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Research

Quality Criteria for B2C E-Commerce Websites in Brazil

Thair M. Hamtini[1], Ana Alice Vilas Boas[2], Luciana Pussi Santos[2], Tania Regina Vasconcellos Dias[2]

[1]Department Computer Information Systems, The University of Jordan, Amman, Jordan; [2]The Department of Management and Economy, The Federal University of Lavras, Lavras, Brazil.
Email: thamtini@ju.edu.jo

ABSTRACT

The objective of this study is to compare the ranking of the quality of e-commerce B2C portals in Brazil according to explicit criteria described in the article with the ranking according to the INFO 100 ranking. Theoretical research is first described, followed by the construction of eight self-established criteria of B2C portal quality measures and identification and compilation of requirements used by the I-Best, Opinia, E-bit and other institutes. After that, a portal quality evaluation is made by the web site content analysis; finally, a comparison of the rankings is presented. The obtained results showed that in spite of the lack of knowledge of the criteria adopted by INFO100 [1], there could be agreement with the criteria adopted in this study, because there was agreement with the results for the Ponto Frio portal. Therefore, it was concluded that the eight criteria used in this study can be useful in a quality analysis of B2C electronic portals.

Keywords: B2C Portals; Criteria; Quality; E-Commerce

1. Introduction

Long-distance commerce to consumers has evolved from mail-order catalogs and telephone sales to the modern advanced form of e-commerce. The physical presence of the consumer is not necessary anymore as in traditional commerce. E-commerce makes it possible for retailers to open up new markets, reach new customers, and make commerce faster for their existing customer base.

This trend was already visible in studies conducted by the Ernest & Young consulting company [2]. According to this study, 60% of the American population was at that moment already connected to the dot-com world. Electronic commerce via Internet has developed significantly since its inception. In the case of Brazil, according to IBOPE data [3], the number of Brazilian residential users that visited e-commerce sites increased 140% between September, 2000 and September, 2002. The same study mentions that in 2000, about 1.1 million web users in the country have visited at least one electronic commerce site. In September of 2002, that number had increased to 2.6 million and the number of active web users in Brazil had increased by 50.5% in these two years, despite the fact that the period was marked by technology company crises, energy rationing and the rise in the US dollar against the Real.

The publishing industry stands out, because there are no changes between the product sold via the Internet and that directly bought from the supplier or in traditional shops. Amazon has been particularly successful. It was the first company to market books via the Internet and reached sales of US$1.89 billion dollars and profit of US$111 million in 2004 [4].

Research conducted by the Fundação Getúlio Vargas [5] on e-commerce in the Brazilian Market, revealed that in 2003, the value of B2B and B2C transactions of companies that acted in the Brazilian market reached about US$16.3 billion. At the end of 2003, 4.94% of the B2B transactions were carried out via Internet, totaling US$11.8 billion. However, the B2C electronic transactions represented 2.08% of the total market, with a turnover of US$4.5 billion. In 2002, the volume of B2B transactions was US$5.7 billion, and that of B2C transactions was US$1.9 billion. The research, conducted with 435 companies from various economic sectors, branches and sizes, pointed out that the industrial sector presented the highest penetration (5.37%) in the B2B transactions, followed by the services branch (4.87%) and trade (3.97%). The payment systems most used by the on-line consumers were the credit card, which 33% of the interviewed persons preferred, followed by the smart card (a form of electronic money) (10%), the e-check

(9%), and the e-cash, which only 8% of the interviewed people preferred.

Researchers such as Daft *et al.*, recognized the potential of the Internet for retailers to globally expand their operations, improve commercial processes, reach new clients and take maximum advantage of resources, by using e-business as their spring board for this strategy.

The concepts of e-business and e-commerce vary according to various authors. However, in this study, e-business will be defined as any business that occurs through the digital process in a computer network instead of in a physical space. More commonly, it refers to electronic connections with the customers, partners, suppliers, employees or other key elements via the Internet.

Albertin [6] defines e-commerce as "the accomplishment of the whole business process chain of values in an electronic environment, through the intense application of communication technologies and information, meeting the objectives of the business." Bloch, Piggneur and Seveg in Alexandrini [7] define e-commerce as the "buying and selling of information, products and services through computer networks with the support of any type of business transactions that use a digital infrastructure." For this study, e-commerce is a term that specifically refers to the commercial transactions that occur electronically.

The objective of this work is to make an evaluation of the quality of the ten best portals according to Info100 [1] using our own criteria, and to do a comparative analysis with the INFO100 [1] classification, in order to discuss the degree to which the two methods converge and diverge. This article will only consider B2C e-commerce.

2. Theoretical Reference

2.1. Electronic Commerce versus Tradition Commerce

Today, information can be considered as one more component among the company production factors. It is through the manipulation of the information that a company can remain competitive in its market segments. As such, Drucker [8] affirms that the e-commerce represents for the Information Revolution what the railroad represented for the Industrial Revolution: a totally new and unexpected advancement. It generates a novel and distinct "boom", provoking accelerated transformations in the economy, society and politics. It is thanks to e-commerce that companies are losing or gaining their clientele overnight, many times competing with competitors never imaginable, usually from other parts of the country or sometimes even from other countries of the world.

E-commerce created a new field of competition, and according to Contador [9] the technology is characterized as a support weapon of great importance for obtaining a competitive advantage, different from most of the combat weapons. For Porter (1985), (in Contador, [9], "The technological development that a company achieves will only be converted to competitive advantage: 1) if this development reduces the cost or increases the differentiation; 2) if the technological leadership of the company is sustainable; 3) if the technological pioneerism represents a competitive advantage even after the technological leadership disappears; 4) if the technological development improves the general structure of the business sector, even being copied."

Bloch, Piggneur and Seveg in [7] classify the basic e-commerce models in:

• **Business-to-business-B2B**: The commercial transactions take place among companies, usually within a supplier or user of products, services and information relationship;

• **Business-to-consumer-B2C**: The transactions take place between companies and consumers, involving payment strategies accepted by the parties involved. This paper only considers the B2C channel.

In a general way, companies develop B2C e-commerce portals with the following objectives, according to Albertin [6]: to promote the electronic presentation of goods and services; to increase the market share through a more popularization and marketing; to give customers an attractive and easy trade navigation environment ; to offer payment and transportation options accessible to the target public; to improve the time and the quality of the rendered services; and to automate transactions between suppliers and companies in order to minimize costs and facilitate the processes. **Table 1** makes a comparison of commercial transactions via traditional trade and e-commerce.

E-commerce made it a prerequisite that payments can be made in a time-independent and free way without geographical, political and commercial barriers. For this reason, it depends a lot on the physical support from conventional money and especially from electronic money, such as the credit card. **Table 2** displays the main means of payment used in the traditional trade and in electronic commerce. There are many advantages with planned and implemented e-commerce, in comparison with the traditional trade:

• The relationships with the customers are improved, due to a higher interaction carried out through direct lines (electronic mail, telephone) or through advertising and marketing done on the site itself;

• Costs to win the trust of a customer are less than costs that would be incurred in traditional trade;

• Through the rationalization of processes and personnel, the time involved in the whole purchase, sale and delivery process of the product is optimized;

Transportation, storage and distribution expenses are

Table 1. A comparison of commercial transactions.

Sales Cycle Steps	Traditional Commerce (multiple media involved)	Eletronic Commerce (one medium involved)
Acquire information on the product	Magazines, folders, catalogs	Web pages
Request an item	Printed forms, letters	e-mail, Web pages
Analyze catalogs, prices	Catalogs	On-line catalogs
Analyze availability of items and price conformity	Phone Calls, Fax	On-line catalogs
Send order (buyer), Receive order (supplier)	Fax, mail	E-mail, EDI
Prioritize order	-	On-line database
Analyze in stock inventory	Printed form, telephone, fax	On-line database, Web pages
Schedule delivery	Printed form	On-line database
Generate invoice	Printed form	On-line database
Receive product	Any means of delivery	Mail, Sedex
Confirm reception	Printed form	E-mail
Send invoice (supplier), Receive invoice (buyer)	Mail	E-mail, EDI
Schedule payment	Printed form	EDI, on-line database
Send payment (buyer), Receive payment (supplier)	Mail	EDI, EFT

Source: Pegoraro (2002). Abbreviations: EDI-Electronic Data Interchange (Electronic transfer of documents between computers); EFT-Electronic Funds Transfer.

Table 2. Means of payment.

Means of Payment	Traditional Commerce	Electronic Commerce
In cash	Through cash, it is made through a bank deposit in the merchant's account	The transaction is conducted via the Internet and the payment is made upon reception of the product by mail order or when delivered to residence. Checks can also be used.
Bank payment booklet	Issuedby the trade companies or service providers	Can be issued on-line and reproduced on a home printer.
Check	Widely used, mainly as promise of payment on dates subsequent to the commercial transaction.	-------------------
Bank transfer	The monetary value transferred from the consumer's account to that of the merchant, by consumer debit account authorization.	The user makes on-line bank transfers.
Conventional credit card	Known as plastic money, widely known and used.	Used for purchases through Internet. The consumer supplies personal data and the number and expiration date of his/her credit card.
Virtual money	Used in form of cumulative points, allowing conversion in exchange for products and or services.	Known as Cybercash, it allows the consumer to acquire goods and services presented on the Virtual Portals.
Virtual credit card	-------------------	Specific form of the Credit card in "bits" for the Internet.

Source: Melo (2002).

reduced, as well as expenses for stock through automation and reduction of processing time;

• The planning of a good marketing and advertising system can lead the company to expand their markets and increase competitiveness, with minimum capital, stock and personal requirements;

• Improvement of communication and coordination within the companies due to the higher use of information technology, integration of systems and the Internet itself;

• Contact with suppliers is more direct when done through interlinked systems, eliminating the need for representatives and inventories, and increasing the availability of products for the customers.

Hammond [10] states that with the increasing number of residences with Internet access, via dial-up, broadband or mobile communications channels, the tendency is towards the expansion of the e-commerce focused on the final B2C consumer.

In Brazil, through Internet portal web sites, B2C e-

commerce billing surpassed 1 billion Reals in 2003. Expectations for 2004 are that the sector grows about 30%, arriving at 1.6 billion Reals. That would be done by expansion of the consumer base, which is now estimated at 2.5 million people. The revenue of the B2C e-commerce in 2003 in Brazil resulted from the sale of automobiles, tourism and consumer goods, especially CD's, video tapes, books, DVDs and other home appliances (MCT) [11].

2.2. B2C Electronic Portals

According to Toledo 2002, portals can be classified according to their use context Public ones are known as Web Portals or Internet Portals. Users interact with them as an interface with the network of servers which compose the Internet. Portals possess the function of attracting the general public and functioning as an additional media for the marketing of products and as business or corporate portals. They incorporate new technologies that make the identification, capture, storage, recovery and distribution of large amounts of information from multiple internal and external sources possible for people and teams of an organization.

Since B2C became a strategic tool for obtaining of competitive advantage of the companies, a convenient instrument of satisfaction of human needs and an economic object, it became necessary to evaluate its effectiveness. With this objective, research institutes have been conducting statistical surveys on on-line activities, including those of businesses. One of these studies is the Brazilian INFO100 [1] research and is annually conducted by the magazine Info Exame.

2.3. The Best B2C Electronic Portals According to Info100 Research

The INFO100 [1] research by the Info Exame magazine classifies the 100 biggest companies (**Figure 1**) that act in the e-commerce market in Brazil. This magazine has as mission to anticipate technological tendencies; test hardware, software and high tech services; present practical computer, internet and telecom solutions; and to provide career orientation to professionals involved with information technology. It has as a policy independence, integrity and exemption; the first commitment of INFO is to the reader and their interests; INFO treats all the technology market suppliers in the same exempt way; INFO does not accept hardware or software donations, trips or presents from any company and the INFO employees do not have additional job nor can they provide any type of service to technology companies.

Access to the evaluation criteria used in the Info Exame research was not available. Therefore its methodology is unclear. But it is known that the magazine sent out about 700 questionnaires.

3. Methodology

The development of this work has, as a theoretical referential, web design, digital marketing and information technology, having the public portals of the ten best Brazilian B2C e-commerce companies elected by Info100 [1] as an object of analysis, research elaborated and published by the Info Exame magazine. Web design, digital marketing and information technology form the basis of the methodology of this paper. The objective of this research is to give a basis to the ranking of the most im-

OS MAIORES DO B2C

	EMPRESA	RAMO DE ATIVIDADE	TRANSACOES (US$ MILHARES) [1]
1	**General Motors** www.chevrolet.com.br	Automotivo	720 868.6 [2]
2	**Volkswagen** www.volkswagen.com.br	Automotivo	420 984.5
3	**Visanet** www. Visanet.com.br	Servicos	320 754.7
4	Fiat www.visanet.com.br	Automotivo	301 886.8
5	**Gol Linhas Aereas** www.voegol.com.br	Transportes	170 574.6 [3]
6	**Submarino** www.s ubmarino.com.br	Varejo	136 188.7
7	**Magazine Luiza** www. magazineluiza.com	Varejo	56 603.8
8	Ponto Frio www.pontofrio.com.br	Varejo	40 873.2
9	**Shop Time** www.shoptime.com.br	Varejo	32 452.8
10	**Carsal** Wwwcarsal.com.br	Automotivo	31 437.9

Figure 1. List of the major B2C E-commerce companies according to Info100 2005. Fonte: Pesquisa Info100. da revista Info-Exame edição 230, ano 20, maio/2005.

portant public portals of the ten best Brazilian B2C e-commerce companies as published by INFO100 [1] 2005's research published by Info Exame. The adopted methodology consisted descriptive, comparative and analytical methods. First theoretical research was done in the areas of the methodology. In the subsequent stage, the construction of our own criteria was done, private and public data was consulted, and the identification and compilation methods were adopted. In the last phase, in which the evaluation of the portal quality was done, content analysis, consultations of the institutional site, team and a systematic observation, identification and scale of direct classification were undertaken.

Of the INFO100 [1] ranking, only the first ten portals were used in this article. It is important to observe that this work does not have the pretension of establishing scientific validation of its own criteria, characterized in **Table 3**, nor the classification of the portals proposed. The authors implemented the evaluation of the portals in order to establish some parameters and to create concepts, and submit these criteria to users for quality measurement of other portals.

The quality evaluation of the portals was carried out starting from the parameters in **Table 3**. The scores for the parameters were converted to an overall result as follows:

1st) a score from 0 to 3 was attributed for each portal parameter, where 0 is none, 1 low, 2 medium, and 3 high.

2nd) the scores per analyzed electronic portal were summed.

3rd) the portals were ranked according to the sum of the scores.

4th) a comparative analysis of the results obtained in this evaluation was done with the results from the Info Exame Info100 research.

The characteristics that were appraised measured and classified in each parameter of the e- B2C commerce portals are shown in **Table 3**. They were obtained as a result of research into the criteria used by research institutes specialized in e-business evaluations, such as: I-Best, Opinia, E-bit, and others, that were analyzed and compiled into a single criterion.

4. Assessment and Analysis of B2C Portals

4.1. Evaluation of the Portal Quality of the Ten Best Companies by Info100

Currently, most organizations have already incorporated the Internet and e-commerce as part of their information technology strategy. With the use of e-commerce, these organizations do more business, at lower transaction cost when compared to the traditional market.

However, the world's e-commerce is only a little over six years old, and the Brazilian, about three. It is a sector that is still growing, and therefore it can be a great business opportunity for non-virtual organizations [12]. However, when one speaks of Internet commerce as a new commercialization channel, the importance of regular evaluations of the quality aspects of the portals should be considered as an issue of overriding importance, because this is the contact instrument between consumers and the company, and therefore a key factor in the success or failure of a virtual enterprise.

With competition based on mouse clicks, pressure exists on each company practicing e-commerce to distinguish themselves from the others. Therefore, possessing a quality portal becomes fundamental. A portal in conformity with the virtual consumer demand standards should be considered as a comfortable disposition of resources. Some studies note this.

In a study done in Europe and North America on the development of the use of the e-commerce between 2000

Table 3. Evaluation parameters of B2C portals.

Parameter	Characteristics of parameter evaluated
Accessibility	Time taken for complete loading of the main page of the site.
Webdesign	The amount and aesthetic placement of images, texts, sounds, videos and animation on the main page.
Communication tools	Availability of contact, 'speak to us' (E-mails), chats, on-line service or other ways to contact the company.
Products and/or Services Marketed	Availability of products and services.
Buying ease	Availability of objective information in the product selection: product image, brand, payment form, freight value, price, period of delivery and amount in stock. Other items: sales ranking, customer satisfaction and possibilities for comparison.
Additional information	Availability of uniformity with target-public, with the institution, awards.
Navigation	Availability of search services, access to links to other sites, and return to the main page options, site map.
Privacy and handling policy	Mentioning of privacy policies and registration data with explanations.

Source: The Authors.

and 2010, Hammond [10] points out the two most important barriers than can hinder the adoption of e-commerce by the consumer at home are: concerns about personal data security (among them, credit cards numbers) and the low data transmission speed of dial-up connections to the residences.

According to this research, other relatively important barriers, such as the high on-line cost, should be resolved within two years. Relatively unimportant barriers related to technology, should also be resolved in the near future. They are: the lack of definition of a standard payment system; insufficiently developed security/cryptography technologies; high system creation and maintenance costs for the retail sector and high access equipment costs for the consumer.

Furthermore, according to the research, the impediments that will take more time to be resolved include factors related to convenience for the consumer, who are not able to specify schedules and appropriate places for product delivery; technology, such as high distribution costs for physical products; and the underdeveloped consumer interface and concerns with the non-authorized use of personal data, such as name, navigation habits and similar As an alternative solution for this problem, McKenna [13] suggests that organizations, in real time, focus on consumer satisfaction, provide support, help, provide orientation and necessary information on the portals to widen the simple service, and collaborate for the building of the consumer loyalty.

In line with this suggestion, this research provides an evaluation of the portal quality of the ten best B2C e-commerce companies. **Table 4** details the scores per analyzed parameter of each portal. The parameter communication tools also served as a tiebreaker criterion by demonstrating the concern of the e-commerce companies for a continuous relationship with their virtual customers.

The possible maximum score for each analyzed portal is 24 points.

In this same table it can be seen that Gol [14], for instance, obtained the highest scores in the evaluation for accessibility, web design, communication tools and products and/or services marketed criteria, totaling 20 points out of a maximum of 24. On the other hand, the Fiat site [15] had the worst performance, because the items such as accessibility, navigation and privacy and handling policies got zero points, while the Visanet portal qualified in last place by not qualifying as a B2C portal. According to the INFO100 [1] research, Visanet was considered as a B2C type company. However, it should be classified as B2B because of its definition in the about us link on its institutional portal. This mentions: "Visanet, a company responsible for the relationship with the commercial establishments affiliated to the Visa System, was created in November of 1995 by International Visa and by large Brazilian banks with the objective of administering the network of commercial establishments affiliated to the Visa System and centralizing operations regarding the Visa card transactions in Brazil, until then under the responsibility of the acquiring banks" (VISA, 2006). This is the fact which justifies its last place rank in the portal quality evaluation.

The heterogeneity among the sectors, to which the B2C e-commerce companies chosen as the best by the Info100 [1] research belong, not considered by the present research as a specific category its classification, generated an intuitively sectorized comparison of the its portal parameter characteristics.

The portal accessibility parameter from **Table 4** was derived from the average portal access time. Those times are reported in **Table 5**. Results in **Table 5** can be used as a benchmark for other portals.

Table 4. Quality evaluation of the portals of the top 10 companies according Info100 2005.

	General Motors	Volkswagen	Visanet	Fiat	Gol	Submarino	Magazine Luiza	Ponto Frio	Shop time	Carsale
Acessibility	3	0	1	0	3	3	0	3	2	2
Web design	2	1	1	2	3	1	2	1	3	0
Communication tools	2	2	2	1	3	1	2	1	3	3
Products and/or services marketed	3	3	3	3	3	3	3	3	3	3
Ease of Purchase	2	3	0	2	2	3	2	2	3	1
Additional Informations	3	3	0	1	2	0	2	0	1	3
Navigation	2	1	1	0	2	3	2	2	2	3
Privacy and handling policy	2	2	1	0	2	1	1	1	2	0
Total Score	**19**	**15**	**9**	**9**	**20**	**15**	**16**	**14**	**19**	**15**
Ranking	3rd	6th	10th	9th	1st	7th	4th	8th	2nd	5th

Table 5. Results of the average portal access time.

Portal	Access Time	Scores (0 to 3)
General Motors	10 sec	3
Volkswagen	24 sec	0
Visanet	20 sec	1
Fiat	30 sec	0
Gol	13 sec	3
Submarino	9 sec	3
Magazine Luiza	28 sec	0
Ponto Frio	10 sec	3
Shoptime	18 sec	2
Carsale	14 sec	2

Explanation: The following rule was adopted as the scale of points: 9 to 13 s - 3 points; 14 to 18 s - 2 points; 19 to 23 s - 1 point; 24 to 30 s - 0 point.

4.2. Comparative Analysis of the Portal Rankings in Relation to the Placement of Their Companies by Info Exame Info100

Only one company was ranked the same, Ponto Frio. In the case of Submarino there was a difference of one position, having a better classification-7th place-in the Info 100 [1] research and 8th position in the portal quality. With General Motors [16], there was a difference of two in the position. General Motors was first in the Info100-classification while it was at 3rd place in the portal quality ranking.

Table 6 shows the portal quality classification of the ten best companies compared with the placement of their respective companies in the Info100 research [1]. The Magazine Luiza [17] had a difference in position of three places, 4th place in portal quality and 7th place in the Info100 best companies. Gol and Volkswagen had a position difference of four places, the former occupying the 1st place in the portal quality and 5th position in Info100 and the latter 2nd place by Info100 and 6th in portal quality. Carsale [18] had a difference of five positions, with a 5th place in portal quality and in last-10th place-in Info100.

Finally, Shoptime, Fiat and Visanet had a classification difference of six places. Shoptime reached 2nd place in the portal quality and 9th place in Info100. Fiat obtained 4th place in Info100 and 9th place in the quality of the portal and Visanet was classified in 3rd place in Info100 and 10th place in the portal quality.

5. Conclusions

The development of internet portals has been of fundamental importance for companies especially B2C portals

Table 6. Comparison between classification of portals and enterprises.

Ranking	Portal Quality	Info100
1st	Gol	General Motors
2nd	Shoptime	Volkswagen
3rd	General Motors	Visanet
4th	Magazine Luiza	Fiat
5th	Carsale	Gol
6th	Volkswagen	Submarino
7th	Submarino	Magazine Luiza
8th	Ponto Frio	Ponto Frio
9th	Fiat	Shoptime
10th	Visanet	Carsale

which have been making great strides for e-commerce related organizations. According to the estimates of the Organization for Cooperation and Economic Development, MCT [11], the transactions among companies (B2B) and between companies and consumers (B2C) will be responsible for about 5% of all the wholesale and retail operations in 2005. The most conservative forecasts indicate annual growth rates, for the near future, of over 45% on a worldwide scale.

Therefore, the e-commerce mode of commercial activity has become a fundamental consumer contact channel for organizations in search of a competitive differential. In this sense, the adaptation of the electronic portal, which is the means of entrance and contact with the virtual market, to the demands of the virtual consumer, is fundamental. However, with the evaluation conducted in this article, the question is raised that maybe virtual entrepreneurs are not paying enough attention to portal quality, because there is no correlation between portal quality and the importance of web sites. Won't it be necessary for the entrepreneurs to seek a perfect agreement among portal quality, business strategy and the virtual consumer satisfaction in order to obtain success in e-business?

A form of obtaining of this synergy is the submission of the e-commerce portals to qualitative analysis of the measurements of their quality criteria. One modality is presented in this work, which compiles eight criteria for the evaluation of B2C e-commerce portal quality starting from a collection of criteria used by research institutes specialized in evaluations of e-business, such as: I-Best, Opinia, E-bit, and others, that later are analyzed and compiled into a single criterion.

The criteria of accessibility, web design, communication tools, products and/or marketed services, ease of

purchase, additional information, navigation and of privacy and handling policies, are the characteristic parameters defined in this research, and make the evaluation of the e-commerce portal quality possible. In order to measure them, a survey and identification of some parameters and concepts was first undertaken and in a second piece of research, they were submitted for use by virtual consumers for the measurement of the portal quality, scientifically validating them.

However, the comparative analysis of the ten best e-commerce portals according to the research of INFO100, Info Exame (2005), through the criteria proposed in this research shows that in spite of the lack of knowledge of the criteria adopted by INFO100, there can be their discreet convergence with the criteria adopted in this study, because there is a convergence of results with the Ponto Frio case. This fact shows that the criteria used in this study can be useful in the analysis of the B2C e-commerce portal quality. Entrepreneurs would be able to submit their portals, via these eight criteria, so that the quality of their portals can be measured.

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