creating policies that stimulate their use and, thus, enhancing the dissemination of the research they develop as well as the image of the organization, through the improvement of the communication and digital marketing aspects.*

**Keywords:** altmetrics; informational behavior; digital communication; digital platforms

## The background and purpose of the study

The society in which we live is commonly referred to as the "Information Society"[2], closely related to the development of information and communication technologies, where large amounts of information are produced and transmitted, which defines and / or influences most human activities. Effectively, the way communicative processes transform themselves, influence how socialization takes place, how knowledge is produced and communicated, and the ways in which messages are appropriated intellectually. For this article, we understand the communication of science as that made available by Wenninger, Weingart and Wormer (2017, p. 20) "In a broader sense, science communication encompasses all forms of communication by and about the sciences, within audience as well as in the science-external public sphere (general audience)". The public should be an integral part of the scientific process (Public Engagement with Science and Technology) and the science channels can provide scientific communication in several formats[3]. Technological innovations promote new possibilities of communication, since "the way people act and interact (with each other and with the environment) is always modified with the arrival of technological innovations" (Ehrenberg and Souza, 2012, p. 33). The fact is that with the advancement and democratization of the Internet it has enabled the individual to create a new way of communicating and acquiring knowledge, influencing their info communication behaviour in the search and use of information as well as innovative socio-technical relations (Costa, Silva and Ramalho, 2014). In higher education institutions, the adherence of teachers and researchers to these digital platforms has brought about a change of behaviour, caused using tools that enable individuals to create an identity and an online professional profile, favouring the creation of a presence in the web (Donelan, 2015; Morais et al., 2014). In Portugal, great majority of the researchers are also teaching at higher education and, for this reason, they develop research and naturally publish their results to create relationships with peers, get feedback on their research. If some researchers assume their presence quite actively on these platforms, others still show some reluctance to use them (Lupton, 2014 cited by Persson and Svenningsson, 2016)[4].

2 See Toffler´s book "The Third Wave" (1989) and Zurkowski´s "The Information Service Environment Relationships and Priorities: report 5 (1974)

3 Specialized books, channels like youtube, blogs, science centres, lectures and discussions and other formats free of the influence of sponsors, educational projects of research institutions and their public relations departments and journalistic reporting by the mass media also play an important role.

4 Other authors such as Scott, 2013, Wilkinson & Weitkamp, 2013 identify the trend in the United States and the United Kingdom that both universities and funding agencies consider of great importance for the promotion and explanation of research for the public.

Several investigations, in particular those conducted by Bik and Goldstein (2013), Liang et al. (2014), Lupton (2014), Van Noorden (2014) cited by Persson and Svenningsson (2016) indicate that social networks present a high potential for researchers because on one hand they help them to keep up to date in the face of new developments in their field of action, on the other hand, are strong allies for the dissemination of their own research, managing to reach a wider audience and increase their visibility and the impact of their work. Effectively, Liang et al. (2014, p. 776) state that “being cited or mentioned on Twitter may be a new sign of a person’s academic impact”. Persson and Svenningsson (2016) consider the time invested in social networks to be beneficial, since they are a good strategy that will give rise to a return on investment in research. However, they consider a constant updating since these communication channels are constantly in motion and, therefore, it is necessary to use marketing strategies, not only to know the behaviour of the target audience, but for their loyalty. The definition of strategy involves the creation of information and technology policies and the use of scientific marketing, which for Araújo (2015) can be considered a form of marketing that helps to leverage market growth of scientific products. According to Bizzocchi (2002, cited by Araújo, 2015), the basic principle to be adopted by scientific marketing is that knowledge, especially the discourse that contains it, is a product like any other, if it is established as the target of this product, the public and not just the specialized one[5].

The measurement of the impact of the dissemination of science through social networks is done using the so-called alternative metrics, which are believed to be more democratic than the traditional metrics that according to Vanti and Sanz-Casado (2016) in the ways of measuring information and scientific communication and the use of social networks as communication channels of science. These are alternative metrics that are characterized by the creation and study of new indicators based on Web 2.0, to analyse scientific and academic activities or to explore the properties of measurements based on social networks[6].

5 In this way, Carvalho (2003) presents the use of marketing, in the scientific and digital context, in particular of web 2.0, to “consolidate, sell and design a good image of science and its products (companies, scientists and institutions), and thus stimulate confidence and investment in research”.

6 Vanti & Sanz-Casado INSERIR TITULO DO TRABALHO (2016, p.353) state the three main groups that make up the alternative metrics.

## Details of the methods, procedures or instruments used

In this article we intend to identify the presence of the teachers of P. Porto[7] in some of the scientific social networks currently available, namely in Google Scholar, ResearchGate, Academia.edu and Mendeley. The data collection took place in March 2018 and was based on the information available through each platform (Google Scholar: H Index, i10 Index, Number of citations and Publications; ResearchGate: Views, Quotations, Co-authors and Publications; Academia.edu: Mendeley: Index H, Co-authors, Quotations, and Publications). Information was collected on up to four authors, and on certain platforms, there are only two authors associated with P.Porto's schools. Digital information processing was performed through Microsoft Excel software, which allowed for the introduction of the data to facilitate an effective analysis of the collected data.

## Findings, discussion and conclusions

Regarding the data collected about ISCAP (Table 1), we can see that, in general terms, most of publications are in Google Scholar, and we believe that the reason for that is because it is the oldest platform available focused on the availability of research and academic papers, since 2006, whereas the other platforms are from the year 2008. Another interesting factor that we believe influenced these numbers, is the fact that it presents some conventional metrics that are of interest for researchers.

*Table 1*. ISCAP. Data collected

| Google Scholar | | Research Gate | | Academia | | Mendeley | |
|---|---|---|---|---|---|---|---|
| H Index | | **Visualizations** | | **Visualizations** | | **H Index** | |
| Author A | 11 | Author A | 3618 | Author A | 24683 | Author A | 4 |
| Author B | 6 | Author B | 698 | Author B | 4451 | Author B | 2 |
| Author C | 8 | Author C | 3602 | Author C | 2743 | Author C | 1 |
| Author D | 7 | Author D | 202 | Author D | 16341 | Author D | 1 |

[7] The Polytechnic Institute of Porto was founded in 1985, having initially integrated the Superior Schools of Education (ESE) and Superior of Music (ESMAE). In 1988, the Institute of Accounting and Administration of Porto (ISCAP) and the Institute of Engineering of Porto (ISEP) were integrated, and two years later, in 1990, the School of Industrial Studies and Management (ESEIG) was created. In 1999 the Higher School of Technology and Management (ESTG) was created and in 2004 it was given in the universe of the Polytechnic of Porto of the School of Health (ESS). In 2016, because of the strategic repositioning of P. Porto, ESEIG is extinguished and campus 2 now hosts the School of Arts and Design (ESMAD) and the School of Hospitality and Tourism (ESHT).

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| i10 Index | | **Co-Authors** | | **Co-Authors** | | **Co-Authors** | |
| Author A | 13 | Author A | 15 | Author A | 2 | Author A | 16 |
| Author B | 4 | Author B | 2 | Author B | 2 | Author B | 11 |
| Author C | 6 | Author C | 45 | Author C | 0 | Author C | 3 |
| Author D | 6 | Author D | 11 | Author D | 18 | Author D | 6 |
| Citations | | **Citations** | | NA | | Citations | |
| Author A | 360 | Author A | 78 | | | Author A | 48 |
| Author B | 350 | Author B | 43 | | | Author B | 14 |
| Author C | 222 | Author C | 87 | | | Author C | 1 |
| Author D | 211 | Author D | 68 | | | Author D | 4 |
| Publications | | **Publications** | | **Publications** | | **Publications** | |
| Author A | 91 | Author A | 45 | Author A | 12 | Author A | 165 |
| Author B | 25 | Author B | 84 | Author B | 14 | Author B | 11 |
| Author C | 68 | Author C | 109 | Author C | 1 | Author C | 2 |
| Author D | 75 | Author D | 17 | Author D | 73 | Author D | 15 |

This marked presence has a positive impact on the amount of citations the papers receive. The second most widely used platform is ResearchGate. In this platform the visualization of the profiles of the authors presents considerable numbers. The Academia, although little used for making publications available, is a platform that has higher profile view numbers than ResearchGate. Mendeley is incipient to use and although Author A has 165 publications uploaded on this platform, the others do not exceed 15. Co-authoring data indicate that this is a relatively common practice, which turns out to be multi- and interdisciplinary and integrator of this polytechnic school.

*Table 2.* ESE. Data collected

| Google Scholar | | Research Gate | | Academia | | Mendeley | |
|---|---|---|---|---|---|---|---|
| H Index | | **Visualizations** | | Visualizations | | H Index | |
| Author A | 8 | Author A | 3544 | Author A | 94 | Author A | 1 |
| Author B | 9 | Author B | 415 | Author B | 564 | Author B | 2 |
| Author C | 7 | Author C | 1962 | Author C | 37 | Author C | 2 |
| Author D | 5 | Author D | 1912 | | | Author D | 1 |
| i10 Index | | **Co-Authors** | | Co-Authors | | Co-Authors | |
| Author A | 7 | Author A | 33 | Author A | 1 | Author A | 29 |
| Author B | 8 | Author B | 11 | Author B | 7 | Author B | 17 |
| Author C | 4 | Author C | 30 | Author C | 0 | Author C | 40 |
| Author D | 4 | Author D | 28 | | | Author D | 9 |
| Citations | | **Citations** | | **NA** | | Citations | |
| Author A | 503 | Author A | 73 | | | Author A | 3 |
| Author B | 282 | Author B | 78 | | | Author B | 43 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Author C | 227 | Author C | 95 | | | Author C | 16 |
| Author D | 146 | Author D | 105 | | | Author D | 15 |
| Publications | | **Publications** | | **Publications** | | Publications | |
| Author A | 19 | Author A | 76 | Author A | 2 | Author A | 29 |
| Author B | 29 | Author B | 12 | Author B | 16 | Author B | 11 |
| Author C | 33 | Author C | 31 | Author C | 0 | Author C | 15 |
| Author D | 23 | Author D | 25 | | | Author D | 2 |

This School of P.Porto (Table 2) uses more ResearchGate as a way of disseminating the publications, however presents a greater number of quotations from Google Scholar, indicating that this will be the platform most used by those who search , and that goes against what is the common and ingrained idea. The Mendeley is little used and the academy presents a very incipient use in this school. The highest h index is 9 and the i10 is 8.

*Table 3.* ESTG. Data collected

| Google Scholar | | Research Gate | | Academia | |
|---|---|---|---|---|---|
| H Index | | Visualizations | | Visualizations | |
| Author A | 9 | Author A | 3547 | Author A | 1319 |
| Author B | 5 | Author B | 1009 | Author B | 85 |
| Author C | 7 | Author C | 3503 | Author C | 702 |
| Author D | 6 | Author D | 2114 | Author D | 502 |
| i10 Index | | **Co-Authors** | | **Co-Authors** | |
| Author A | 8 | Author A | 38 | Author A | 6 |
| Author B | 3 | Author B | 27 | Author B | 1 |
| Author C | 6 | Author C | 23 | Author C | 0 |
| Author D | 3 | Author D | 21 | Author D | 0 |
| Citations | | Citations | | NA | |
| **Author A** | 252 | Author A | 92 | | |
| **Author B** | 248 | Author B | 63 | | |
| **Author C** | 226 | Author C | 24 | | |
| **Author D** | 107 | Author D | 24 | | |
| Publications | | **Publications** | | **Publications** | |
| Author A | 50 | Author A | 46 | Author A | 20 |
| Author B | 20 | Author B | 31 | Author B | 11 |
| Author C | 41 | Author C | 34 | Author C | 0 |
| Author D | 46 | Author D | 26 | Author D | 0 |

Regarding the presence of researchers of this school of P.Porto (Table 3), in Mendeley there were no indications that it exists. This school, among the schools of P.Porto is a multidisciplinary polytechnic school because it covers different areas but that work in a complementary way different situations. Although Google

Scholar is the most widely used platform, ResearchGate presents similar values at the level of publications. However, the citations values obtained are much higher from Google Scholar, something that can be explained by what was referred to earlier. Regarding the profile visualization, ResearchGate remains the most consulted platform when compared to the Academy, this can be explained by the incipient presence of researchers of this school in this platform, having only been identified two researchers and with few publications inserted in the system. With respect to ICAP and ESE, this organic unit of P. Porto has interesting values of H-index and I-10, and this can be justified by the focus on teaching and research in engineering, technology and business sciences.

*Table 4.* ESMAE. Data collected

| Google Scholar | | Research Gate | | Academia | |
|---|---|---|---|---|---|
| H Index | | **Visualizations** | | **Visualizations** | |
| Author A | 5 | Author A | 2042 | Author A | 80 |
| Author B | 4 | Author B | 95 | Author B | 80 |
| Author C | 1 | Author C | 63 | Author C | 30 |
| Author D | 0 | Author D | 437 | Author D | 31 |
| i10 Index | | **Co-Authors** | | **Co-Authors** | |
| Author A | 2 | Author A | 36 | Author A | 2 |
| Author B | 2 | Author B | 3 | Author B | 3 |
| Author C | 0 | Author C | 2 | Author C | 1 |
| Author D | 0 | Author D | 4 | Author D | 2 |
| Citations | | **Citations** | | **NA** | |
| Author A | 179 | Author A | 93 | | |
| Author B | 55 | Author B | 0 | | |
| Author C | 5 | Author C | 0 | | |
| Author D | 0 | Author D | 5 | | |
| Publications | | **Publications** | | **Publications** | |
| Author A | 37 | Author A | 25 | Author A | 12 |
| Author B | 12 | Author B | 5 | Author B | 8 |
| Author C | 6 | Author C | 1 | Author C | 7 |
| Author D | 0 | Author D | 5 | Author D | 3 |

As to the presence of ESMAE investigators at Mendeley, no evidence has been found that it exists. About the data collected on this school in the other networks analysed (Table 4), there is a reduced presence in these social networks, being among the analysed, Google Scholar the most used platform / network, being of course, the one with the highest number of citations. The second most popular social network is ResearchGate, although it is expected to have a smaller impact than Google Scholar at the citation level. However, the profiles of the teachers end up presenting some relevant data regarding their visualization. In this respect, the academy has more homogeneous values than ResearchGate, which features an author with 2042 profile views and other authors with 63 and 95 views. Being an arts school the presence and use of platforms of this nature does not seem to be a top priority for this scientific community, and even the traditional citations and metrics obtained from Google Scholar show that. We believe that this behaviour towards these networks will be consequence of the nature of the scientific area.

*Table 5*. ISEP. Data collected

| Google Scholar | | Research Gate | | Academia | | Mendeley | |
|---|---|---|---|---|---|---|---|
| H Index | | **Visualizations** | | **Visualizations** | | **H Index** | |
| **Author A** | 55 | Author A | 14941 | Author A | 485 | Author A | 29 |
| Author B | 37 | Author B | 6617 | Author B | 699 | Author B | 40 |
| Author C | 82 | Author C | 28218 | Author C | 1659 | Author C | 25 |
| Author D | 30 | Author D | 14178 | Author D | 376 | Author D | 14 |
| | | | | | | | |
| | | | | | | | |
| i10 Index | | **Co-Authors** | | **Co-Authors** | | **Co-Authors** | |
| Author A | 314 | Author A | 30 | Author A | 12 | Author A | 202 |
| Author B | 129 | Author B | 52 | Author B | 6 | Author B | 196 |
| Author C | 82 | Author C | 49 | Author C | 51 | Author C | 172 |
| Author D | 61 | Author D | 36 | Author D | 6 | Author D | 230 |
| | | | | | | | |
| Citations | | **Citations** | | **NA** | | Citations | |
| Author A | 15863 | Author A | 4560 | | | Author A | 3885 |
| Author B | 6382 | Author B | 10829 | | | Author B | 7922 |
| Author C | 4141 | Author C | 5502 | | | Author C | 1650 |
| Author D | 3976 | Author D | 1227 | | | Author D | 772 |
| | | | | | | | |
| Publications | | **Publications** | | **Publications** | | **Publications** | |
| Author A | 1062 | Author A | 538 | Author A | 77 | Author A | 451 |
| Author B | 628 | Author B | 743 | Author B | 66 | Author B | 347 |
| Author C | 276 | Author C | 385 | Author C | 175 | Author C | 116 |
| Author D | 144 | Author D | 239 | Author D | 44 | Author D | 144 |

According to the data in Table 5, this is the P.Porto school with the strongest presence in all social networks at the level of publications and, consequently, at the level of the other items analysed. It is also the one with the highest indexes for viewing profiles and traditional metrics such as the H index with a value of 82 in Google Scholar and 40 in the Mendeley and the i10 index of 314. This is an engineering school, an area where profusion of publications is high, we believe to be because of the advances inherent in the research conducted. The fact that these data are overwhelming in relation to other schools seems to indicate that there is a definite policy regarding the dissemination of scientific production on social networks. In fact, several initiatives were effectively developed in ISEP to train teachers and researchers in the writing of scientific articles and in the use of social networks to promote professional success.

*Table 6*. ESS. Data collected

| Google Scholar | | Research Gate | | Academia | |
|---|---|---|---|---|---|
| H Index | | **Visualizations** | | **Visualizations** | |
| Author A | 5 | Author A | 3544 | Author A | 71 |
| Author B | 4 | Author B | 415 | Author B | 18 |
| Author C | 1 | Author C | 1962 | Author C | 199 |
| Author D | 0 | Author D | 1912 | Author D | 564 |
| i10 Index | | **Co-Authors** | | Co-Authors | |
| Author A | 2 | Author A | 33 | Author A | 0 |
| Author B | 2 | Author B | 11 | Author B | 0 |
| Author C | 0 | Author C | 30 | Author C | 0 |
| Author D | 0 | Author D | 28 | Author D | 7 |
| Citations | | **Citations** | | **NA** | |
| **Author A** | 179 | Author A | 73 | | |
| **Author B** | 55 | Author B | 78 | | |
| **Author C** | 5 | Author C | 95 | | |
| **Author D** | 0 | Author D | 105 | | |
| Publications | | **Publication** | | Publications | |
| Author A | 37 | Author A | 76 | Author A | 2 |
| Author B | 12 | Author B | 12 | Author B | 1 |
| Author C | 6 | Author C | 31 | Author C | 41 |
| Author D | 0 | Author D | 25 | Author D | 16 |

Regarding the presence of ESS researchers at Mendeley, no evidence was found that it exists. About the use of the other networks, this being a health school, an area where there is a great profusion of research and dissemination of scientific knowledge, the data falls short of what would be expected. Of all the networks used, the one with a more marked presence of ESS researchers is ResearchGate, the social network where there are more publications, more co-authoring data and more profile views. The number of citations is more homogeneously distributed than the citation data collected from Google Scholar. This is the second platform most used by researchers and teachers of this school of P.Porto. The traditional metrics provided by Google Scholar are low, considering the scientific area to which they refer. Academia appears to be a network that has attracted the interest of some researchers since there is evidence that it is used to make publications available to some of the researchers and to view and query their profiles.

*Table 7*. ESHT. Data collected

| Google Scholar | | Research Gate | | Academia | |
|---|---|---|---|---|---|
| H Index | | **Visualizations** | | **Visualizations** | |
| Author A | 11 | Author A | 512 | Author A | 93 |
| Author B | 10 | Author B | 510 | Author B | 1658 |
| Author C | 4 | Author C | 7995 | Author C | 543 |
| Author D | 8 | Author D | 911 | Author D | 500 |
| i10 Index | | **Co-Authors** | | **Co-Authors** | |
| **Author A** | 13 | Author A | 6 | Author A | 4 |
| Author B | 10 | Author B | 12 | Author B | 3 |
| Author C | 1 | Author C | 17 | Author C | 0 |
| Author D | 5 | Author D | 14 | Author D | 0 |
| Citations | | **Citations** | | **NA** | |
| **Author A** | 709 | Author A | 4 | | |
| **Author B** | 199 | Author B | 13 | | |
| **Author C** | 70 | Author C | 39 | | |
| **Author D** | 183 | Author D | 182 | | |
| Publications | | **Publications** | | **Publications** | |
| **Author A** | 27 | Author A | 6 | Author A | 1 |
| Author B | 98 | Author B | 27 | Author B | 16 |
| Author C | 62 | Author C | 46 | Author C | 2 |
| Author D | 41 | Author D | 75 | Author D | 5 |

As for ESHT (Table 7), this school also has no presence at Mendeley. This school has a larger number of publications and citations in Google Scholar. The H and i10 indices are respectively 11 and 13. Researchers also use ResearchGate, albeit less frequently. On this platform co-authors are identified, and it is possible to verify that teacher profiles are visualized, although there is a great discrepancy between the most visualized profile and the remaining three.

*Table 8*. ESMAD. Data collected

| Google Scholar | | Research Gate | | Academia | |
|---|---|---|---|---|---|
| H Index | | **Visualizations** | | **Visualizations** | |
| Author A | 5 | Author A | 310 | Author A | 23 |
| Author B | 1 | Author B | 597 | Author B | 38 |
| Author C | 1 | Author C | 2518 | Author C | 40 |
| Author D | 4 | Author D | 1604 | Author D | 38 |

| | | | | | |
|---|---|---|---|---|---|
| i10 Index | | **Co-Authors** | | **Co-Authors** | |
| Author A | 2 | Author A | 2 | Author A | 0 |
| Author B | 0 | Author B | 2 | Author B | 0 |
| Author C | 1 | Author C | 9 | Author C | 0 |
| Author D | 3 | Author D | 12 | Author D | 0 |
| Citations | | **Citations** | | **NA** | |
| Author A | 82 | Author A | 38 | | |
| **Author B** | 1 | Author B | 38 | | |
| **Author C** | 63 | Author C | 293 | | |
| **Author D** | 48 | Author D | 38 | | |
| Publications | | **Publications** | | **Publications** | |
| Author A | 28 | Author A | 10 | Author A | 0 |
| Author B | 9 | Author B | 25 | Author B | 0 |
| Author C | 18 | Author C | 85 | Author C | 4 |
| Author D | 16 | Author D | 20 | Author D | 2 |

As for ESMAD (Table 8), there is no presence in Mendeley either. This school has a greater presence in ResearchGate, both at the level of publications and citations received. Google Scholar is the second most used network and has the highest H index 5 and i10 Index 3. The Academy is little used at the publications level, no co-authors are identified on this platform and the views are reduced in number.

As general conclusions we can mention that the use of social networks for scientific dissemination is a way of democratizing access to scientific advances, reaching more people and promoting the visibility of researchers and the work they do. It seems to be essential that in order for these networks to be used in an efficient, structured and formal way, it is necessary for the various organizational units to create the conditions for this, through the promotion of training actions directed both at the writing of scientific documents and scientific articles, but also how researchers can use these networks to promote their work, networking among peers and between institutions, and to enhance the visibility and impact of their scientific research. Another aspect that can influence the use of these social networks is the (over) burden that teachers and researchers can experience. The P.Porto presents quite different results among the various schools that compose it, so it seems necessary to define a uniform information policy to be emanated by the institution's maximum body. Through the definition of this policy it would be necessary to identify the available resources, material and immaterial, as well as the social networks to be used and how they should be used.

## References

Academia.edu. (s.d.) About. Retrieved from https://www.academia.edu/about

Araújo, R. F. (2015). Scientific digital marketing and altmetrics for academic journals: from visibility to engagement. *Perspectivas em Ciência da Informação*, *20*(3), 67–84. doi: 10.1590/1981-5344/2402

Azevedo, J., & Moutinho, N. (2014). A comunicação de ciência em plataformas digitais: As implicações da cultura participativa e da convergência tecnológica. Retrieved from http://repositorio-aberto.up.pt/handle/10216/115190

Barbour, K., & Marshall, D. (2012). The academic online: Constructing persona through the World Wide Web. *First Monday*, *0*(0). doi: 10.5210/fm.v0i0.3969

Barros, A. M. (2014). Redes sociais para pesquisadores e acadêmicos. Retrieved from https://bsf.org.br/2014/02/27/redes-sociais-para-pesquisadores-e-academicos/

Barros, M. (2015). Altmetrics: alternative metrics of scientific impact based on social media. *Perspectivas em Ciência da Informação*, *20*(2), 19–37. doi: 10.1590/1981-5344/1782

Breland, J. Y., Quintiliani, L. M., Schneider, K. L., May, C. N., & Pagoto, S. (2017). Social Media as a Tool to Increase the Impact of Public Health Research. *American Journal of Public Health*, *107*(12), 1890–1891. doi: 10.2105/AJPH.2017.304098

Chung, A. Q. H., Andreev, P., Benyoucef, M., Duane, A., & O'Reilly, P. (2017). Managing an organisation's social media presence: An empirical stages of growth model. *International Journal of Information Management*, *37*(1, Part A), 1405–1417. doi: 10.1016/j.ijinfomgt.2016.10.003

Cintra, F. C. (2010). Marketing digital: a era da tecnologia on-line. *Investigação*, (10) 1, 6-12.

Costa, L. F., Silva, A. C. P., Ramalho, F. A. (2014). Comportamento infocomunicacional. *Da informação à auditoria de conhecimento para a inteligência organizacional*. João Pessoa: Editora UFPB.

Davies, J., & Merchant, G. (2007). Looking from the inside out: academic blogging as new literacy. *A new literacies sampler* (pp. 167-197). New York: Peter Lang.

Donelan, H. (2015). Social media for professional development and networking opportunities in academia. *Journal of Further and Higher Education*, 40(5), 1-24.

Ehrenberg, K. C., Souza, R. F. (2012). Comunicação mercadológica em mídias digitais e o consumidor internauta. *Acta Científica*, (21), 33-44. Retrieved from http://revistas.unasp.edu.br/actacientifica/article/view/363.

Elsevier. (s.d.). Reference Manager and Academic Social Network - Mendeley Database Elsevier Solutions. (sem data). Retrieved from https://www.elsevier.com/solutions/mendeley

Firpo, D., Kasemvilas, S., Ractham, P., & Zhang, X. (2010). Constructing a Sense of Community in a Graduate Educational Setting using a Web 2.0 Environment. *Technologies and Practices for Constructing Knowledge in Online Environments: Advancements in Learning* (pp. 46-84). Hershey, PA : Information Science Reference

Fraumann, G. (2017). *Discussing indicators in research funding: What role do altmetrics play?* (2017, Dezembro 15). Retrieved from https://era.ideasoneurope.eu/2017/12/15/discussing-indicators-research-funding-role-altmetrics-play/

Hernandez Barros, R. (2014, Maio 18). *Academic networks contest: ResearchGate vs. Academia vs. Mendeley.* Retrieved from https://howtopublishinjournals.com/2014/05/18/academic-networks-contest-researchgate-vs-academia-vs-mendeley/

Holliman, R. (2008). Communicating science in the digital age - issues and prospects for public engagement. Em *Readings for technical communication* (pp. 68–76). Canadá: Oxford University Press. Retrieved from https://www.researchgate.net/publication/42796855_Communicating_science_in_the_digital_age_-_issues_and_prospects_for_public_engagement

Jesus, D. L., Cunha, M. B. (2012). Produtos e serviços da Web 2.0 no setor de referência das bibliotecas. *Perspectivas em Ciência da Informação*, (17) 1, 110-133.

Kjellberg S. (2010). I am a blogging researcher: Motivations for blogging in a scholarly context. *First Monday First Monday*, *15*(8).

Liang, X., Yi-Fan Su, L., K. Yeo, S., A. Scheufele, D., Brossard, D., Xenos, M.,… A. Corley, E. (2014). Building buzz: (Scientists) Communicating science in new media environments. *Journalism & Mass Communication Quarterly*, 91(4), 772–791. doi: 10.1177/1077699014550092

Lobo Antunes, J., Sanchez, A., & Granado, A. (2014). *Redes Sociais para Cientistas*.

Martins, D. (2016). Redes sociais acadêmicas: as condições de existência na área das ciências da comunicação no Brasil. *Revista FAMECOS*, *23*(3), 23391. doi: 10.15448/1980-3729.2016.3.23391

Mendeley (s.d.). Connect & Network with Researchers Worldwide. Retrieved from https://www.mendeley.com/research-network/community

Morais, N.; Pombo, L.; Batista, J.; Moreira, A.; Ramos, F.. 2014. Uma Revisão de Literatura Sobre o Uso das Tecnologias da Comunicação no Ensino Superior: A Literature Review of the Use of Communication Technologies in Higher Education, *Prisma*, 24, 162 - 185.

Persson, S., & Svenningsson, M. (2016). Librarians as Advocates of Social Media for Researchers: A Social Media Project Initiated by Linköping University Library, Sweden. *New Review of Academic Librarianship*, *22*(2/3), 304–314. doi: 10.1080/13614533.2016.1184693

Pitrelli, N. (2017). Big data and digital methods in science communication research: opportunities, challenges and limits. *Journal of Science Communication*, *16*(2), C01. Retrieved from https://doi.org/10.22323/2.16020301

Piwowar, H. (2013). Altmetrics: Value all research products. *Nature*, *493*, 159. doi: 10.1038/493159a

Rambukkana, N. (2016). *Hashtag publics: the power and politics of discursive networks*. New York: Peter Lang.

Ribeiro, R. A., Cordeiro, C., & Oliveira, L. (2015). As redes sociais acadêmicas e científicas como mecanismos de visibilidade e internacionalização da produção científica brasileira e portuguesa na área de Biblioteconomia e Ciência da Informação – análise da presença na Rede Social ResearchGate. *Actas do Congresso Nacional de Bibliotecários, Arquivistas e Documentalistas*, *0*(12). Retrieved from https://www.bad.pt/publicacoes/index.php/congressosbad/article/view/1396

Ribeiro, R. A., Oliveira, L., & Furtado, C. (2017). A rede social acadêmica researchgate como mecanismo de visibilidade e internacionalização da produção científica brasileira e portuguesa na área de Biblioteconomia e Ciência da Informação. *Perspectivas em Ciência da Informação*, *22*(4), 177–207. doi: 10.1590/1981-5344/2937

Ribeiro, R., Furtado, C., & Oliveira, L. (sem data). As redes sociais acadêmicas e científicas como mecanismos de visibilidade e internacionalização da produção científica brasileira e portuguesa na área de Biblioteconomia e Ciência da Informação – análise da presença na Rede Social ResearchGate, 19.

Sanchez, A., Granado, A., & Antunes, J. L. (sem data). Redes sociais para cientistas, 56.

Sedighi, M. (//15). The Role of Social Media in Assessing the Impact of Research (Case Study: The Field of Scientometrics). *Iranian Journal of Information Processing and Management*, 653–653.

Tajudeen, F. P., Jaafar, N. I., & Ainin, S. (2018). Understanding the impact of social media usage among organizations. *Information & Management*, *55*(3), 308–321. doi: 10.1016/j.im.2017.08.004

Van Eperen, L., & Marincola, F. M. (2011). How scientists use social media to communicate their research. *Journal of Translational Medicine*, *9*, 199. doi: 10.1186/1479-5876-9-199

Vanti, N., Sanz-Casado, E. (2016). Altmetrics: Social media metrics for a more democratic Science. *Transinformação*, *28*(3), 349–358. doi: 10.1590/2318-08892016000300009

Wenninger, A., Weingart, P., & Wormer, H. (Eds.). (2017). *Social Media and Digital Science Communication: Analysis and Recommendations for Dealing with Risks and Opportunities in a Democracy*. München: acatech – National Academy of Science and Engineering.