ARE NATIONS SO DIFFERENT ACCESSING THE INTERNET?

Dr. Alexandre Cappellozza (Escola de Administração de Empresas de São Paulo / FGV, São Paulo, Brasil) – cappellozza@gmail.com
Gustavo H. S. Moraes (Escola de Administração de Empresas de São Paulo / FGV, São Paulo, Brasil) – gustavo.moraes@gvmail.br
Cláudio L. C. Larieira (Escola de Administração de Empresas de São Paulo / FGV, São Paulo, Brasil) – claudio.larieira@fgv.br

This study will examine the existence of a common awareness about the audience of websites in different groups of countries with the aim to identify, regardless of the variety of endogenous and exogenous influences that can interfere with hearing websites, some access pattern associated to the global audience of websites. In order to enable an analysis of a possible preference pattern associated to the global website´s audience, we will develop a Virtual Popularity Index - VPI. The data will be used to develop this study were obtained from the Alexa website (www.alexa.com) that provides information about the hits on various websites, such as traffic information, origin and time of access. Thus, through the development of the Virtual Popularity Index - VPI applied to a sample of 2500 observations which includes the 20 most visited websites in 125 countries, it was possible to reveal that in the continents of Africa, American, Asian and European the first eight most accessed websites are the same. This study also confirms what some studies, in part, state: the hegemony of websites focused in content production, search and social networks. Thus, this study showed that these popular websites not only dominate the amount of hits, but also the leadership of the audience on different continents and may to adapt themselves to any possible barriers to user adoption, such as culture, language, ease of use, among others.

Keywords**:** rank, audience, Internet, global, websites.

INTRODUCTION

Seen as one of the most revolutionary tools of information dissemination and communication of recent decades, the Internet can be considered as the main network to exchange data between different users or organizations (Ramos, 1998).

The development of the Internet began in the 1960s with the emergence of the ARPAnet, and had the aim of linking research laboratories in North America. The name "Internet" came about when the technology has also involved universities and other countries. By the early '80s, Internet use was limited only to the academic environment. Only in 1987, the commercial use of the Internet was released in the United States (Curi, Dias, & Filho, 2006; Fuoco, 2003).

One of the evidences of its success, both fast and expressive, it can be seen by the number of users: the internet took only five years to reach the same number of users that radio took to 38 years (Curi, et al., 2006; Ferreira, Oliveira, & Feix, 2004; ZEFF & ARONSON, 2000); in 1997, the Internet had 48 million users (Gertner & Diaz, 1999).

Among the most commonly used services on the Internet is the World Wide Web, also known as WWW or web, and it becomes easier to navigate into websites available in this digital environment through systems browsers *(Crispim & Dultra, 2005; Curi, et al., 2006)*.

According to Lee (2010), communication media have two categories: 1 - Mass Media or Media 1.0: information, news and entertainment are produced by organizations or institutions, and the content is targeted indirectly to the public in a single direction; 2 - Social Media or Media 2.0: Any individual is capable of producing content for the web and the content is distributed through relationships.

Currently, the Internet stands out as one of the favorite activities by different type of computers users in many countries, so the website audience is one of the challenges for companies interested in this technology to gain information about their visitors, promote advertisement campaigns, among others objectives (Bhatnagar, Ghose, & Vikas, 2009; Dann & Haddow, 2008; Deloitte, 2009; Oliveira & Huertas, 2010).

Thus, this research investigate the existence of a common awareness about the audience of websites in different groups of countries with the aim to identify, regardless of the variety of endogenous and exogenous influences that can interfere with hearing websites, some access pattern associated to the global audience of websites.

THEORETICAL BACKGROUND

Internet Success as an information channel

Among other features of the Internet, flexibility and accessibility of information manifest are some of main components that promote its use worldwide. The flexibility of information refers to the possibility of manipulating data according to the interest of content owners; accessibility of information is understood as the availability of information to users, regardless of locations, dates and times, considering the guaranteed existence of technological infrastructure that allows to access the data (Alhudaithy & Kitchen, 2009; Flavian, Guinalau, & Torres, 2005).

Interactivity is another important feature to justify the global adoption of this

technology among users; this functionality can be understood as a resource that allows communication two-way *versus* real-time, mediated by technology platforms (such as the Internet) (Tse & Chi-Fai, 2004).

In the past, the website´s were, mainly, dedicated to present products and services, in a time where managers of organizations still did not understand, completely, the whole Internet's potential to fully exploit it (Albertin, 1999; Graeml, Graeml & Steil, 2001). Fearful perceptions about the actual success of the Internet e-commerce could also be observed in some academic research papers about the theme (Cordeiro, Silveira, & Benevides, 2004).

However, given the current global adoption of this technology, it is confirmed that Internet is now regarded as a communication channel that offers more opportunities than threats in various segments of use. Among these opportunities, there are best directions to improve marketing communications to segmented customers, faster and cheaper distribution of information than traditional communication media, among others applications and benefits. (Gertner & Diaz, 1999).

In the corporate environment, the Internet can be used as a means of disseminating information about the company, information collection, to enable transactions, transmission and dissemination of promotional campaigns, among other purposes (Crispim & Dultra, 2005; Koetz, 2004; Limeira, 2003; Plebani, Guerini, & Tontini, 2009).

Currently, several market segments benefit from the extensive range of services offered by the possibilities of using the Internet: banking institutions, government agencies, political parties, tourism, universities, among other examples (Diniz, 2000; Ramos, 1998; Ramos & Costa, 1999; Vitak et al., 2011)

Among the services available on the Internet, we mention: financial transactions (Diniz, 2000), communications, data storage, transmission and distribution of music files, videos, photos, email, social networks, among other facilities and forms of application systems (Bryson, Gomez, & Willman, 2010; Raacke & Bonds-Raacke, 2008; Stefanone, Lackaff, & Rosen, 2011).

About the motivations that lead to the use of the Internet, some authors have characterized as utilitarian or hedonic reasons (Gertner & Diaz, 1999). Examples of utilitarian benefits can be exemplified as: reduction of transaction costs, discounts on purchases, recommendation about products and services, among others benefits (Ang, 2011; Hernandez, 2001; Huei-Chen, Chi-Shiun, & Cheng-Hsui, 2007).

One reason for the presence of hedonic results when using the Internet, as the satisfaction of use, it can be explained by the concept of flow, which refers to the sensation of a "great experience or enjoyment". In this situation, the user is motivated by the balance of his skills and his interaction with the information system. Thus, the flow is described as the individual state that occurs during shipping, in which: 1 - there is an uninterrupted sequence of responses facilitated by interaction with the system, 2 – the use of technology becomes enjoyable ; 3 – the state of flow is accompanied by loss of self-conscience. Consequently, it reduces the possibility of a user abandons your browsing experience, which can increase the interaction time with the website and allows the user to return this website on another occasion (Curi, et al., 2006; Hoffman & Novak, 1996).

However, despite the increasing adoption of Internet users in everyday, resistance behaviors may be observed among individuals when different types of electronic services such as online banking are offered to them. Among the reasons that justify the resistance to adoption some IT are: cultural factors, fear of loss of privacy, uncertainty about the possibility of fraud, habit, usage experience, and other aspects (Crispim & Dultra, 2005; Hernandez,

2002; Priest, Nayak, & Stuart-Hamilton, 2007).

Moreover, the challenge of retaining online users to the websites may depend not only on factors associated to individual preferences, but also aspects related to quality of information and systems, characteristics of the platforms and websites content (Tao, Yaobin, & Bin, 2009).

Characteristics inherent to the success of audience on Websites

According to Iyer, Gupta, Foroughi (2000) "A good web site not only attracts, informs and sells to consumers during the first visit, but also increases the potential for visits and sales". In this sense, websites have become the main tools to expose the presence of companies on the Internet. Such technological resources provided new ways of communication with customers and suppliers, promotion and marketing of products and services, among other possibilities (Plebani, et al., 2009; Sicilia, Ruiz, & Reynolds, 2006).

Generally, the categorization of websites depends on the intended purpose of these information systems. Websites can be categorized, for example, as: 1 - Portals Content; 2 - Search Engines; 3 – Retail; 4 – Entertainment; 5 – News and Information; 6 – Financial Services, 7 – Social Networking (Tarafdar & Jie, 2005).

Wells et. al (2011) state that the quality of a website affects the perceived quality of the product by the consumer. In this sense, website usability and aspects of efficiency are considered in the evaluation of the quality of the website. The usability of the website is a broad concept that is associated with the visual display, navigation features, functionality or utility delivered to the user (Cappel & Zhenyu, 2007; Rossi, 2008; Tao, et al., 2009; Wells, Valacich, & Hess, 2011).

One of the instruments developed to evaluate the quality of a website is called *WebQual* (Loiacono, 2000), whose website quality assessment includes 12 dimensions, namely: *1 - Fit to Task*: ability included to a website which helps the user to accomplish the desired task; *2 - Interactivity:* the website allows communication between the parties, regardless of distance or time; *3 - Reliability; 4 - Time Response; 5 - Intuitiveness:* the website promotes easy learning or understanding on their navigation by the user; *6 - Appeal Visual; 7 – Innovation; 8 - Emotional Appeal Flow*: The website provides an intense, intrinsic and enjoyable experience for the user during navigation; *9 - Integrated communication; 10 - Business Processes:* the website promotes business transactions held by the owner or developers (if it is a websites' goal); *11 - Appeal of design:* graphics and content of the website that promotes a sense of ease of use or comfort to the user; *12 – Feasibility of Substitution:* the website operates as an alternative channel to perform the intended tasks that could be done by other means.

Range, richness and *affiliation* are also considered three important features of a website (Evans & Wurster, 1999). Range refers to the number of users visiting this website, or audience, and the volume of information the website provides its visitors; *Richness* is defined as the relevance and details of the information contained on the website and, finally, *affiliation* refers to the ability of the website provide some kind of relationship with your visitors, for example, customers of an e-commerce portal (Evans & Wurster, 1999; Tse & Chi-Fai, 2004).

Other characteristics that may influence the website's users preference are: *1- Information organization*: it allows the user to navigate easily on the content; *2-*

Customization: the website allows the user to suit, easily, visualization of information and provides users interactivity as well, *3- Technical aspects*: technical properties are also considered important to the operation of the website, for example the speed and availability of access to information. Also include other security aspects: such as user authentication, fraud protection and encryption codes (Alhudaithy & Kitchen, 2009; Tarafdar & Jie, 2005; Tse & Chi-Fai, 2004).

Endogenous influences on the use of websites

Besides the characteristics of websites cited in last topic, social influences and cultural factors may also influence the preference of users to access websites (Liao, Proctor, & Salvendy, 2009; Shen & Khalifa, 2010; Singh, Baack, Pereira, & Baack, 2008; Soyoung & Yuri, 2006; Straub, Loch, & Hill, 2001; Wonsun & Jisu, 2009).

As different characteristics among populations, Hofstede (2001) proposed five cultural dimensions: *1 - Power distance:* degree of perception that individuals with less power in organizations or institutions accept that power is distributed unevenly, *2a - Individualism:* the social structure that governs how people take care of themselves and their families; *2b - Collectivism:* expectation that third parties take care of others, even unknown parties, *3 - Aversion to uncertainty:* individual feeling of threat in the face of ambiguous situations or situations of risk; *4a - Masculinity:* individuals coming from cultures with high masculinity tend to consume to gain self-status; *4b - Femininity:* cultures with high femininity tend to consume for your own use; *5 - Focusing on long-term*: long term oriented cultures value the economy, or saving, of individual economies; whereas cultures focused on short-term value immediate consumption instead of saving for the future. These cultural dimensions were validated in a study of individual perceptions related to websites between Americans and Koreans (Soyoung & Yuri, 2006).

When applicable, acculturation is also another possible influence on usage of websites. In this case, immigrants residing in a country usually undergo a process of learning the culture of the foreign country and influence their behavior patterns, purchase intentions and use of media, among others aspects (Berry, 1980; Singh, et al., 2008). For example, Signh et. al (2008) has identified some preferences related to the use of websites in the Hispanic population residing in the United States: 1 - best attitude to adopt websites related to Hispanic causes, 2 - higher intention to purchase on websites that are associated with the Hispanic community; 3 – likely to prefer websites that insert pictures of Hispanic celebrities on their content; 4 - availability of support in Spanish language.

Liao et al. (2009) has found differences in perception of risk in online shopping websites between Chinese and Americans. The Chinese respondents were more afraid to shop online motivated mainly by the lack of experience and lack of infrastructure for this type of transaction.

Studies also indicate that the cultural effects combined with social norms may influence the use of the Internet. Characteristics of the use of social network Facebook permeated by aspects of traditional Arab and Islamic culture have been described by Khalifa and Shen (2010). In this research, the authors have found that the male use of this website is consistent with the goal of socialization, understood as basic function of this site; while the female use of Facebook refers to the possibility to obtain complements on important limitations to their social lives.

The government censorship also can force users to migrate their usage behavior to other websites that provide a particular service or content (Hamilton, Knouse, & Hill, 2009). It may be cited as an example of corporate actions to meet the regulations of Internet government censorship, the launch of the website Google.cn that allowed the Chinese could access a content filtered according to the rules of Internet access by the Chinese government.

When you type "Tiananmen Square", the website Google.cn appear suggestions of tourism enterprises and images of people enjoying this environment on holidays and no picture on the events of resistance to government in 1989, are located. In the Google.com website can be found images of a Chinese citizen who was in front of an army tank and has became a symbol of resistance to Communist rule (Dann & Haddow, 2008).

Since Google's mission is to "organize the world's information and make it globally accessible and useful" (Google, 2011), it generates the debate whether the information actually available to all interested parties, among other aspects (Dann & Haddow, 2008; Hamilton, et al., 2009; Liao, et al., 2009). One explanation that tries to justify the action of Google to conform to the policies of Chinese information blocking Chinese citizens are losing market share to other competing organizations, such as Chinese search site www.baidu.com (Dann & Haddow, 2008).

Among studies on the influences that may affect traffic websites among individuals, most of them focused on the hegemony of the audience on two websites on the web: Google and Facebook (Ang, 2011; Bryson, et al., 2010; Clemons & Madhani, 2010; Conway, 2010; Dann & Haddow, 2008; Rienzo & Bernard, 2009; Ripberger, 2011; Shen & Khalifa, 2010; Stefanone, et al., 2011). Over the next two topics, it will be presented studies that seek to explain the popularity ratings of these two websites in several countries, among other information.

Google website search

In 1998, two Stanford students launched the Google website, with an apology to the term Googol which is defined by a number with very high value, practically infinite. This number is also associated with the size of the universe or considered as a number greater than the number of atoms in the observable universe, estimated between 10^{79} e 10^{81}. In other words, the Googol is a term which can be interpreted as a number of very high value, although finite. The apology to the Google site with the word Googol, refers to the availability of a huge amount of links, documents and information to users (Smith, 2010).

According to the company Netmarketshare (2010), Google accounts for approximately 85% of the global search for information on the Internet. His closest competitor is the website Yahoo, with 5.38% market share worldwide Internet searches. In Figure 1 can be viewed the market shares of the major search websites in 2010.

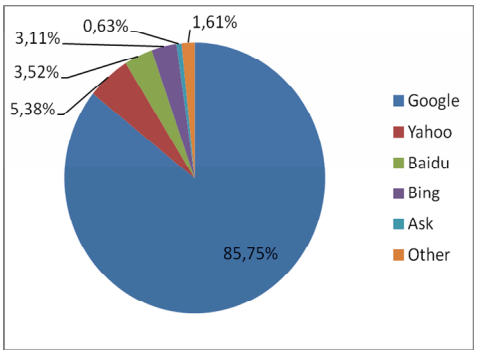

Figure 1: World Market for search websites.
Source: adapted from (Netmarketshare, 2010; Ripberger, 2011).

Several reasons may explain Google's success against other competitors in this segment of Information Technology: 1 - habit: this individual influence can be seen as a key factor in selecting a site search (Vogl & Barrett, 2010); 2 - ease of use (Ripberger, 2011); 3 – Google has become an ubiquitous website (Smith, 2010).

Two reasons that also contributes to the expansion of Google market share, it is the integration of technological tools in their systems and the massive purchase of digital content (Conway, 2010).

Given the popularity of Google, there are developers who seek to improve techniques to position their websites in top positions on Google search, some of these techniques are considered illegal by Google and other search sites, such as the technique of "black hat": it is based to hide text in lines of code of a website to promote better position in web search (Vogl & Barrett, 2010).

Such is the popularity of websites, as the capability of manipulation the position of links, it generates discussion among researchers who claims that Google website search monopoly can negatively affect competition among some organizations (Clemons & Madhani, 2010; Vogl & Barrett, 2010).

The social networking website: Facebook

To Boyd and Ellison (2007), social networking sites are Internet-based services that allow: 1 - the creation of individual profiles, public or semi-public, in an interconnected system to other profiles, 2 - users to decide to which users they will share their private information and 3 - the viewing of other users through the connection they have with their contacts within the social networking site.

Notwithstanding the possibility communicating with other users, these sites provide some degree of flexibility to the user to share information with his, or her, social network: it is possible to disclose information about their daily lives and interests, either by publication of texts, photos or videos in their individual profiles (Raacke & Bonds-Raacke, 2008).

About the types of use of social networks, two categories can be cited: the *instrumental use*: defined as the use focused to search of specific information and *ritual use*: it refers to the habitual use of media as a distraction or entertainment. Research on these two different categories of use results have revealed different cognitive and emotional factors as a justification for the use of social networks (Lang, 2006; Kevin Wise, Alhabash, & Park, 2010;

K. Wise & Kim, 2008; K. Wise, Kim, & Kim, 2009). Among the examples of social networking websites, we mention: Facebook, Orkut, Linkedin and Twitter, among others.

Among the social networking websites available on the web, Facebook is considered the most popular social networks, in a period of 06 years, this website attracted more than 500 million users and 70% of users outside the United States, their country of origin. Revenues coming from marketing to the organization totaled $ 716 million in 2009, which indicates that this website is also attracting companies interested in using this communication channel to promote their business besides other purposes (Ang, 2011; Bryson, et al., 2010; Rienzo & Bernard, 2009; Stefanone, et al., 2011).

The variety of applications and the search for behavioral casualties related the use of Facebook can be proven in several studies on this system, for example, disclosures of political campaigns (Robertson, Vatrapu, & Medina, 2010; Vitak, et al., 2011), process of hiring employees (Peluchette & Karl, 2009), customer relationship management (Ang, 2011), individual behavioral traits (Gonzales & Hancock, 2011; Orr et al., 2009; Shen & Khalifa, 2010; Stefanone, et al., 2011; Young, Dutta, & Dommety, 2009).

According to previous studies, Facebook can show the following individual motivations for use, including: the use of specific content such as games, applications and surveys; practice of social research associated to search for information from others users; viewing and sharing photos and videos, maintaining social relationships, among other purposes (Joinson, 2008; Kevin Wise, et al., 2010).

In addition to the features provided by the use of social networking websites and search, traffic on the websites may be subject to government regulation of access to web, beyond the cultural, behavioral and technological aspects (Dann & Haddow, 2008; Hamilton, et al., 2009; Liao, et al., 2009).

However, the authors haven't found studies that investigate whether there is a common global pattern about the audience of websites, regardless of the variety of endogenous and exogenous influences that may interfere on audience of those websites.

In this sense, we develop a study that investigates the global popularity of websites, based on a Virtual Popularity Index - VPI - to enable analysis on the global preferences patterns associated to audiences of websites.

Virtual Popularity Index – VPI

Toward to the preparation of a virtual popularity index, the authors have collected data regarded to access of websites. These type of data are available in specialized websites, such as www.alexa.com (Bhatnagar, et al., 2009).

Thus, we define the position in the volume of hits for a particular country as *Ranking Access - RA* - and it will be one of the variables to be used for the development of VPI. As an example of observation from this sample, we can refer to www.youtube.com that ranks third in number of visits by Internet users in Macedonia. Then, it is considered that the RA of *youtube* is equal to 3 to Macedonia.

The variable NPC is defined to the percentage of countries over the continent that has a specific website associated with a specific RA. For example: Linkedin is the ninth most visited website in 5% of African countries. Then, the NPC is equal to 0.05 for RA equals to 9 in these countries.

Thus, the variable NPC prevents countries that have higher, or lower, average number of accesses to the group of countries to influence the measure of popularity of a website over the continent, for example.

Another variable is considered to VPI is the total number of positions on this rank - TP. This study will analyze the 20 most visited websites in each country and, then, TP is equal to 20.

Considering the variables described in this topic, the authors developed the Virtual Popularity Index - VPI, as it follows.

$$VPI = \sum_{i=1}^{n} (NPC_i * (TP - RA_i + 1))$$

Figure 2: Equation of Virtual Popularity Index - VPI
Source: Developed by the authors.

According to the equation of VPI, it is observed that the subtraction of TP and RA plus of a unit results in a numerical weight that adds to the value of the index VPI for websites that have better positioning in access volume compared to other websites.

Furthermore, VPI is independent of the number of access of each site, because the variable NPC takes in consideration the percentage of countries over a continent or group of countries.

In this sense, the popularity of a website can be compared in any group of countries, regardless of the number of accesses to this website or number of countries in some continent. Thus, countries that have lower rate of Internet penetration may contribute similarly to the index of popularity of a website with countries that have increased availability of Internet access to its population.

Since the sum of a unit in the third term of the equation prevents the VPI assumes zero value over the analysis of the largest value of TP.

Finally, it is understood that the use of VPI index requires the selection of countries as groups to enable the sum of the values as specified before.

METHODOLOGY

The sample was obtained from the Alexa website (www.alexa.com) that provides information about websites around the world, such as traffic information, origin and time of access.

In addition to providing access to information related to websites, the choice of Alexa website as a source of information to the composition of the sample was supported by another studies that also used this channel as a data source (Bhatnagar, et al., 2009; Hackett, Parmanto, & Xiaoming, 2005; McCafferty, 2011).

Sample

The data sample contains the Uniform Resource Locator – URL, or website address, of the 20 most visited websites in 125 countries in March 2012, which resulted in a collection of data that includes 2500 observations.

In the Appendix section are listed the names of the countries that have participated in this study. Because access data was below of 15% related to Oceania continent (information available only for Australia and New Zealand), we chose to discard the analysis on this continent.

Results and analysis

VPI was calculated for several websites following groups of countries as Africa, Europe and Asia. However, as the United States have the highest adoption rate of Internet usage among other countries (Curi, et al., 2006; Hernandez, 2002), in an exploratory way, we have decided to create two groups of countries involving American countries, namely: one group consists of countries in Latin America and another group of countries consists of countries in North America. VPI was also calculated considering all the countries of the sample and forming a group called World.

The following table can be viewed with the 20 most popular websites, according to VPI among groups of countries analyzed in this research. It is noted that the maximum value of VPI-S[1] is equal to 20, as a result by the variable value TP defined before.

AFRICA		ASIA		EUROPA		LATIN AMERICA		NORTH AMERICA		WORLD	
Website	*VPI-S*	*Website*	*VPI-S*	*Website*	*VPI-S*	*Website*	*VPI-S*	*Website*	*VPI-S*	*Website*	*VPI-S*
Facebook	19,70	Google.com	18,33	Facebook	18,41	Facebook	19,57	Google (DL)	20,00	Facebook	18,73
Google.com	17,75	Facebook	17,97	Google.com	18,33	Google (DL)	17,91	Facebook	19,00	Google.com	17,96
Youtube	17,30	Youtube	16,83	Google (DL)	18,18	Google.com	17,74	Youtube	17,67	Youtube	17,28
Yahoo	16,30	Google (DL)	16,11	Youtube	17,44	Youtube	17,70	Yahoo	16,00	Google (DL)	16,95
Google (DL)	14,20	Yahoo	13,56	Wikipedia	13,51	Windows Live	15,65	Windows Live	13,33	Yahoo	13,28
Windows Live	10,75	Blogspot	10,33	Yahoo	10,64	Yahoo	14,13	Wikipedia	13,33	Wikipedia	11,72
Blogspot	10,70	Wikipedia	10,33	Blogspot	9,85	Blogspot	12,70	Blogspot	12,67	Blogspot	10,74
Wikipedia	10,20	Windows Live	8,61	Windows Live	7,82	Wikipedia	11,87	Twitter	12,67	Windows Live	10,20
Google (OD)	7,10	Twitter	6,44	Twitter	5,44	MSN	10,35	Google.com	11,67	Twitter	6,54
Babylon	5,20	MSN	3,67	Linkedin	3,72	Twitter	9,09	MSN	10,00	MSN	4,32
Twitter	4,75	Maktoob	2,86	Google (OD)	2,92	Amazon	7,04	Amazon	9,67	Google (OD)	3,07
MSN	4,10	Linkedin	2,50	Ebay	2,59	Taringa	5,22	Linkedin	7,33	Amazon	3,07
Maktoob	2,95	Wordpress	2,47	Mail.ru	2,38	Ebay	3,09	Ebay	5,33	Linkedin	2,80
Linkedin	2,20	Google (OD)	2,39	Amazon	2,36	Mercadolibre	3,09	Craiglist	4,00	Wordpress	1,85
MediaFire	1,90	Mail.ru	2,08	Yandex	1,97	Wordpress	2,00	Wordpress	3,67	Ebay	1,75
Amazon	1,50	MediaFire	1,89	V Kontakte	1,56	Google (OD)	1,52	Mercadolibre	3,33	Mail.ru	1,37
Kooora	1,45	Yandex	1,86	Wordpress	1,38	Enterfactory	1,22	Eluniversal	3,00	Maktoob	1,32
XNXX	1,35	4shared	1,44	MSN	1,26	Orange	1,17	Kijji	3,00	Babylon	1,27
BBC	1,25	Amazon	1,39	IMDB	1,05	Linkedin	1,09	Bing	3,00	Yandex	1,17
Wordpress	1,15	Baidu	1,31	Index	1,03	t.co	0,96	Taringa!	2,67	Taringa!	1,04

Table 1: 20 Most Popular Websites by VPI.
Source: Developed by the authors.

[1] VPI-S: VPI score

According to Table 1, Google[2], Facebook, Youtube remain in the first four positions for any group of countries displayed, including worldwide.

It is evident that Google, considering your websites search among several domains, whether local or not, has hegemony over the global Internet audience, since this organization is able to capture the electronic searches of users with different goals.

However, Youtube, Picasa and Blogger also belong to Google. In this sense, VPI shows an evidence that the diversity of successful services offered by Google, such as: search for maps, images and some other electronic services can also help to attract users to these websites.

Regarding e-commerce websites, Table 1 indicates that North America, Latin America and Europe showed a greater popularity of the use of e-commerce websites by the presence of two websites devoted to retail positioned within the first 15 positions of rank VPI (Amazon and Ebay).

It is understood that, despite numerous advances in e-commerce tools, Table 1 indicates the preference of the users of the WorldWideWeb as a distribution of information and customized digital content over electronic transaction websites. However, it does not mean that the volume of electronic transactions has lower importance compared to another websites, given the disclosures of significant financial value movements through electronic channels.

The perception of risk associated with electronic transactions can be an influence to explain the preference of users by websites that provide customized content on the websites of electronic transaction, given the possibilities of fraud on electronic commerce websites (Liao, et al., 2009; Soyoung & Yuri, 2006).

There is also considering that many electronic transactions are made by virtual private networks and their accesses are not monitored by measuring traffic websites, such as the Alexa website, which manifests itself as a first limitation of the index VPI calculated from this source data.

Among the observations in this sample, only China, Russia and Iran do not have the Facebook website in the top 20 most visited websites in their territories. It is inferred that there is any policy of restricting access to this website or censorship in these countries, among other factors, according to other studies on this topic (Dann & Haddow, 2008; Hamilton, et al., 2009).

In order to analyze groupings of the 20 world most popular websites by VPI, it follows clusters[3] analysis in Figure 03.

[2] LD = Local Domain

[3] Grouping by similarity level calculated by Euclidean means distances between pairs by Minitab software version 15.

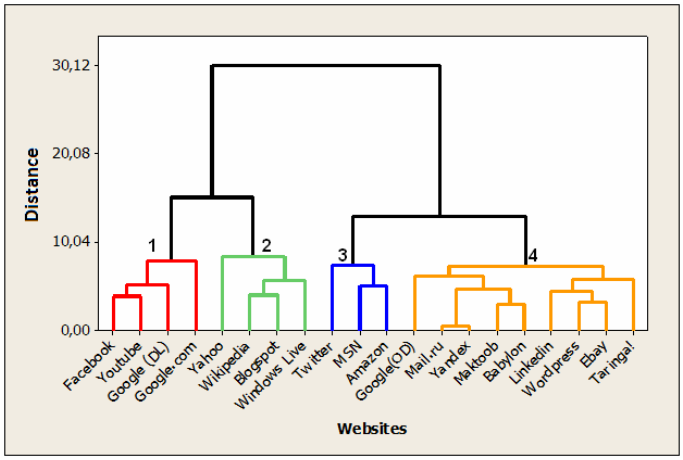

Figure 3: 20 Most Popular Websites Dendogram by VPI.
Source: Developed by the authors.

In Figure 03, it is observed that the clusters 1and 2 represent the first eight positions of VPI rank and it contains the same websites in anyone of the country groups analyzed before.

From these eight websites, four of them enable the dissemination of personal content, which supports the global adoption of digital media or Internet 2.0. In this sense, it is evident that, currently, Internet lives an era of digital content production, which it supports the interest in disseminating knowledge and information among users of the WorldWideWeb, among other aspects.

Although the fourth cluster is formed by some websites that have a broader audience in certain countries and groups, some of them are not present in the top 20 VPI world ranking. In this sense, cultural effects or aspects associated to the language might influence the users preferences of these websites.

Table 03 shows the relationship of the 20 most popular websites according to VPI score and the most accessible, globally, by website Alexa[4].

[4] http://www.alexa.com

RANK	VPI	ALEXA
	Website	*Website*
1	Facebook	Google.com
2	Google.com	Facebook
3	Youtube	Youtube
4	Yahoo	Yahoo
5	Wikipedia	Baidu
6	Blogger	Wikipedia
7	Windows Live	Blogger
8	Twitter	Windows Live
9	MSN	Twitter
10	Amazon	QQ
11	Linkedin	Amazon
12	Wordpress	Taobao
13	Ebay	Msn
14	Mail.ru	Yahoo JP
15	Maktoob	Linkedin
16	Babylon	Google India
17	Yandex	Sina
18	Taringa	Wordpress
19	Media Fire	Google.de
20	V Kontakte	Ebay

Table 2: Most popular websites by VPI and Alexa.
Source: Developed by the authors.

Table 02 indicates that the popularity of a website reviewed by VPI and the volume of hits is distinct in most of the positions of these ranks.

It appears that the popularity measured only by the volume of hits (Alexa rank) favors websites that may be popular only in certain countries with high number of user, e.g. the website Taobao is allocated to position 12 of the Alexa ranking, but its VPI score has zero value in the America and European continents.

CONCLUSIONS

By proposing, developing and applying a Virtual Popularity Index – VPI to access data from several websites, this rank has allowed analysis on the preferences related to browsing websites worldwide.

The multi-dimensionality of VPI transfers to this index the interpretation associated to the spread of the popularity of a website around a group of countries, not limited to the amount of total of Internet users per country, but also on the distribution of popularity among the groups of countries studied.

This characteristic transmits to the index higher parsimony on the evaluation of the spread the adoption of a website by its users worldwide due to the weighting on access made by a group of countries and not by the volume of hits from specific countries.

Although several studies had been concerned to the details about the individual preferences of accessing websites, this research demonstrates that there is a common pattern of preferences over the most popular websites indexed by VPI.

Thus, through the development of the Virtual Popularity Index - VPI applied to a sample of 2500 observations which includes the 20 most visited websites in 125 countries, showed that in the continents of Africa, American, Asian and European have the first eight most popular websites among them.

This study also confirms that Google and Facebook are two examples of virtual devoted worldwide audience. Thus, this research showed that these two websites not only dominate the individual preference of website hits, but also the leadership of the audience, as distributed, on different continents and may self –adapting to any barriers to user adoption, such as language, ease of use, among others, thanks to the possible customization of individual data.

This study also provides that future research may be conducted on the factors that justify the audience of specific websites, among other possibilities. To accurate, or to improve, the VPI with another data source, or terms in the equation, it is a possible avenue for future research.

REFERENCES

Albertin, A. L. (1999). *Comércio eletrônico: Modelo, aspectos e contribuições de sua aplicação*. São Paulo: Atlas.

Alhudaithy, A. I., & Kitchen, P. J. (2009). Rethinking models of technology adoption for internet banking: The role of website features. [Article]. *Journal of Financial Services Marketing, 14*(1), 56-69. doi: 10.1057/fsm.2009.4

Ang, L. (2011). Community relationship management and social media. [Article]. *Journal of Database Marketing & Customer Strategy Management, 18*(1), 31-38. doi: 10.1057/dbm.2011.3

Berry, J. W. (1980). *"Acculturation as varieties of adaptation." In acculturation: Theory, models an some new findings*: Boulder.

Bhatnagar, A., Ghose, S., & Vikas, L. (2009). Role of internet penetration rate on the determinants of website traffic in asian countries. [Article]. *International Journal of Global Management Studies, 1*(1), 68-77.

Boyd, D. M., & Ellison, N. (2007). Social network sites: Definition, history, and scholarship. *Journal of Computer-Mediated Communication, 13*(1).

Bryson, A., Gomez, R., & Willman, P. (2010). Online social networking and trade union membership: What the facebook phenomenon truly means for labor organizers. [Article]. *Labor History, 51*(1), 41-53. doi: 10.1080/00236561003654719

Cappel, J. J., & Zhenyu, H. (2007). A usability analysis of company websites. [Article]. *Journal of Computer Information Systems, 48*(1), 117-123.

Clemons, E. K., & Madhani, N. (2010). Regulation of digital businesses with natural monopolies or third-party payment business models: Antitrust lessons from the analysis of google. [Article]. *Journal of Management Information Systems, 27*(3), 43-80.

Conway, P. (2010). Preservation in the age of google: Digitization, digital preservation, and dilemmas. [Article]. *Library Quarterly, 80*(1), 61-79.

Cordeiro, A. T., Silveira, L. C., & Benevides, V. M. F. (2004). *Decisão de compra na internet e percepção de risco: Uma investigação empírica sobre os riscos percebidos pelos consumidores e seus atenuantes* Paper presented at the XXVIII Encontro da ANPAD, Curitiba, PR.

Crispim, S. F., & Dultra, G. (2005). *Inserção da internet no ambiente competitivo do turismo: Uma pesquisa aplicada ao setor hoteleiro de ribeirão preto – sp* Paper presented at the XXIX Encontro da ANPAD, Brasília, DF.

Curi, W. R., Dias, A. T., & Filho, C. G. (2006). *A percepção dos clientes quanto à qualidade dos sites na internet: Aplicação e validação do modelo webqual* Paper presented at the XXX Encontro da ANPAD, Salvador, BA.

Dann, G., & Haddow, N. (2008). Just doing business or doing just business: Google, microsoft, yahoo! And the business of censoring china's internet. [Article]. *Journal of Business Ethics, 79*(3), 219-234. doi: 10.1007/s10551-007-9373-9

Deloitte. (2009). *Redes de um mundo mais complexo. Mundo corporativo*: Abril.

Diniz, E. H. (2000). Evolução do uso da web pelos bancos. *Revista de Administração Contemporânea, 4*(2), 29-50.

Evans, P., & Wurster, T. (1999). *Blown to bits*. Cambridge, MA: Harvard Business School Press.

Ferreira, G. C., Oliveira, M., & Feix, R. (2004). *Adoção de web sites: Diagnóstico da indústria vinícola gaúcha* Paper presented at the XXVIII Encontro da ANPAD, Curitiba, PR.

Flavian, C., Guinalau, M., & Torres, E. (2005). The influence of corporate image on consumer trust: A comparative analysis in traditional versus internet banking. . *Internet Research, 15*(4).

Fuoco, T. (2003). *Guia valor econômico de comércio eletrônico*. São Paulo: Globo.

Gertner, D., & Diaz, A. N. (1999). Marketing na internet e comportamento do consumidor: Marketing na internet e comportamento do consumidor: Investigando a dicotomia hedonismo vs. Utilitarismo na www. *Revista de Administração Contemporânea, 3*(3), 131-156.

Gonzales, A. L., & Hancock, J. T. (2011). Mirror, mirror on my facebook wall: Effects of exposure to facebook on self-esteem. [Article]. *CyberPsychology, Behavior & Social Networking, 14*(1/2), 79-83. doi: 10.1089/cyber.2009.0411

Google. (2011). Missão do google. Retrieved from http://www.google.com/intl/pt-BR/about/corporate/company/

Graeml, A. R., Graeml, K. S., & Steil, A. V. (2001). *Electronic commerce: The virtual supermarket through the customers' eyes.* . Paper presented at the XII Annual Conference of the Production and Operations Management Society, Orlando, Florida.

Hackett, S., Parmanto, B., & Xiaoming, Z. (2005). A retrospective look at website accessibility over time. [Article]. *Behaviour & Information Technology, 24*(6), 407-417. doi: 10.1080/0144990500066661

Hamilton, J., Knouse, S., & Hill, V. (2009). Google in china: A manager-friendly heuristic model for resolving cross-cultural ethical conflicts. [Article]. *Journal of Business Ethics, 86*(2), 143-157. doi: 10.1007/s10551-008-9840-y

Hernandez, J. M. d. C. (2001). *Seria a internet um atalho para descontos maiores na compra do automóvel novo? Uma investigação empírica sobre os benefícios da procura* . . Paper presented at the XXV Encontro da ANPAD, Campinas, SP.

Hernandez, J. M. d. C. (2002). Um estudo empírico sobre os benefícios da procura e do uso da internet como fonte de informações. *Revista de Administração Contemporânea, 6*(3), 149-173.

Hoffman, D. L., & Novak, T. P. (1996). Marketing in hypermedia computer-mediated environments: Conceptual foundations. *Journal of Marketing, 60*, 50-68.

Hofstede, G. H. (2001). *Culture's consequences: Comparing values, behaviors, institutions and organizations across nations.* (2 ed.). Thousand Oaks, CA: Sage.

Huei-Chen, H., Chi-Shiun, L., & Cheng-Hsui, C. (2007). Extrinsic cue of warranty by selling through a reputable website. [Article]. *Journal of Advertising Research, 47*(2), 158-164. doi: 10.2501/s0021849907070183

Iyer, L. S., Gupta, B., & Foroughi, A. (2000). *An overview of commercial web site development issues*. Paper presented at the Proceedings of the Americas Conference on Information Systems, Long Beach.

Joinson, A. N. (2008). *Looking at, looking up or keeping up with people?: Motives and use of facebook.* Paper presented at the Proceedings of the SIGCHI conference on Human Factors in Computing Systems, San Jose, CA.

Koetz, C. I. (2004). *O valor para o consumidor virtual – análise da utilização da internet por meio de websites de empresas* Paper presented at the I Encontro de Marketing da ANPAD, Porto Alegre, RS.

Lang, A. (2006). Using the limited capacity model of motivated mediated message processing to design effective cancer communication messages. *Journal of Communication, 56*.

Lee, D.-H. (2010). Growing popularity of social media and business strategy. [Article]. *SERI Quarterly, 3*(4), 112-117.

Liao, H., Proctor, R. W., & Salvendy, G. (2009). Chinese and us online consumers' preferences for content of e-commerce websites: A survey. [Article]. *Theoretical Issues in Ergonomics Science, 10*(1), 19-42. doi: 10.1080/14639220801936588

Limeira, T. M. V. (2003). *E- marketing. O marketing na internet com casos brasileiros*. São Paulo: Saraiva.

Loiacono, E. T. (2000). *Webqual™: A website quality instrument.* PhD Dissertation, University of Georgia.

McCafferty, D. (2011). Brave, new social world. [Article]. *Communications of the ACM, 54*(7), 19-21. doi: 10.1145/1965724.1965732

Netmarketshare. (2010). Search engine market share. Retrieved from http://marketshare.hitslink.com/search-engine-market-share.aspx?qprid=4

Oliveira, M. J. d., & Huertas, M. K. Z. (2010). *Comunicação na internet: Uma análise do uso de ferramentas dialógicas em websites de agentes de integração no brasil* Paper presented at the IV Encontro de Marketing da ANPAD, Florianópolis, SC.

Orr, E. S., Sisic, M., Ross, C., Simmering, M. G., Arseneault, J. M., & Orr, R. R. (2009). The influence of shyness on the use of facebook in an undergraduate sample. [Article]. *CyberPsychology & Behavior, 12*(3), 337-340. doi: 10.1089/cpb.2008.0214

Peluchette, J., & Karl, K. (2009). Examining students' intended image on facebook: "What were they thinking?!". [Article]. *Journal of Education for Business, 85*(1), 30-37. doi: 10.1080/08832320903217606

Plebani, S., Guerini, A. C. L., & Tontini, G. (2009). *Identificação de atributos que influenciam a satisfação de usuários de web sites: Aplicação do modelo kano.* . Paper presented at the XXXIII Encontro da ANPAD, São Paulo, SP.

Priest, L., Nayak, L., & Stuart-Hamilton, I. (2007). Website task performance by older adults. [Article]. *Behaviour & Information Technology, 26*(3), 189-195. doi: 10.1080/01449290500402668

Raacke, J., & Bonds-Raacke, J. (2008). Myspace and facebook: Applying the uses and gratifications theory to exploring friend-networking sites. [Article]. *CyberPsychology & Behavior, 11*(2), 169-174. doi: 10.1089/cpb.2007.0056

Ramos, A. S. M. (1998). *Análise fatorial da percepção do uso da internet em organizações acadêmicas*. Paper presented at the XXII Encontro da ANPAD, Foz do Iguaço, PR.

Ramos, A. S. M., & Costa, F. d. S. P. H. A. R. (1999). *Serviços bancários pela internet: Uma proposta de avaliação integrada de competidores e clientes* Paper presented at the XXIII Encontro da ANPAD, Foz do Iguaçu, PR.

Rienzo, T., & Bernard, H. (2009). Microsoft or google web 2.0 tools for course management. [Article]. *Journal of Information Systems Education, 20*(2), 123-127.

Ripberger, J. T. (2011). Capturing curiosity: Using internet search trends to measure public attentiveness. [Article]. *Policy Studies Journal, 39*(2), 239-259. doi: 10.1111/j.1541-0072.2011.00406.x

Robertson, S. P., Vatrapu, R. K., & Medina, R. (2010). Off the wall political discourse: Facebook use in the 2008 u.S. Presidential election. [Article]. *Information Polity: The International Journal of Government & Democracy in the Information Age, 15*(1/2), 11-31. doi: 10.3233/ip-2010-0196

Rossi, G. B. (2008). Presença - fator a formar preferências no ambiente da internet: Um estudo com estudantes brasileiros em são paulo. *Revista de Administração Contemporânea - Eletrônica, 2*(2), 234-252.

Shen, K. N., & Khalifa, M. (2010). Facebook usage among arabic college students. [Article]. *International Journal of e-Business Management, 4*(1), 53-65.

Sicilia, M., Ruiz, S., & Reynolds, N. (2006). Attitude formation online: How the consumer's need for cognition affects the relationship between attitude towards the website and attitude towards the brand. [Article]. *International Journal of Market Research, 48*(2), 139-154.

Singh, N., Baack, D. W., Pereira, A., & Baack, D. (2008). Culturally customizing websites for u.S. Hispanic online consumers. [Article]. *Journal of Advertising Research, 48*(2), 224-234.

Smith, R. (2010). Google means every. [Article]. *Research Technology Management, 53*(1), 67-69.

Soyoung, K., & Yuri, L. (2006). Global online marketplace: A cross-cultural comparison of website quality. [Article]. *International Journal of Consumer Studies, 30*(6), 533-543. doi: 10.1111/j.1470-6431.2006.00522.x

Stefanone, M. A., Lackaff, D., & Rosen, D. (2011). Contingencies of self-worth and social-networking-site behavior. [Article]. *CyberPsychology, Behavior & Social Networking, 14*(1/2), 41-49. doi: 10.1089/cyber.2010.0049

Straub, D. W., Loch, K., & Hill, C. (2001). Transfer of information technology to the arab world: A test of cultural influence modeling. . *Journal of Global Information Management, 9*, 6-28.

Tao, Z., Yaobin, L., & Bin, W. (2009). The relative importance of website design quality and service quality in determining consumers' online repurchase behavior. [Article]. *Information Systems Management, 26*(4), 327-337. doi: 10.1080/10580530903245663

Tarafdar, M., & Jie, Z. (2005). Analysis of critical website characteristics: A cross-category study of successful websites. [Article]. *Journal of Computer Information Systems, 46*(2), 14-24.

Tse, A. C. B., & Chi-Fai, C. (2004). The relationship between interactive functions and website ranking. [Article]. *Journal of Advertising Research, 44*(4), 369-374.

Vitak, J., Zube, P., Smock, A., Carr, C. T., Ellison, N., & Lampe, C. (2011). It's complicated: Facebook users' political participation in the 2008 election. [Article]. *CyberPsychology, Behavior & Social Networking, 14*(3), 107-114. doi: 10.1089/cyber.2009.0226

Vogl, P., & Barrett, M. (2010). Regulating the information gatekeepers. [Article]. *Communications of the ACM, 53*(11), 67-72. doi: 10.1145/1839676.1839695

Wells, J. D., Valacich, J. S., & Hess, T. J. (2011). What signal are you sending? How website quality influences perceptions of product quality and purchase intentions. [Article]. *MIS Quarterly, 35*(2), 373-A318.

Wise, K., Alhabash, S., & Park, H. (2010). Emotional responses during social information seeking on facebook. [Article]. *CyberPsychology, Behavior & Social Networking, 13*(5), 555-562. doi: 10.1089/cyber.2009.0365

Wise, K., & Kim, H. (2008). Searching versus surfing: How different ways of acquiring content online affect cognitive processing. *CyberPsychology & Behavior, 11*(360).

Wise, K., Kim, H. J., & Kim, J. (2009). The effect of searching versus surfing on cognitive and emotional responses to online news. *Journal of Media Psychology, 21*, 49-59.

Wonsun, S., & Jisu, H. (2009). Multinational corporate website strategies and influencing factors: A comparison of us and korean corporate websites. [Article]. *Journal of Marketing Communications, 15*(5), 287-310. doi: 10.1080/13527260802481207

Young, S., Dutta, D., & Dommety, G. (2009). Extrapolating psychological insights from facebook profiles: A study of religion and relationship status. [Article]. *CyberPsychology & Behavior, 12*(3), 347-350. doi: 10.1089/cpb.2008.0165

Zeff, R., & Aronson, B. (2000). *Publicidade na internet.* (2 ed.). Rio de Janeiro: Campus.