Analytic Web and Cybermetrics (AWC)

WEBOMETRIC REPORT ON TELECOM.GOV

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Sumario

1 Introduction

On this report, we aim to perform a prospective study about the presence and impact on the internet of the national authorities responsible for the regulation of the telecommunications market, comparing their activity to identify leaders that may be pointing the way for more encompassing communication strategies over the web.

To contextualize the reader on the subject, the telecommunications market is traditionally considered a natural monopoly [1], [2], since it presents high fixed costs for a company to operate on a larger scale, such as to answer the needs from thousands to millions of clients in a region, national or global scale. These costs are mostly related to the technical infrastructure needed to provide the service and organizational structure to keep it running with acceptable quality.

Another important characteristic of the telecommunications market is the need of cooperation between competing companies since this is the only way to interconnect all users from different companies and provide acceptable services. [3].

Looking with today's perspective, of fierce competition between large companies, one is tempted to believe that this natural tendency to monopolies in the telecommunications market is something of the past and we now live in a selective but competitive market. But the reality is that this situation is only maintained by the active effort of the national regulatory authorities that enforced regimes of sharing and coexistence between companies [4], down to the fact that, nowadays, many important companies worldwide rely on this regulatory system and simply does not consider the ownership of the infrastructure a relevant aspect for market leadership and revenues.

The regulatory situation in each country is quite specific and, in some cases, several organizations work together on distinct aspects of regulation in the telecommunication sector. Main concerns are the establishment and enforcement of

regulatory directives, and the administration of limited resources, such as the use of the radio spectrum and orbital positions.

When considering the transnational characteristics of telecommunication, early in the development of these technologies it became clear the need for cooperation between nations. So much that in 1865 the International Telegraph Union was created, and later, in 1947, became the International Telecommunications Union, a specialized agency of the United Nations devoted to the coordination, standardization and development of the telecommunications. [5]

The International Telecommunications Union currently lists 191 entities as official authorities that are responsible for the regulation of the telecommunications market in 181 countries [6]. Along with these organizations, and ITU itself, cooperation takes place also at the regional level. For this task, ITU lists 11 regional organizations that encompass all areas of the planet [7].

After this short view on how is organized the world of telecommunications from the regulatory perspective, it became clear that, for all these organizations that struggle to keep the balance between nations and economic powers, communication is a key tool. As such, it of interest to know how much these organizations applied the modern tools of the internet and identify the organizations that are leading the way and might provide references to others on how to improve the way that telecommunication authorities communicate and work together.

As a final introductory note, we highlight that several assumptions were taken in relation to the variables under study, their statistical and numerical behaviour. A deeper understanding of all these variables would be needed for a complete analysis, something that is beyond the scope of the present study that remains with the perspective of a more qualitative investigation, although, as an exercise, several quantitative methods were applied.

2 Methodology

As presented on the introduction, the telecommunications authorities are fairly organized within the international community and an encompassing list of all organizations can be retrieved from the ITU website [6], [7].

A complete evaluation of all listed organizations, including cross references to ITU would demand the study of 203 domains. This number surpasses the resource capability available to the present study, specially the number of hours available and the limited access to APIs and interfaces to the various information sources needed to perform such encompassing study in a fully automated fashion.

As a reference of the costs involved, to evaluate the following discussed indicators for all these organizations, including 14 notable social media networks, we estimate that one would need to perform over 47.000 queries including 15 different web services. Trying to put a price tag on such queries, Google Custom Search API, offers free access for only 100 queries per day and charges 5 USD per additional 1000 queries [8]. The price scales down for more than 10.000 queries but still, one could expect to spend more than 200 USD to perform a full research or spend over a year collecting data using free resources.

Is important to highlight that google disallow the use of robots for data scrapping of search results and it also don't provide an API to get reliable search queries data for third party websites, which means that the most reliable solution would involve setting up a crawler over the target sites, something that is also beyond the scope of the present work.

Due to these limitations, we concentrated our study on 10 national authorities and, for some analysis, also included ITU and the 10 of the regional organizations that relates to these organizations.

The selection of the 10 national authorities considered the experience of the group and the relations of its participants with the theme, concentrating the analysis on authorities from Americas and Europe, but also including references

from Asia and Africa. We present a list of the entities identified by their country and domains in the [Annex](#).

On the social media networks front, we can highlight 12 services as the most used worldwide and that provide some level of transparency that may allow the application of cybernetic tools. These networks include the most used in all countries and the number of users can be easily obtained through http://gs.statcounter.com. They are: Facebook, Pinterest, Twitter, YouTube, Instagram, Tumblr, Google+, reddit, LinkedIn, VKontakte, Youku, Sina Weibo.

Since our studies could not collect data from all social media platforms due to similar resource restrictions, the effort was concentrated on Youtube, Twitter and Facebook. The first two were selected due to the availability of simple interfaces that enabled us to collect the needed data from these services without cost. Facebook, was selected due to its importance as a social media network and had a small amount of information manually extracted using the service own interface.

To determine the leader on the web communication between the national regulatory agencies we will consider several cybernetic indicators. These are:

Presence: The presence on the internet will consider two indicators:

- Web Volume: Associated with the number of documents published on the internet under the main domain of the organization. This includes documents of any type, including the webpages themselves, but excludes documents that have restricted access. It also excludes publication on other domains, such as Youtube Videos or Tweets. Some of these publications will be considered on our next indicator.

- Social Media Engagement: Related to the number of publications, e.g. tweets, YouTube video or Facebook publications. As an attempt to include this other communication channels in the evaluation of the presence of the organization on the internet.

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Impact: The impact of the presence will consider two indicators:

- Web Mention: Associated with the number of documents published on the internet outside the domain of the organization and its official sites on social media that mention the organization domain or use a hyperlink to it i.e. how many documents posted outside the organization mention a page or document in the organization.

- Social Media Authority: Associated with impact of the organization on the social media. as discussed, we will concentrate only on YouTube, Twitter and Facebook and try to consolidate into one figure, numbers associated with followers, likes, views and such associated with the usage of the social media services.

Layout:

- Topology: will consider the number of links between organizations, including weblinks and mention within the sites of each organization to all others under study, including the regional organizations and ITU.

The main source of information are searches in Google services. We choose this service due to the larger coverage when compared with other search engines [9]. The decision also considered that the use of other search engines, with different API capabilities, would not have expanded significantly the number of queries per day to allow for a complete search of all combinations of domains and search words such as to justify the reduced coverage.

To avoid the interference on the results by Google's algorithms, that might automatically adjust considering user profile and search history, we performed all using privacy option on browsers.

Additional attempts to get anonymity by routing the requests through TOR network were frustrated since Google detected the use of the TOR network as an access that were potentially violating the terms of use and refused the service,

imposing captcha queries too often to enable an efficient execution all queries needed to perform the study.

The queries were constructed using simple operations from google search services as presented on the following table, that relates the basic indicator as previously presented with the query format used.

TABLE 1. FORMAT USED FOR GOOGLE SEARCH QUERIES

Indicator	Query Syntax	Example
Publication Volume	site:DOMAIN	site:fcc.gov
Social Media Mention	SOCIAL_MEDIA_DOMAIN site DOMAIN	youtube.com site:trai.gov.in
Mention	"DOMAIN" -site:MAIN_DOMAIN -site:SOCIAL_M_DOMAIN	"anacom.pt" -site:anacom.pt -site:twitter.com_ANACOM_ -site:youtube.com/channel/UCApJZ6dQ...
Topology:	DOMAIN1 site:DOMAIN2	ofcom.org.uk AND OFCOM site:itu.int

The queries were either manually or semi-automatically performed. Semi-automatic analysis was performed using Python [10] to automate repetitive tasks that were manually performed and evaluated at an initial stage. Care was taken to avoid the excessive use of the search engine service, performing about 1 query per minute, mimicking a natural use of the interface and thus, behaving as a person and avoiding a violation of Google Terms of Service.

Manual queries were used for the mention indicator, since it involved a series of steps to evaluate the main results (first 20) and exclude domains that were official channels of communication from the organization under analysis, such as that the mention indicator would include mostly pages that mentioned the organization but were not produced by it.

One important characteristic of the mention indicator is that it uses the domain and not a set of reference words, such as the organization name and acronym. This

procedure was chosen since the explicit mention of the organization domain almost guarantee that the organization mentioned is really the one under investigation. Several tries using keywords resulted in inconsistent data and although the use of hyperlinks is not universal, and the obtained result might underestimate the real social impact of the organization, the applied methodology provides more consistent and reliable data to how much reused by the society is the content published by the organization. Comparing this with Tweeter, it is something like counting the number of retweets, not the number of followers.

A full analysis using keywords is exceedingly difficult since that to exclude pages that are not related to the organization but matches the used keywords, one should visit all pages and perform a semantic analysis of the content. Such analysis cannot be properly performed in manual fashion and the use of robots for queries and scrapping imposes other legal limitations. In the present study, due to the restrictions already mentioned, we acknowledge the limitations of the manual analysis performed and highlight that it might have significant impact on the presented results.

One can create an indicator of the impact of the publications made by the organization by computing the ration between the number of publications and the number of mentions obtained. A relative indicator to the number of publications can also be obtained by comparison within the group. To make it easier to compare with other indicators extracted for social media, as discussed in the following paragraphs, these values were linearly adjusted to a scale from 0 to 100.

To achieve the effective comparison between the organizations under study, not only the results gathered for each organization need to be consolidated into a few key indicators, but also these key indicators must be adjusted to the reality of each country, i.e. a country more regulations will need to communicate these regulations to the public and thus, have more documents associated with their domains; Countries with more activity in the sector, will need more interactions between the regulator and the society; and so on.

Unfortunately, it is very hard to obtain reliable information that can be used to provide such adjustment. Figures such as the number of employees on each organization, that would allow the computation of a Web Usage Factor (WIF), are simply not available to all organizations.

Assuming that there is a correlation between the volume of information that needs to be handled by each organization and the volume of activities in the telecommunication sector, a set of variables were gathered from ITU [15] and the UN [16] to enable some insight into the telecommunication market of each country and thus allow for the needed scale adjustment that may enable a more reasonable comparison between the evaluated organizations.

At last, we propose that the activity in the telecommunication sector is proportional to the investment per capta in the sector for each country. This value, as presented on the Table 12, was multiplied to the web indicators, as later discussed.

The reach indicators were gathered using specific services for Twitter, YouTube and Facebook as previously discussed and applying the following tools:

For Twitter it was used https://followerwonk.com, a service that provides a lot of information about twitter users. Main indicators provided are: Number of Tweets, Number of users being followed by, Number of followers, Account age, Social Authority Indicator, Number of retweets, and Total Engagement Indicator. An important limitation on the use of followerwonk is that it is unable to perform the most advanced analysis for users with many followers (more than 300.000). For this reason, only the basic indicators previously mentioned were used.

Two of the indicators provided by followerwonk are composite indicators, they are: Social Authority [11] is based on the rate of retweets for the user's tweets multiplied by a decay in order to favour recent activity. Other user data also influence the result based on a linear regression model. Total Engagement [12] is related to how the user interact with others, based on mentions and retweets.

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This two indicators provided an interesting reference for analysis since they encompass the two sides of the communication process: the production of content in one side is associated with the "Total Engagement" in using the platform and the consumption of the content is associated with the "Social Authority" and how people propagate and rate the information created by the organization.

These concepts can be generalized to obtain a reference indicator for production and consumption based on the other indicators collected, associated with other communication channels used by the organization. To allow further comparison, these two values are normalized in a scale from 0 to 100 considering the maximum and minimum values obtained in the group. This normalization allows for better comparison within the group and between similar indicators obtained for other communication channels.

For YouTube it was used https://commentpicker.com, a service that provides channel identification based on user's ID, something needed whenever the channel ID is nor publicized on the organization website. Additionally, Commentpicker provides basic statistics for the channel, including Channel owner, Channel start date, Channel description, Subscriber count, Total Views, Total videos.

From this basic information, we can try to consolidate indicators using the following expressions:

$$Youtube\ Engagement = \frac{Number\ of\ Videos\ Published}{Age\ of\ the\ Channel} \tag{1}$$

$$Youtube\ Authority = \frac{Subscriber\ Count \times Total\ Views}{Number\ of\ Videos\ Published \times Age\ of\ the\ Channel} \tag{2}$$

The above expressions were created evaluating if the number related with each variable is directly proportional, inversely proportional or not related with the desired indicators. All variables must be normalized in a scale from 1 to 100 within the group, prior to be applied on the equations. This avoid distortions that could happen due to the absolute magnitude of the variables. Later, the results are renormalized in a scale from 0 to 100 for further comparison.

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For Facebook, from the service interface were extracted the information of the number of followers, number of likes and the account creation date. For the number of publications, a sample of the last 7 days were collected, manually counting all publications in the period.

Trying to consolidate indicators with such few information is exceedingly difficult. Since the small sample of publications can not be considered in relation to the total numbers provided by the platform, the Facebook Engagement was defined simply the number of publications in the sample, normalized to a scale from 0 to 100. Facebook Authority was defined according to the following expression:

$$Facebook\ Authority = \frac{number\ of\ followers \times number\ of\ likes}{Age\ of\ the\ Account} \tag{3}$$

To further consolidate all social media indicators into a pair of indicators, one may compute the weighted average of the values obtained for each service. The weights in this case can be the percentage of the social media users for each network, in each country. This allows us to compensate variations in usage from country to country. To obtain this percentage, we can use the numbers provided by http://gs.statcounter.com and presented on the Annex.

Although there are known limitations to the percentage of users, since statcounter applies a statistical modelling to extrapolate information collected by browser agents installed on a limited number of users, this is the most reliable source available and is never less useful to take into account the effectiveness of the communication performed by the evaluated organizations.

All collected information was organized on tables that are presented on the Annex along with indicators computed from the raw data. The tabular data was analysed using MS. Excel [13] and the topological features using Gephi [14].

With Gephi it was possible to evaluate how the organizations are connected between themselves and consider how the organizations work within a community to share knowledge and information. To better evaluate this characteristic, we included in this analysis several institutions listed by ITU [7] as regional

organizations and ITU itself. We consider the measure of centrality in this communication network an important reference to achieve the objective of defining the most prominent organizations in the group, since more central organizations will more likely be more able to share practices with the others.

3 Results

Considering the different communication channels evaluated, one can segment the analysis into two groups: one associated with social media, e.g. Twitter, YouTube and Facebook; and another associated with the publication of documents on the web.

This segmentation is important since these organizations have a preponderant task of standardization and control, mostly associated with the creation of documents for regulatory purposes. As such, social media is more used as a secondary channel of communication, which is in consonance with the results obtained, of small use of these services.

The following table present the Engagement and Authority indicators computed to all domains.

TABLE 2. SOCIAL MEDIA ENGAGEMENT AND AUTHORITY

Domain (Country)	Twitter		YouTube		Facebook	
	Engagement	Authority	Engagement	Authority	Engagement	Authority
anatel.gov.br (Brazil)	0,0	65,7	43,4	21,5	NA	NA
arcep.fr (France)	30,2	88,6	4,2	0,2	30,1	0,0
bundesnetzagentur.de (Germany)	59,2	81,4	91,5	33,0	NA	NA
trai.gov.in (India)	13,4	80,0	48,7	7,9	6,8	1,1
osiptel.gob.pe (Peru)	100,0	100,0	15,2	69,3	100,0	100,0
anacom.pt (Portugal)	44,7	42,9	22,8	0,0	NA	NA
kcc.go.kr (Korea)	38,0	71,4	34,5	100,0	1,0	0,5
icasa.org.za (South Africa)	59,2	61,4	0,0	0,2	30,1	16,3
ofcom.org.uk (UK)	74,3	94,3	10,1	25,4	35,9	0,1
fcc.gov (USA)	27,9	100,0	100,0	49,3	88,4	3,1

Consolidating the indicators of the different social media using the social media penetration in each country, one can plot the result as presented on Figure 1 for a final comparison between all organizations.

On this figure, at once it calls the attention for the preeminent and unsuspected position of Peru Returning to Table 2 and, if needed, to the raw data on the Annex, it becomes clear that this position is consequence of a general attention to all social media under study and specially to Facebook, the most popular social network for all countries studied and where Osiptel, from Peru, counts with almost 4 times more followers than FCC, that stands in second in this number. It also counts with the highest amount of publications in Facebook and is highly active in Twitter.

It's interesting also to notice how KCC from Korea is in advantageous position in relation to the authority indicator, meaning that most of its publications have high impact, especially on Twitter and YouTube.
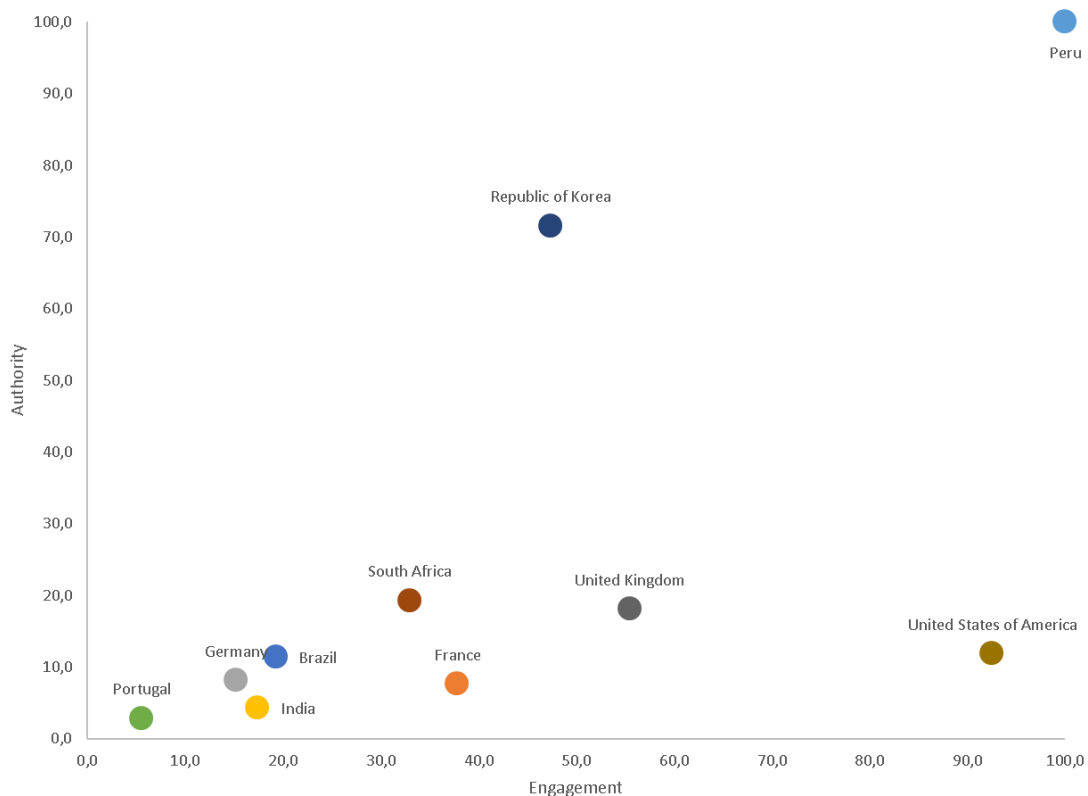
FIGURE 1. SOCIAL MEDIA ENGAGEMENT AND AUTHORITY FOR THE ORGANIZATIONS

One must also consider the situation of FCC, from the USA, with apparent important level of publications but with negligible impact. Numerous factors might contribute for this but surely one should consider the case in more detail and rethink the used strategy to improve efficiency on the mobilization of social networks relevant to the organization.

Finally, the European countries, Brazil and India seems to be with much lower interest on the use of the social media networks, being clear in some cases that the use of these communication channels have simply been abandoned.

Considering the publication of documents on the internet through their domains, a significantly different picture arises. Table 3 presents the web indicators, with applied weights to compensate for economical and populational variations and also with scales adjusted to the allow an easier comparison within the group. For conciseness, we added in this same table the topological relevant information that will be later discussed.

TABLE 3. INDICATORS FOR DOCUMENTS AND WEBPAGE HYPERLINKS

Country	Engagement	Authority	Eingen Centrality	Page Rank
Brazil	100,0	0,6	91,1	29,2
France	1,2	6,7	33,5	1,8
Germany	3,2	13,7	59,3	6,7
India	9,3	1,0	76,3	6,4
Peru	10,3	0,1	0,0	0,0
Portugal	15,0	1,1	68,5	15,6
Republic of Korea	8,0	12,2	64,8	7,4
South Africa	0,1	100,0	69,9	4,2
United Kingdom	3,9	6,0	87,0	47,3
United States of America	35,0	10,5	100,0	100,0

Similar to what was done on the analysis of social media, on Figure 2 one can visually compare the engagement in the production of electronic documents by the organizations and the impact of these documents, as measured by the authority and engagement indicators.
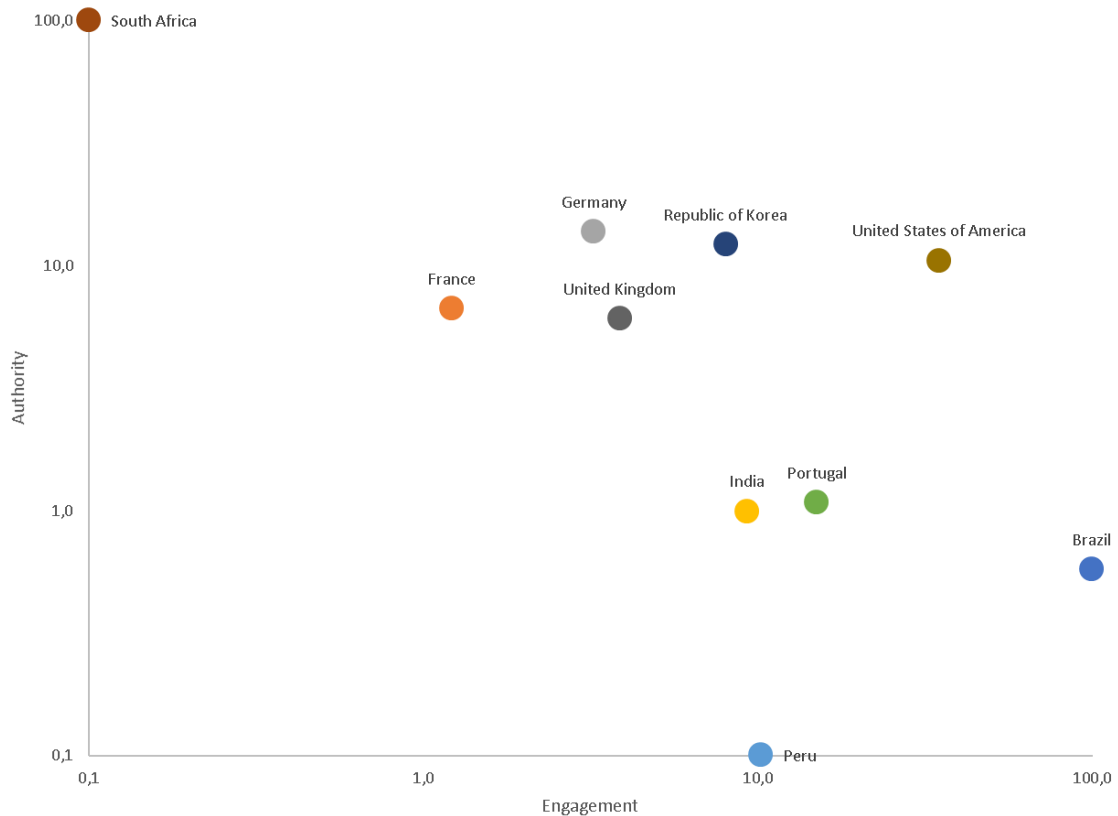
Firstly, one needs to highlight that the plot is presented on a logarithmic scale to better separate the central points, that otherwise would be too clustered to be understandable.

This clustering is consequence of the extremes. Brazil, with many publications and South Africa, with high authority. Brazilian situation is understandable due to the implementation status of both electronic documentation systems and transparency laws, that increases the number of publications and thus the engagement indicator. With this, although some of these publications have sensible relevance, the indicator authority tends to be decreased. On the other side, with South Africa one can only wonder that the transparency issues are not so critical, or the electronic documentation not implemented, either way, they focus on publishing exclusively high impact information.

In a more balanced situation we find all the remaining countries, again with pre-eminence of FCC and the USA and Korea.

To better understand the use of electronic documents by these organizations and related international institutions, we may evaluate the hyperlinks between then over a graph, as presented on Figure 3.
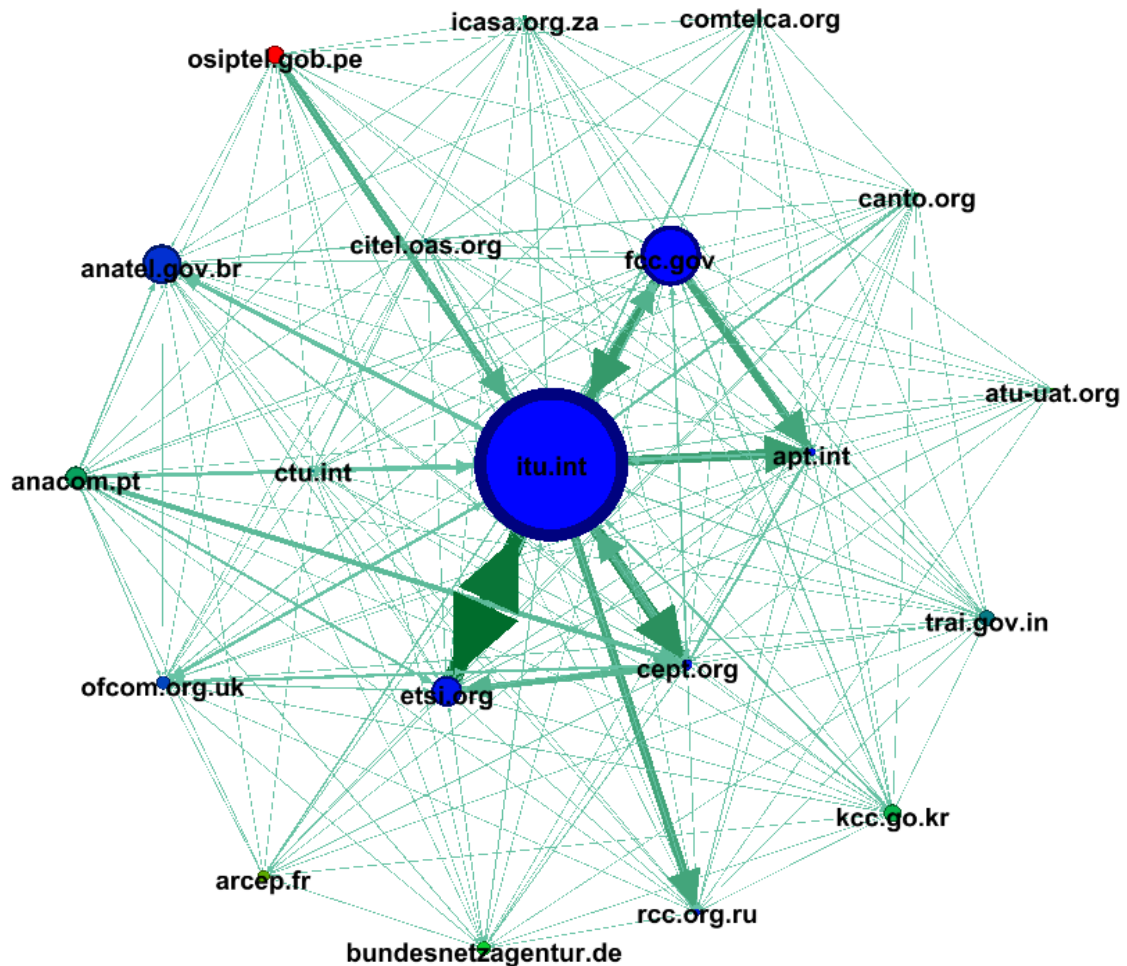
FIGURE 3. GRAPH FOR THE MENTIONS AND AMOUNT OF PUBLICATIONS

At this figure: the area of each node is proportional to the number of web pages published by it; the size of each arrow, that can be evaluated by the arrowhead, is proportional to the number of mentions, to that domain, from the other; the colour of each node varies from red to green and then to blue as the eigen centrality of the node increases. The disposition of the nodes has no meaning, but regional groups were positioned together, and the final adjustment was performed using Fruchterman Reigold algorithm.

One can easily see from the graph the vital importance of ITU in the aggregation of documents and references from all organizations but also becomes clear how much FCC represents an important reference to all organizations.

We consider also important to highlight that the eigen centrality does not consider the asymmetrical relation of the nodes, as observed in most of the cases above. As a result, page rank was also included as a relevant indicator of the network importance of the organizations.

4 Discussion and Conclusions

Taking into account the selected 10 national authorities responsible for the telecommunications market we were able to determine that FCC, from United States of America, and KCC from Democratic Republic of Korea have a balanced and leading approach in relation to the documents publicized on the web. Although FCC proved to be more interconnected to other organizations and provide a more encompassing approach. Specific cases of Anatel in Brazil and Icasa in South Africa are highlights and would be of interest for further study.

Considering the use of Social Media, the case of Osiptel in Peru is of interest, specially the high rate of success in relating to people through these communication channels. Also, the systematic and volume of publications from FCC is worth mentioning and its approach could also be an important reference for an adequate use of the social network tools by regulatory authorities

5   References

[1]   J. L. Whiteman, "Telecommunications: Competition or Monopoly?," *Econ. Pap. A J. Appl. Econ. policy*, vol. 9, no. 3, pp. 46–57, 1990.

[2]   O. CNX, "OpenStax Economics, Principles of Economics," *OpenStax*, 2016. [Online]. Available: http://cnx.org/contents/69619d2b-68f0-44b0-b074-.

[3]   H. Bakker, "Key principles of market regulation in telecommunications," in *ITU Regional Workshop on "Competition in Telecommunications Market,"* 2016.

[4]   A. Ranade, "Is telecom still a monopoly?," *livemint.com*, 2016. [Online]. Available: https://www.livemint.com/Opinion/h0qsnbqLytEKn1E1anyNAK/Is-telecom-still-a-monopoly.html. [Accessed: 23-Sep-2018].

[5]   ITU, "Overview of ITU's History," *itu.int*, 2018. [Online]. Available: https://www.itu.int/en/history/Pages/ITUsHistory.aspx. [Accessed: 23-Sep-2018].

[6]   ITU-D, "National Telecommunication Agencies," *itu.int*, 2018. [Online]. Available: https://www.itu.int/en/ITU-D/Statistics/Pages/links/nta.aspx. [Accessed: 14-Sep-2018].

[7]   ITU-D, "Regional Telecommnunication Organizations," *itu.int*, 2018. [Online]. Available: https://www.itu.int/en/council/Pages/rto.aspx.

[8]   Google, "Google Custom Search Price Overview," *Google.com*, 2018. [Online]. Available: https://developers.google.com/custom-search/json-api/v1/overview#pricing. [Accessed: 24-Sep-2018].

[9]   M. de Kunder, "The size of the World Wide Web (The Internet)," *worldwidewebsize.com*, 2018. [Online]. Available: http://www.worldwidewebsize.com/. [Accessed: 25-Sep-2018].

[10]   E. Martin, "Scraping Google with Python," *edmundmartin.com*, 2017. .

[11]   Peter Bray, "Social Authority: Our Measure of Twitter Influence," *Moz.com*, 2013. [Online]. Available: https://moz.com/blog/social-authority. [Accessed: 01-

Oct-2018].

[12] P. Bray, "Introducing New Followerwonk Engagement Metrics for Twitter," *Moz.com*, 2012. [Online]. Available: https://moz.com/blog/new-followerwonk-twitter-data. [Accessed: 01-Oct-2018].

[13] Microsoft, "Microsoft Excel 2016," *office.com*, 2018. [Online]. Available: https://products.office.com/en/excel. [Accessed: 27-Sep-2018].

[14] Gephi.org, "Gephi - The Open Graph Viz Platform," *gephi.org*, 2018. [Online]. Available: https://gephi.org/. [Accessed: 27-Sep-2018].

[15] ITU, "World Telecommunication/ICT Indicators (WTI) database." itu.int, 2018.

[16] UN and DESA, "Total Population: Median and prediction intervals Database." population.un.org, 2017.

[17] StatCounter, "Social Media Stats Worldwide," *gs.statcounter.com*, 2018. [Online]. Available: http://gs.statcounter.com./social-media-stats. [Accessed: 24-Sep-2019].

6 Annex - Data Tables

TABLE 4. PAGE COUNT AND MENTION INDICATORS FOR SELECTED ORGANIZATIONS

Country	Domain	Page Count[1]	Mention	Impact factor	Exclusion[2]	Mention Query
Brazil	anatel.gov.br	338 000	20 300	0,06	5	"anatel.gov.br" -site:anatel.gov.br -site:twitter.com/anatel_oficial -site:youtube.com/channel/UCMzB_Ihgd2O-Vvu-Pn3dqWA -site:flickr.com/photos/anatel_informa/albums -site:linkedin.com/company/anatel
France	arcep.fr	24 800	38 400	1,55	5	"arcep.fr" -site:arcep.fr -site:twitter.com/arcep -site:facebook.com/pg/arcep.fr -site:fr.linkedin.com/company/arcep -site:dailymotion.com/arcep
Germany	bundesnetzagentur.de	35 200	75 200	2,14	3	"bundesnetzagentur.de" -site:bundesnetzagentur.de -site:twitter.com/BNetzA -site:youtube.com/channel/UCIMb4NfwmKWab9mbzoidpkQ
India	trai.gov.in	46 200	5 480	0,12	9	"trai.gov.in" -site:trai.gov.in -site:twitter.com/TRAI -site:youtube.com/channel/UCbpIrIEmbD29jk9velOKtPg -site:facebook.com/TRAI/ -site:nccptrai.gov.in/ -site:traiportal.gov.in/ -site:tccms.gov.in/ -site:ap.gov.in -site:www.tariff.trai.gov.in

[1] Page Count is produced by a simple query such as: "site:anatel.gov.br".

[2] Exclusion is a count of domains excluded from the query due to the fact that they are associated with the organization and published by it, counting as self-mention.

Cont. Table 4. Page Count and Mention Indicators for Selected Organizations

Country	Domain	Page Count[1]	Mention	Impact factor	Exclusion[2]	Mention Query
Peru	osiptel.gob.pe	61 700	3 220	0,05	6	"osiptel.gob.pe" -site:osiptel.gob.pe -site:twitter.com/OSIPTEL -site:youtube.com/user/OsiptelOficial -site:facebook.com/OsiptelOficial -site:flickr.com/photos/osiptel -site:linkedin.com/company/osiptel
Portugal	anacom.pt	93 900	15 300	0,16	5	"anacom.pt" -site:anacom.pt -site:youtube.com/channel/UCApJZ6dQYtZj6FLAB49pjTw -site:twitter.com/_ANACOM_ -site:mce-anacom.pt -site:http://www.anacom-consumidor.com
Republic of Korea	kcc.go.kr	58 300	84 000	1,44	5	"kcc.go.kr" AND Korea CommunicationC -site:kcc.go.kr -site:blog.naver.com/kcc1335 -site:twitter.com/withkcc -site:facebook.com/withkcc -site:youtube.com/user/KCCwith
South Africa	icasa.org.za	2 620	16 400	6,26	4	"icasa.org.za" -site:icasa.org.za -site:twitter.com/ICASA_org -site:facebook.com/icasa.org/ -site:linkedin.com/company/icasa -site:icasa-group.com
United Kingdom	ofcom.org.uk	33 900	28 100	0,83	7	"ofcom.org.uk" -site:ofcom.org.uk/ -site:twitter.com/ofcom -site:https:facebook.com/ofcom -site:linkedin.com/company/ofcom -site:youtube.com/ofcom -site:plus.google.com/+Ofcom -site:instagram.com/ofcom.org.uk/
United States of America	fcc.gov	871 000	3 970 000	4,56	8	"fcc.gov" -site:fcc.gov -site:twitter.com/fcc -site:youtube.com/user/fccdotgovvideo -site:facebook.com/FCC -site:flickr.com/photos/fccdotgov -site:instagram.com/fcc -site:linkedin.com/company/federal-communications-commission -site:https://github.com/fcc

TABLE 5. TWITTER INDICATORS

Twitter Account	Tweets	Followers	Following	Account age (avg)	Social Authority (*)	Retweets	Total Engagement
@anatel_oficial	1885	36 175	15	6,66	46	0,0%	0,0%
@OSIPTEL	46 708	86 273	447	7,45	70	0,5%	89,5%
@FCC	12 833	716 453	177	9,10	70	25,0%	25,0%
@ofcom	10 989	39 879	433	9,71	66	2,0%	66,5%
@Acerp	2 496	12 187	985	3,67	62	21,0%	27,0%
@ANACOM	7 700	65 614	1	9,64	30	5,0%	40,0%
@bnetza	1 547	7 272	94	3,88	57	5,5%	53,0%
@ICASA_org	1370	3 904	313	2,24	43	39,5%	53,0%
@withkcc	7 142	31 823	14 077	8,41	50	34,0%	34,0%
@TRAI	1 175	106 573	54	3,1	56	9,5%	12,0%

TABLE 6. YOUTUBE INDICATORS

Domain	Channel ID	Channel owner	Channel start date	Subscriber count	Total Views	Total video's
osiptel.gov.pe	UCjp5AVeSh3_XKDxgG7Ob58A	Osiptel	20/12/2020	2 149	58 429	79
anatel.gov.br	UCMzB_Ihgd2O-Vvu-Pn3dqWA	Agência Nacional de Telecomunicações	13/05/2006	2 838	191 282	470
fcc.gov	UCIWI0h4WenWWPlJrqU7GGsg	fccdotgovvideo	25/08/2009	2 765	536 830	775
ofcom.org.uk	UCotSpLJU69aAC9dOOgXqUNQ	Ofcom	22/11/2006	769	195 674	116
anacom.pt	UCApJZ6dQYtZj6FLAB49pjTw	ANACOM - Autoridade Nacional de Comunicações	18/03/2015	65	6 854	68
acerp.fr	UCDpEA_tNueQZRqsLY7a34Gw	Arcep	25/06/2006	75	35 442	59
bundesnetzagentur.de	UCIMb4NfwmKWab9mbzoidpkQ	Bundesnetzagentur	04/05/2018	21	2 001	9
kcc.go.kr	UCOWnNOXd4UAzHbMeqfT6DEg	KCCwith	25/01/2011	1 262	588 466	230
trai.gov.in	UCbpIrIEmbD29jk9velOKtPg	Telecom Regulatory Authority of India	18/10/2016	310	10 553	72
icasa.org.za/	UCcQgZBQVszTjYWpL3hjbTtQ	IcasaMedia	16/07/2012	20	2 926	7

TABLE 7. FACEBOOK INDICATORS

Organization	Date Account	Account Age	Followers	Likes	Number of Publications (7 days sample from 24/09 to 01/10)
anatel.gov.br	Not Active				
arcep.fr	19/09/2009	9,04	2 103	1 982	6
bundesnetzagentur.de	Not Active				
trai.gov.in	20/08/2015	3,12	10 501	10 243	2
osiptel.gob.pe	01/07/2013	5,25	173 000	172 000	18
anacom.pt	Not Active				
kcc.go.kr	03/11/2010	7,92	17 125	17 112	1
icasa.org.za	17/06/2016	2,29	10 810	10 728	6
ofcom.org.uk	26/04/2010	8,44	7731	7786	7
fcc.gov	09/09/2009	9,07	45 999	45 672	16

Domain	Number of Pages	Query
itu.int	14100000	site:itu.int
apt.int	7580	site:apt.int
atu-uat.org	536	site:atu-uat.org
canto.org	2140	site:canto.org
cept.org	19000	site:cept.org
citel.oas.org	2010	site:citel.oas.org
comtelca.org	493	site:comtelca.org
ctu.int	560	site:ctu.int
etsi.org	193000	site:etsi.org
rcc.org.ru	6750	site:rcc.org.ru

TABLE 9. ARCS CONNECTING EVALUATED DOMAINS DEFINED BY THE NUMBER PAGES WITH HYPERLINKS

Source Domain	Target Domain	Pages with Hyperlinks	Total Number of Pages on domain	Percentage of pages with hyperlinks
itu.int	apt.int	12100	14100000	0,086%
itu.int	atu-uat.org	560	14100000	0,004%
itu.int	canto.org	2820	14100000	0,020%
itu.int	cept.org	15100	14100000	0,107%
itu.int	citel.oas.org	1280	14100000	0,009%
itu.int	comtelca.org	1660	14100000	0,012%
itu.int	ctu.int	2470	14100000	0,018%
itu.int	etsi.org	23000	14100000	0,163%
itu.int	rcc.org.ru	10600	14100000	0,075%
itu.int	fcc.gov	8040	14100000	0,057%
itu.int	arcep.fr	228	14100000	0,002%
itu.int	osiptel.gob.pe	4	14100000	0,000%
itu.int	icasa.org.za	595	14100000	0,004%
itu.int	anacom.pt	1190	14100000	0,008%
itu.int	bundesnetzagentur.de	519	14100000	0,004%
itu.int	anatel.gov.br	5060	14100000	0,036%
itu.int	ofcom.org.uk	3440	14100000	0,024%
itu.int	kcc.go.kr	967	14100000	0,007%
apt.int	itu.int	2120	7580	27,968%
apt.int	atu-uat.org	3	7580	0,040%
apt.int	cept.org	154	7580	2,032%
apt.int	citel.oas.org	4	7580	0,053%
apt.int	comtelca.org	1	7580	0,013%
apt.int	etsi.org	102	7580	1,346%
apt.int	rcc.org.ru	12	7580	0,158%
apt.int	fcc.gov	125	7580	1,649%

Cont. Table 9. Arcs connecting evaluated domains defined by the number pages with hyperlinks

Source Domain	Target Domain	Pages with Hyperlinks	Total Number of Pages on domain	Percentage of pages with hyperlinks
apt.int	trai.gov.in	104	7580	1,372%
apt.int	anatel.gov.br	2	7580	0,026%
apt.int	ofcom.org.uk	24	7580	0,317%
apt.int	kcc.go.kr	58	7580	0,765%
atu-uat.org	itu.int	13	536	2,425%
atu-uat.org	apt.int	9	536	1,679%
atu-uat.org	cept.org	16	536	2,985%
atu-uat.org	etsi.org	2	536	0,373%
atu-uat.org	rcc.org.ru	5	536	0,933%
atu-uat.org	fcc.gov	11	536	2,052%
atu-uat.org	icasa.org.za	6	536	1,119%
atu-uat.org	ofcom.org.uk	1	536	0,187%
canto.org	itu.int	149	2140	6,963%
canto.org	apt.int	12	2140	0,561%
canto.org	cept.org	2	2140	0,093%
canto.org	citel.oas.org	15	2140	0,701%
canto.org	comtelca.org	9	2140	0,421%
canto.org	ctu.int	129	2140	6,028%
canto.org	etsi.org	10	2140	0,467%
canto.org	rcc.org.ru	5	2140	0,234%
canto.org	fcc.gov	68	2140	3,178%
canto.org	icasa.org.za	1	2140	0,047%
canto.org	trai.gov.in	2	2140	0,093%
canto.org	anatel.gov.br	11	2140	0,514%
canto.org	ofcom.org.uk	4	2140	0,187%
cept.org	itu.int	8940	19000	47,053%
cept.org	apt.int	2370	19000	12,474%
cept.org	atu-uat.org	11	19000	0,058%
cept.org	canto.org	2	19000	0,011%
cept.org	citel.oas.org	101	19000	0,532%
cept.org	comtelca.org	1	19000	0,005%
cept.org	ctu.int	179	19000	0,942%
cept.org	etsi.org	7670	19000	40,368%
cept.org	rcc.org.ru	19	19000	0,100%
cept.org	fcc.gov	1440	19000	7,579%
cept.org	arcep.fr	121	19000	0,637%
cept.org	icasa.org.za	6	19000	0,032%
cept.org	anacom.pt	1040	19000	5,474%
cept.org	trai.gov.in	4	19000	0,021%
cept.org	bundesnetzagentur.de	481	19000	2,532%
cept.org	anatel.gov.br	14	19000	0,074%
cept.org	ofcom.org.uk	2940	19000	15,474%
cept.org	kcc.go.kr	16	19000	0,084%

Cont. Table 9. Arcs connecting evaluated domains defined by the number pages with hyperlinks

Source Domain	Target Domain	Pages with Hyperlinks	Total Number of Pages on domain	Percentage of pages with hyperlinks
citel.oas.org	itu.int	290	2010	14,428%
citel.oas.org	apt.int	100	2010	4,975%
citel.oas.org	atu-uat.org	3	2010	0,149%
citel.oas.org	canto.org	44	2010	2,189%
citel.oas.org	cept.org	168	2010	8,358%
citel.oas.org	comtelca.org	217	2010	10,796%
citel.oas.org	ctu.int	142	2010	7,065%
citel.oas.org	etsi.org	142	2010	7,065%
citel.oas.org	rcc.org.ru	7	2010	0,348%
citel.oas.org	fcc.gov	73	2010	3,632%
citel.oas.org	anacom.pt	2	2010	0,100%
citel.oas.org	anatel.gov.br	192	2010	9,552%
comtelca.org	itu.int	138	493	27,992%
comtelca.org	canto.org	1	493	0,203%
comtelca.org	citel.oas.org	72	493	14,604%
comtelca.org	ctu.int	3	493	0,609%
comtelca.org	fcc.gov	2	493	0,406%
comtelca.org	trai.gov.in	1	493	0,203%
ctu.int	itu.int	114	560	20,357%
ctu.int	apt.int	4	560	0,714%
ctu.int	canto.org	7	560	1,250%
ctu.int	cept.org	4	560	0,714%
ctu.int	citel.oas.org	10	560	1,786%
ctu.int	comtelca.org	4	560	0,714%
ctu.int	etsi.org	2	560	0,357%
ctu.int	rcc.org.ru	4	560	0,714%
ctu.int	fcc.gov	12	560	2,143%
ctu.int	anatel.gov.br	1	560	0,179%
etsi.org	itu.int	21200	193000	10,984%
etsi.org	apt.int	298	193000	0,154%
etsi.org	atu-uat.org	1	193000	0,001%
etsi.org	canto.org	2	193000	0,001%
etsi.org	cept.org	7130	193000	3,694%
etsi.org	citel.oas.org	8	193000	0,004%
etsi.org	comtelca.org	1	193000	0,001%
etsi.org	ctu.int	104	193000	0,054%
etsi.org	rcc.org.ru	15	193000	0,008%
etsi.org	fcc.gov	2180	193000	1,130%
etsi.org	arcep.fr	3	193000	0,002%
etsi.org	icasa.org.za	6	193000	0,003%
etsi.org	anacom.pt	41	193000	0,021%
etsi.org	trai.gov.in	48	193000	0,025%
etsi.org	bundesnetzagentur.de	42	193000	0,022%

Cont. Table 9. Arcs connecting evaluated domains defined by the number pages with hyperlinks

Source Domain	Target Domain	Pages with Hyperlinks	Total Number of Pages on domain	Percentage of pages with hyperlinks
etsi.org	anatel.gov.br	9	193000	0,005%
etsi.org	ofcom.org.uk	425	193000	0,220%
etsi.org	kcc.go.kr	17	193000	0,009%
rcc.org.ru	itu.int	530	6750	7,852%
rcc.org.ru	apt.int	234	6750	3,467%
rcc.org.ru	atu-uat.org	7	6750	0,104%
rcc.org.ru	cept.org	318	6750	4,711%
rcc.org.ru	citel.oas.org	8	6750	0,119%
rcc.org.ru	etsi.org	106	6750	1,570%
rcc.org.ru	fcc.gov	5	6750	0,074%
rcc.org.ru	icasa.org.za	1	6750	0,015%
rcc.org.ru	anacom.pt	1	6750	0,015%
rcc.org.ru	trai.gov.in	1	6750	0,015%
rcc.org.ru	bundesnetzagentur.de	1	6750	0,015%
rcc.org.ru	ofcom.org.uk	1	6750	0,015%
fcc.gov	itu.int	13200	871000	1,515%
fcc.gov	apt.int	10600	871000	1,217%
fcc.gov	atu-uat.org	14	871000	0,002%
fcc.gov	canto.org	69	871000	0,008%
fcc.gov	cept.org	1410	871000	0,162%
fcc.gov	citel.oas.org	180	871000	0,021%
fcc.gov	comtelca.org	5	871000	0,001%
fcc.gov	ctu.int	86	871000	0,010%
fcc.gov	etsi.org	1700	871000	0,195%
fcc.gov	rcc.org.ru	7	871000	0,001%
fcc.gov	arcep.fr	4	871000	0,000%
fcc.gov	icasa.org.za	8	871000	0,001%
fcc.gov	anacom.pt	12	871000	0,001%
fcc.gov	trai.gov.in	158	871000	0,018%
fcc.gov	bundesnetzagentur.de	18	871000	0,002%
fcc.gov	anatel.gov.br	68	871000	0,008%
fcc.gov	ofcom.org.uk	556	871000	0,064%
fcc.gov	kcc.go.kr	19	871000	0,002%
arcep.fr	itu.int	29	24800	0,117%
arcep.fr	apt.int	7	24800	0,028%
arcep.fr	canto.org	2	24800	0,008%
arcep.fr	cept.org	77	24800	0,310%
arcep.fr	ctu.int	3	24800	0,012%
arcep.fr	etsi.org	109	24800	0,440%
arcep.fr	fcc.gov	1290	24800	5,202%
arcep.fr	anacom.pt	128	24800	0,516%
arcep.fr	trai.gov.in	15	24800	0,060%
arcep.fr	bundesnetzagentur.de	69	24800	0,278%

Cont. Table 9. Arcs connecting evaluated domains defined by the number pages with hyperlinks

Source Domain	Target Domain	Pages with Hyperlinks	Total Number of Pages on domain	Percentage of pages with hyperlinks
arcep. fr	anatel.gov.br	5	24800	0,020%
arcep.fr	ofcom.org.uk	124	24800	0,500%
arcep.fr	kcc.go.kr	6	24800	0,024%
osiptel.gob.pe	itu.int	8750	61700	14,182%
osiptel.gob.pe	apt.int	12	61700	0,019%
osiptel.gob.pe	canto.org	7	61700	0,011%
osiptel.gob.pe	cept.org	13	61700	0,021%
osiptel.gob.pe	citel.oas.org	15	61700	0,024%
osiptel.gob.pe	comtelca.org	9	61700	0,015%
osiptel.gob.pe	ctu.int	9	61700	0,015%
osiptel.gob.pe	etsi.org	70	61700	0,113%
osiptel.gob.pe	rcc.org.ru	5	61700	0,008%
osiptel.gob.pe	fcc.gov	101	61700	0,164%
osiptel.gob.pe	icasa.org.za	1	61700	0,002%
osiptel.gob.pe	anacom.pt	44	61700	0,071%
osiptel.gob.pe	trai.gov.in	8	61700	0,013%
osiptel.gob.pe	bundesnetzagentur.de	3	61700	0,005%
osiptel.gob.pe	anatel.gov.br	17	61700	0,028%
osiptel.gob.pe	ofcom.org.uk	29	61700	0,047%
icasa.org.za	itu.int	55	2620	2,099%
icasa.org.za	apt.int	4	2620	0,153%
icasa.org.za	cept.org	58	2620	2,214%
icasa.org.za	ctu.int	1	2620	0,038%
icasa.org.za	etsi.org	51	2620	1,947%
icasa.org.za	rcc.org.ru	3	2620	0,115%
icasa.org.za	fcc.gov	57	2620	2,176%
icasa.org.za	anacom.pt	1	2620	0,038%
icasa.org.za	trai.gov.in	1	2620	0,038%
icasa.org.za	anatel.gov.br	4	2620	0,153%
icasa.org.za	ofcom.org.uk	91	2620	3,473%
icasa.org.za	kcc.go.kr	3	2620	0,115%
anacom.pt	itu.int	4260	93900	4,537%
anacom.pt	apt.int	152	93900	0,162%
anacom.pt	atu-uat.org	9	93900	0,010%
anacom.pt	canto.org	16	93900	0,017%
anacom.pt	cept.org	6170	93900	6,571%
anacom.pt	citel.oas.org	10	93900	0,011%
anacom.pt	comtelca.org	6	93900	0,006%
anacom.pt	ctu.int	19	93900	0,020%
anacom.pt	etsi.org	2540	93900	2,705%
anacom.pt	rcc.org.ru	15	93900	0,016%
anacom.pt	fcc.gov	398	93900	0,424%
anacom.pt	arcep.fr	5	93900	0,005%

Cont. Table 9. Arcs connecting evaluated domains defined by the number pages with hyperlinks

Source Domain	Target Domain	Pages with Hyperlinks	Total Number of Pages on domain	Percentage of pages with hyperlinks
anacom.pt	icasa.org.za	2	93900	0,002%
anacom.pt	trai.gov.in	19	93900	0,020%
anacom.pt	bundesnetzagentur.de	333	93900	0,355%
anacom.pt	anatel.gov.br	1210	93900	1,289%
anacom.pt	ofcom.org.uk	540	93900	0,575%
anacom.pt	kcc.go.kr	10	93900	0,011%
trai.gov.in	itu.int	929	46200	2,011%
trai.gov.in	apt.int	275	46200	0,595%
trai.gov.in	canto.org	1	46200	0,002%
trai.gov.in	cept.org	79	46200	0,171%
trai.gov.in	citel.oas.org	1	46200	0,002%
trai.gov.in	ctu.int	7	46200	0,015%
trai.gov.in	etsi.org	222	46200	0,481%
trai.gov.in	rcc.org.ru	5	46200	0,011%
trai.gov.in	fcc.gov	577	46200	1,249%
trai.gov.in	icasa.org.za	20	46200	0,043%
trai.gov.in	anacom.pt	5	46200	0,011%
trai.gov.in	bundesnetzagentur.de	6	46200	0,013%
trai.gov.in	anatel.gov.br	14	46200	0,030%
trai.gov.in	ofcom.org.uk	271	46200	0,587%
trai.gov.in	kcc.go.kr	17	46200	0,037%
bundesnetzagentur.de	itu.int	724	35200	2,057%
bundesnetzagentur.de	apt.int	13	35200	0,037%
bundesnetzagentur.de	canto.org	1	35200	0,003%
bundesnetzagentur.de	cept.org	247	35200	0,702%
bundesnetzagentur.de	ctu.int	9	35200	0,026%
bundesnetzagentur.de	etsi.org	361	35200	1,026%
bundesnetzagentur.de	rcc.org.ru	5	35200	0,014%
bundesnetzagentur.de	fcc.gov	25	35200	0,071%
bundesnetzagentur.de	anacom.pt	61	35200	0,173%
bundesnetzagentur.de	trai.gov.in	3	35200	0,009%
bundesnetzagentur.de	anatel.gov.br	1	35200	0,003%
bundesnetzagentur.de	ofcom.org.uk	85	35200	0,241%
anatel.gov.br	itu.int	1210	338000	0,358%
anatel.gov.br	apt.int	61	338000	0,018%
anatel.gov.br	atu-uat.org	4	338000	0,001%
anatel.gov.br	canto.org	14	338000	0,004%
anatel.gov.br	cept.org	110	338000	0,033%
anatel.gov.br	citel.oas.org	380	338000	0,112%
anatel.gov.br	comtelca.org	7	338000	0,002%
anatel.gov.br	ctu.int	33	338000	0,010%
anatel.gov.br	etsi.org	222	338000	0,066%
anatel.gov.br	rcc.org.ru	4	338000	0,001%

Cont. Table 9. Arcs connecting evaluated domains defined by the number pages with hyperlinks

Source Domain	Target Domain	Pages with Hyperlinks	Total Number of Pages on domain	Percentage of pages with hyperlinks
anatel.gov.br	fcc.gov	499	338000	0,148%
anatel.gov.br	icasa.org.za	8	338000	0,002%
anatel.gov.br	anacom.pt	137	338000	0,041%
anatel.gov.br	trai.gov.in	44	338000	0,013%
anatel.gov.br	bundesnetzagentur.de	1	338000	0,000%
anatel.gov.br	ofcom.org.uk	27	338000	0,008%
anatel.gov.br	kcc.go.kr	7	338000	0,002%
ofcom.org.uk	itu.int	2010	33900	5,929%
ofcom.org.uk	apt.int	77	33900	0,227%
ofcom.org.uk	cept.org	1430	33900	4,218%
ofcom.org.uk	citel.oas.org	1	33900	0,003%
ofcom.org.uk	ctu.int	28	33900	0,083%
ofcom.org.uk	etsi.org	1020	33900	3,009%
ofcom.org.uk	rcc.org.ru	5	33900	0,015%
ofcom.org.uk	fcc.gov	528	33900	1,558%
ofcom.org.uk	arcep.fr	6	33900	0,018%
ofcom.org.uk	icasa.org.za	7	33900	0,021%
ofcom.org.uk	anacom.pt	67	33900	0,198%
ofcom.org.uk	trai.gov.in	14	33900	0,041%
ofcom.org.uk	bundesnetzagentur.de	30	33900	0,088%
ofcom.org.uk	anatel.gov.br	3	33900	0,009%
ofcom.org.uk	kcc.go.kr	9	33900	0,027%
kcc.go.kr	itu.int	1870	58300	3,208%
kcc.go.kr	apt.int	402	58300	0,690%
kcc.go.kr	canto.org	1	58300	0,002%
kcc.go.kr	cept.org	31	58300	0,053%
kcc.go.kr	citel.oas.org	2	58300	0,003%
kcc.go.kr	comtelca.org	1	58300	0,002%
kcc.go.kr	ctu.int	11	58300	0,019%
kcc.go.kr	etsi.org	150	58300	0,257%
kcc.go.kr	rcc.org.ru	6	58300	0,010%
kcc.go.kr	fcc.gov	871	58300	1,494%
kcc.go.kr	arcep.fr	11	58300	0,019%
kcc.go.kr	icasa.org.za	4	58300	0,007%
kcc.go.kr	anacom.pt	11	58300	0,019%
kcc.go.kr	trai.gov.in	12	58300	0,021%
kcc.go.kr	bundesnetzagentur.de	8	58300	0,014%
kcc.go.kr	anatel.gov.br	8	58300	0,014%
kcc.go.kr	ofcom.org.uk	259	58300	0,444%

TABLE 10. GRAPH NODE PROPERTIES.

Label	eigencentrality	indegree	outdegree	Degree	weighted indegree	weighted outdegree	Weighted Degree	pageranks
itu.int	1	19	18	37	66531	89633	156164	0,3069
apt.int	0,966774	18	12	30	26730	2709	29439	0,090733
atu-uat.org	0,50056	10	9	19	1148	599	1747	0,009574
canto.org	0,674712	14	13	27	2987	417	3404	0,017544
cept.org	0,966774	18	18	36	32517	25355	57872	0,118502
citel.oas.org	0,776964	15	12	27	2087	1380	3467	0,021921
comtelca.org	0,576414	12	6	18	1921	217	2138	0,016189
ctu.int	0,766186	16	10	26	3233	162	3395	0,023322
etsi.org	0,966774	18	18	36	37479	31530	69009	0,133745
rcc.org.ru	0,944993	17	12	29	10722	1213	11935	0,04046
fcc.gov	1	19	18	37	16302	28114	44416	0,074286
arcep.fr	0,375871	7	13	20	378	1864	2242	0,008738
osiptel.gob.pe	0,061356	1	16	17	4	9093	9097	0,007512
icasa.org.za	0,717913	14	13	27	3285	2949	6234	0,010341
anacom.pt	0,704045	14	18	32	2740	15714	18454	0,017912
bundesnetzagentur.de	0,618352	12	12	24	1511	1535	3046	0,011987
anatel.gov.br	0,916549	16	17	33	6619	2768	9387	0,02704
ofcom.org.uk	0,878215	16	15	31	8817	5235	14052	0,039075
kcc.go.kr	0,669233	11	17	28	1129	3658	4787	0,012431
trai.gov.in	0,777362	15	15	30	434	2429	2863	0,011789

TABLE 11. PERCENTAGE OF USERS PER SOCIAL MEDIA NETWORK. SOURCE [17]

Country	Twitter	YouTube	Facebook	Pinterest	Instagram	Tumblr
Brazil	4,95	27,58	47,4	13,28	3,76	2,14
France	6,93	4,41	70,05	15,47	1,21	0
Germany	5,27	6,9	61,31	20,64	1,99	2,12
India	1,97	10,8	76,87	4,3	5,36	0
Peru	4,2	35,62	52,12	6,64	0	0
Portugal	5,31	4,77	78,49	6,25	3,09	1,18
Republic of Korea	68,36	9	19,33	1,97	0	0
South Africa	10,65	3,24	46,7	34,93	1,23	0
United Kingdom	14,65	2,93	64,21	12,12	2,71	1,77
United States of America	6,86	1,66	60,6	27,05	1,58	1,12

TABLE 12. ADDITIONAL REFERENCE DATA TO COUNTRIES. SOURCE: [15], [16]

	Country Population	Total Internet Users	Annual investment in telecommunication services (US$)
Brazil	210 868 000	130 818 619	6 507 153 772
France	65 233 000	52 512 565	9 825 221 239
Germany	82 293 000	69 451 589	9 070 796 460
India	1 354 052 000	407 744 946	27 891 063 323
Peru	32 552 000	15 861 819	1 325 741 665
Portugal	10 291 000	7 593 854	673 897 073
Republic of Korea	51 164 000	48 655 505	4 808 207 773
South Africa	57 398 000	31 588 425	1 711 718 790
United Kingdom	66 574 000	64 304 234	7 042 821 606
United States of America	326 767 000	253 686 884	91 629 426 195

Other data provided by ITU were evaluated, such as: International Internet bandwidth; in Mbit/s; International Internet bandwidth per Internet user and Revenue from all telecommunication services. These other variables proved to be inconsistent thought the reference database and could not be used. It's important to highlight that all this information is provided by the official government organizations of each country and the methodology for collecting data is far from standardized. Due to this factor, variables that are not clear in the definition might represent different events or objects on the real world and thus be very discrepant between different countries and so, be rendered useless as a metric of comparison for different organizations.