

# Comparative Analysis of the Presence of University Professors from Southern Ecuador in Scientific Social Networks

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**Abstract.** Scientific social networks such as ResearchGate, Academia.edu, and the Google Scholar platform, have become a tool to make the work of researcher-professors visible, measure the impact of their publications, and interact with other researchers. Hence the need to analyze the presence in scientific social networks of the Faculties of Social Sciences and Socio-Humanistic Area of the universities belonging to Zone 7 of southern Ecuador, Universidad Técnica Particular de Loja (UTPL), Universidad Técnica de Machala (UTMACH) and Universidad Nacional de Loja (UNL). The interaction with professors, the RS Score index in ResearchGate, the h index in Google Scholar, and the presence in Academia.edu were observed. In the case of the Faculties analyzed, the professors do not take advantage of the benefits of scientific networks, which affects the visibility of scientific production and the dissemination of the research results.

**Keywords:** Academic scientific networks · Science dissemination · University research

## 1 Introduction

Scientific social networks can be defined as communication tools that can be very useful for talkers to communicate with each other. They are tools that can serve as a complement to carry out research projects (Brunsell and Horejsi 2010). These have become the new tool for researchers to gain visibility in the scientific field (Yan et al. 2021). They appeared between 2007 and 2008 with the purpose of disseminating research results “currently their use is increasing among the scientific community, since they are agile platforms to disseminate the results of research as well as to share knowledge” (González et al. 2015: 640).

The evolution that social networks have had to enter the scientific world, goes from social interaction to the ability to communicate between researchers, they allow organizing and conducting full-text searches, recommending articles to other colleagues and being able to store information as a library (Santana Arroyo 2010).

With the evolution of Web 2.0, the current model of the Internet (Grané and Willem 2008), researchers have at hand the possibility of entering the global scientific community. Academic networks facilitate contact and exchange of opinions and even the possibility of participating in research being carried out by other scientists (Maestro et al. 2010). Therefore, we can talk about science as communication,

collaboration and evaluation methods of scientific articles and reports (Codina 2009).

Along with the scientific social network is the publication of articles in scientific journals (Zapata and Velásquez 2008), the Identificador de Objeto Digital, known in English as Digital Object Identifier (DOI), and the evaluation of scientific production through the bibliometric indexes, the h index of the Google Scholar platform, which serves as a valid bibliometric indicator to measure the trajectory of a person, a team or a researcher, because it combines productivity with impact. In addition, it shows followers the quality and academic recognition of the researchers (Wiechetek et al. 2020).

Sharing research results helps to generate new knowledge. Henceforth, the importance of the use of scientific social networks at the academic level, as part of the universities that make up Zone 7 in Ecuador, we consider that the presence of research professors from universities should be analyzed: Técnica de Machala (UTMAC), Técnica Particular de Loja (UTPL) and Nacional de Loja (UNL), in the scientific social networks: Research- Gate, Academia.edu and Google Scholar as well as to the academic, economic, social, and cultural factors that intervene in the scientific production of research professors.

Our document is divided into the Introduction where we describe the scientific academic social networks, their emergence and bibliometric indices. In the Methodology part, we will analyze the academic social networks (ResearchGate, Academia.edu and Google Academic) of the professors of the Social Faculties of the universities of southern Ecuador (UTMACH, UNL and UTPL). The total universe of teacher-researchers of the faculties of socio-humanistic is 840. While those who use academic social networks of these universities is 240 teacher-researchers (28% of the total). In addition to the quantitative analysis of these academic social networks, interviews were conducted on this topic. In the Results section we identify the Universidad Técnica Particular de Loja as the one that most uses academic social networks. There are higher UTPL indices in all the categories analyzed. In the Conclusions section we evaluate the data.

## **2 Materials and Methods**

For the present research work, the three universities that make up Zone 7 - South of Ecuador were chosen: Universidad Técnica de Machala (UTMACH), Universidad Técnica Particular de Loja (UNL) and Universidad Nacional de Loja (UNL). As a criterion for selecting the sample, the current researcher-professors from each of the universities were identified, through the research department in the case of the UTPL and UNL universities, whilst in the case of the UTMACH the list of research professors can be found on the university website <https://bit.ly/3hhkjFE> determining a sample population of 240 professors identified in the Socio-Humanistic Faculties of the three universities. Besides this investigation was conducted in two phases.

In the first phase, professors were directly mapped to determine their presence in the scientific social networks ResearchGate, Academia.edu and the Google Scholar platform (Mason and Sakurai 2020). The mapping technique allows “to identify the key actors of a system and also allows to analyze their interests, their importance and influence on the results of an intervention” (Ollari 2013 p. 1). Once the sample was identified and validated, observation files were prepared, taking as a basis for direct, systematic and orderly observation of the object of study within a particular situation to acquire new knowledge, with differentiated variables for each platform.

Within ResearchGate, the profile of the researcher, publications, number of citations, recommendations and the score obtained in the RG Score, which determines the impact that their publications have had, were considered (Pertuz et al. 2020). In Academia.edu the number of followers, the total number of readings registered to their publications, were analyzed in an orderly manner, the type of publication uploaded to the scientific social network (book, article, chapters, conferences, among others), thus determining the interest generated by the researcher in the scientific community that is part of these scientific social networks (Boudry and Durand-Barthez 2020). Google Scholar allowed us to identify the scientific production generated by the researcher with the year of publication, as well as the number of citations received, the most important data obtained on this platform is the h index, an indicator that considers the number of citations obtained (Furnham 2020).

In the second phase, we carried out a qualitative analysis through interviews that allowed us to know the benefits of having a presence in scientific networks for professors, as well as identifying the socio-economic, cultural, social, political and academic factors that intervene for the scientific production of university researcher-professors in Zone 7 - South of Ecuador along with the problems they face. This allowed us to contextualize the data obtained in the first phase and strengthen our analysis and conclusions. We interviewed UTPL professors, who in the data obtained and analyzed in the first phase of research appear as the professors with the most publications, appointments and visits in academic social networks, to know first-hand the work of a researcher with a representative presence in scientific social networks. We consider important the opinion of Lcda. Leidy Jaramillo, Research and Political Approach Analyst. She managed the social networks of the presidency of Ecuador. She is Coordinator in digital marketing of Sayce and Tatiana León, graduated in Social Communication from Universidad Técnica Particular de Loja, master’s degree in Political and Business Communication from Universidad Camilo José Cela in Madrid (Spain); to contextualize the importance of the presence of researchers in scientific social networks as a new way of communicating and of international visibility (Salatino 2020).

### **3 Results**

After having identified the researcher-professors of the three universities, which belong to Zone 7 - South of Ecuador, the presence of the same in scientific social networks is broken down as a summary in data: ResearchGate, Academia.edu and Google Scholar.

**Table 1.** Presence of researcher-professors from the Faculties of Social Sciences and Socio-Humanistic Area at ResearchGate, Academia.edu, Google Scholar.

University	N° of Professors	Sample of Professors	Professors on ResearchGate	Professors on Academia.edu	Professors on Google Scholar
UTMACH	80	23	12	12	12
UNL	250	65	15	19	8
UTPL	510	152	52	44	53

Source: ResearchGate, Academia.edu. Google Scholar. With consultation date November 2019. Authorship: Own elaboration

In Table 1 we observe that the presence of professors from Zone 7-South of Ecuador is partial, in the three faculties analyzed less than 28% are assigned to a platform. It was observed that they do not update their profiles continuously. The use of social networks varies in each university, the Universidad Técnica Particular de Loja has more incursion in Google Scholar, compared with the Universidad Nacional de Loja, which is where fewer researcher-professors are present. On the other hand, at the Universidad Técnica de Machala, the number of research professors is maintained on the two social networks and on the Google Scholar platform.

Researcher-professors who use academic social networks the most are those of the UTPL with 29.8% of the total, followed by the researcher-professors of the UTMACH with 28.75% and finally by the UNL who have a network account social academic 26% of the teaching-researchers of Faculties of the Social Area. In the interviews we discovered that the UTPL conducts teacher-training courses and among those courses they have on the use of academic social networks. They have proven useful as a collaborative and knowledge exchange space. The possibilities for the circulation of science and inter- activity offered by these platforms should not be missed, as there is a risk of becoming just another repository. The construction of a digital identity through academic social networks (specifically ResearchGate, Academia.edu and Google Scholar) is relevant. An important issue both for the researcher-professor and for the Universities with a view to its evaluation and also for organizations oriented to the assurance of university quality in Ecuador (The Council of Higher Education, CES, is an autonomous entity of the Ecuadorian government, under public law, with legal status. Its function is to be the planning, regulating and coordinating body of the National System of Higher Education of the Republic of Ecuador). Currently the importance of these elements for the development of evaluation systems in line with advances in science and technology cannot be ignored (Table 2).

Within the Social Sciences Faculty of the Universidad Técnica de Machala (UTMACH), there are 16 careers or master's degrees. The professors of the Communication, Plastic Arts, Clinical Psychology, Jurisprudence, Initial Education and Sociology majors are those who are present in the ResearchGate social network, Academia.edu and the Google Scholar platform; being the Communication career the one with the greatest presence of professors. The content of the research of the Faculty is related to the domain of social development with its line of research of "society and culture, sustainable tourism".

**Table 2.** Classification of professors of the faculty of social sciences (UTMACH) present in ResearchGate, Academia.edu and Google Scholar.

	ResearchGate	Academia.edu	Google Scholar	Total
Plastic and Visual Arts	2	2	2	6
Physical Education	0	0	0	0
Computing	0	0	0	0
Basic Education	0	1	0	1
Initial Education	0	0	1	1
Physics-Mathematics	0	0	0	0
English	0	0	0	0
Language and Literature	0	0	0	0
Clinical psychology	1	2	2	5
Communication	6	6	4	16
Social Science	0	0	0	0
Jurisprudence	2	1	1	4
Environmental Management	0	0	0	0
Sociology and Political Science	1	0	2	3
Social work	0	0	0	0
Educational Psychology and guidance	0	0	0	0
Total	12	12	12	36

Source: ResearchGate, Academia.edu. Google Scholar. With consultation date November 2019. Authorship: Own elaboration

On the contrary, there are as many careers or master's degrees where there is no researcher-professor who uses an academic social network at UTMACH. They are Physical Education, Computing, Physics-Mathematics, English, Language and Literature, Social Science, Environmental Management, Social work, and Educational Psychology and guidance. Most likely, the researcher-professors of these careers have not had any training on academic social networks (Table 3).

In the Socio-Humanistic Area of the Universidad Técnica Particular de Loja, four careers are registered. The scientific social network most used by researcher-professors is Google Scholar with a total of 53 members, followed by ResearchGate with 52 members, and finally, Academia.edu with 44 professors. In this case, the career with the most professors involved in scientific social networks is the Education major, followed closely by the Communication career. Regarding scientific production, it is important to mention that the UTPPL works with interdisciplinary research groups in order to make the most of the development of research projects (Table 4).

**Table 3.** Classification and observation sheet of professors at UTPL of the Socio-Humanistic Area present in ResearchGate, Academia.edu and Google Scholar platform.

	ResearchGate	Academia.edu	Google Scholar	Total
Communication	16	12	13	41
Jurisprudence	15	9	12	36
Psychology	6	7	4	17
Education	15	16	24	55
Total	52	44	53	149

Source: ResearchGate, Academia.edu. Google Scholar. With consultation date November 2019.  
Authorship: Own elaboration

**Table 4.** Classification of professors at UNL of the Faculty of Education, Art and Communication present in ResearchGate, Academia.edu and Google Scholar platform.

	ResearchGate	Academia.edu	Google Scholar	Total
Arts y Music	0	0	0	0
Basic Education	0	0	0	0
Pedagogy of Physical Activity	0	0	0	0
Experimental Sciences	0	0	0	0
Chemistry and Biology	0	0	0	0
Psychopedagogy	1	4	1	6
Social Communication	4	4	3	11
Initial Education	0	0	0	0
Language and Literature	2	0	1	3
Mathematics and Physics	0	0	0	0
Pedagogy in Languages	0	0	0	0
Total	7	8	5	20

Source: ResearchGate, Academia.edu. Google Scholar. With consultation date November 2019.  
Authorship: Own elaboration

In the case of the Universidad Nacional de Loja, the largest presence of researcher-professors is in Academia.edu, and ResearchGate, only 8 professors use Google Scholar to publish their research. Within these social networks and platform, researcher-professors have content related to: education, culture, communication, socio-economic, legal and administrative matters. As data shows, the greatest presence of professors and publications is in the Social Communication career.

On the contrary, there are as many careers or master's degrees where there is no teacher-researcher who uses an academic social network at UNL. They are Arts and Music, Basic Education, Pedagogy of Physical Activity, Experimental Sciences, Chemistry and Biology, Initial Education, Mathematics and Physics and Pedagogy in Languages. The researcher-professor of these careers have not had any training on academic social networks.

**Table 5.** Impact of the publications of university researcher-professors of Zone 7 - South of Ecuador on the scientific social network ResearchGate.

	Nº of Professors on ResearchGate	Nº of Publications on ResearchGate	Nº of quotes
UTMACH	12	143	313
UTPL	52	1077	958
UNL	15	360	102

Source: ResearchGate, Academia.edu. Google Scholar. With consultation date November 2019. Authorship: Own elaboration

Academic publications on scientific social networks is the way in which new knowledge and findings are shared. In this sense, one of the main roles that a researcher must fulfill is to disseminate science, in this we analyze the impact of the publications of professors in ResearchGate. Table 5 shows, in a general way, the number of publications of the professors present in the ResearchGate scientific social network, as well as the number of citations, an interesting data that this network throws up is the academic positioning through the RG Score giving to the authors a public score, which depends on the number of publications, questions, answers and followers. In this case, we can see that the UTPL significantly exceeds the other Faculties in the number of publications and citations, which also benefits it in the world rankings.

The results of the interviews indicate that the UTPL invests in training in specific courses of scientific publications, databases and academic social networks. Those researcher-professors who publish more and in prestigious scientific journals are positively valued and rewarded. While in public universities (UNL and UTMACH) there is no such privilege. That is why the UTPL is among the best universities in Ecuador and Latin America.

The scientific social network Academia.edu allows its users to connect with other researchers and share their work, facilitating the follow-up of articles, books, conferences that are relevant to their area of study. Therein, the researcher knows the number of followers of her profile, and the number of views of her work. As we can see in Table 6, there is a large number of people who have searched for or entered the profile of researcher-professors; consequently, their publications are local, national and inter- national in scope. An important fact is that in the three universities analyzed, Social Communication careers stand out for the highest number of publications and visits.

**Table 6.** Impact of the publications of university researcher-professors of Zone 7 - South of Ecuador in the scientific social network Academia.edu.

	N° of Professors on Academia.Edu	N° of publications on Academia.Edu	N° of visits
UTMACH	12	13	198.373
UTPL	44	373	1.837.808.741
UNL	19	125	1.668.408

Source: ResearchGate, Academia.edu. Google Scholar. With consultation date November 2019. Authorship: Own elaboration

The UTPL researcher-professors have the most visits to Academia.edu. 73% of the documents hosted belong to UTPL professor-researchers. But 99.89% visits are made to documents of teachers-researchers of the UTPL.

**Table 7.** Impact of the publications of university researchers from Zone 7 - South of Ecuador in the scientific social network Google Scholar.

	N° of professors on Google Scholar	N° of publications on Google Scholar	N° of quotes
UTMACH	<b>12</b>	<b>141</b>	<b>119</b>
UTPL	<b>53</b>	<b>1423</b>	<b>722.787</b>
UNL	<b>8</b>	<b>74</b>	<b>251</b>

Source: ResearchGate, Academia.edu. Google Scholar. With consultation date November 2019. Authorship: Own elaboration

Google Scholar allows researcher-professors to upload: articles, theses, reports, books, conference documents, helping them to discover possible collaborators and possessing a name in a specific research area. Table 7 shows the impact of the publications uploaded to this platform. To illustrate this, at the Universidad Nacional de Loja, only 8 professors are part of Google Scholar, but their 74 publications have 251 citations, that is, 251 people who have been interested in their work and have taken it as reference.

The UTPL researcher-professors have the most visits on Google Sholar. 86.87% of the documents hosted belong to UTPL professor-researchers. But 99.94% are the citations to documents of teachers-researchers of the UTPL.

## 4 Conclusions

Of a total of 840 current researcher-professors at universities: Técnica de Machala (UTMACH), Técnica Particular de Loja (UTPL) and Nacional de Loja (UNL), it stands out that, in the case of the UTPL (Socio Humanistic Area) of the 152 professors belonging to this area, 50% are present in scientific social networks, unlike the UNL (Education, Art and Communication Faculty) of 65 research professors belonging to this Faculty only 20% are present in scientific social networks, the UTMACH (Social Sciences Faculty) less than 10% are users of these academic social networks. Taking

into account these data, among the three Faculties there is no more than 50% of the presence of professors in scientific networks, we consider that this is due to ignorance about the use and importance of scientific social networks as a key tool for research and the benefits they provide such as achieving international recognition, being part of and appearing in the world scientific ranking, and the recognition of universities as institutions that contribute to the creation of knowledge. An important fact is that professors of Communication majors are the ones who make the most use of scientific social networks, out of every 5 professors present in these networks, 3 belong to the Communication career. This can be associated with the nature of the degree and its proximity to ICTs and new technologies.

The research initiative is born from the researcher himself, his motivation to discover a solution to the problems that afflict society, as well as in the social sphere, the recognition as a researcher-professor before the scientific community as a community in general. In the political sphere, investigating from the academy brings as a consequence the prestige that a university can achieve. In the economic sphere, when a researcher-professor performs his exploration and manages to obtain innovative and interesting results, high-impact journals pay the researcher so that their results are published on their platforms. Hence, it is ambiguous that many professors who research do not consider that the use of scientific social networks, ResearchGate, Academia.edu and Google Scholar are important for the visibility of publications. After analyzing the results obtained, it was found that the number of readings recorded per publication by a researcher was between 20 and 60 readings. That is, more than 20 people on average have entered and read the articles and books, published on scientific social networks, by researchers from the analyzed Faculties. Therefore, we emphasize the potential of these scientific interaction communities for researchers to achieve acknowledgement and contacts that motivate the growth of their scientific and professional production.

Researcher-professors are being influenced to create profiles on ResearchGate, Academia.edu or Google Scholar by external agents (such as publishers, evaluation agencies or scientific journals). This produces a deviation from the nature of these systems that require an active and systematic role of the researcher-professor. It may be the case that for a researcher to publish in an academic journal, they request a profile on an academic social network that will later become outdated.

Therefore, the importance of academic social networks cannot be denied. The time that a researcher-professor spends in academic social networks must be counted, updating their information and interacting with their peers. Universities will have to yield and assign hours as part of their academic charge since they are the biggest beneficiaries in the University Rankings. Visibility in academic networks is part of your work as a researcher, having a digital identity is essential. Refusing to be visible on academic social networks can condemn the researcher-professor to academic ostracism. Being in these academic networks takes time, but the era of identity and digital reputation is here to stay.

In managing scientific production, it is important to analyze the type of content to be published, who may be interested in that content, how to make the content attractive,

and, above all, to get more and more people who is interested in what is published either on social networks or web portals. We consider that the Research and Institutional Communication departments have not provided strategies for the dissemination of science, training and incentivizing professors to become part of scientific social networks. There are also no clear initiatives for the creation of digital content for the different social networks, taking into account that the information to be presented is accurate, in a language understandable to both the scientific community and society in general.

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