## Analyzing Competitive advantage through Link Analysis

In this industry, search engine visibility is a key source of advantage, and Link Analysis is a central part of the larger task of assessing the online presence of a company. Because organic search relies on the websites’ link profile to assess their page rank, the search engine page results are used to measure and analyze Citigroup’s online market position relative to its competitors. Based on the data collected, a model is created to estimate traffic based on the expected number of searches for each keyword, search engine results ranking and user behavior observed from previous studies. Finally, recommendations are provided to improve and optimize search engine performance.

With its Custom Search API, Google makes relatively easy to collect data form search queries. Using RESTful requests, it is possible to obtain web search results in JSON format for a specific query. For the purposes of this analysis, the total number of search results, the URLs and the ranking of each result are of particular importance, but more information has been extracted to provide context.

In order to get a representative sample of search results, it is necessary to find common search queries that are relevant in the industry. The results presented here are exclusive to the Lending industry, although the same methodology can be applied to other industries in which Citigroup operates. Using Google Adwords’s Keyword Planner, and a few examples of relevant search queries, an expanded list was found containing the most popular search queries and their estimated monthly searches, which was later used as input to the Custom Search API. Having extracted the search engine results, we proceeded to find the URLs with the greatest exposure, the queries relevant to each URL, the estimated number of sites pointing to each URL and the total estimated traffic. Although the sample size is over 300 search queries, or over 3000 search results, it is important to note that these are point estimates and should not be taken as definitive parameters of the population. However, because it is based on the most popular search queries in the Lending industry, these results provide a good indication of Citigroup’s competitive advantage in this dimension.

Panel A of Figure 3.1 shows Citigroup’s links with the most search engine exposure and the queries used. Using the search engine rank, click-through probability distributions of Granka, Joachims and Gay (2004) and the estimated number of monthly searches from Google Adwords the estimated traffic was calculated. Both the probability distribution and the amount of searches are rough estimations, but they are accurate enough to see traffic differences with competitors as shown in Panel B of Figure 3.1.

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| |  |  |  | | --- | --- | --- | | *Panel A – Citigroup’s Most Popular Links and Estimated Traffic* | | | | **URL** | **Keyword** | **Estimated Traffic** | | https://online.citi.com/US/JRS/pands/detail.do?ID=LLInstallmentLoan | personal loan bank | 90 | | https://online.citi.com/US/JRS/pands/detail.do?ID=PersonalLinesAag | personal line of credit | 78 | | https://online.citi.com/US/JRS/portal/template.do?ID=mortgage\_fixed\_rate\_home\_equity\_loan | home equity loan rates | 462 | | https://online.citi.com/US/JRS/portal/template.do?ID=mortgage\_home\_mortgage | mortgage | 6573 | | https://online.citi.com/US/JRS/portal/template.do?ID=mortgage\_home\_mortgage | mortgages | 1262 | | https://www.citicards.com/cards/wv/html/cm/know-the-rules/how-credit-cards-work/cash-advances.html | cash advances | 84 | | https://www.citimortgage.com/ | mortgage company | 84 | | https://www.citimortgage.com/ | mortgage finder | 92 | | https://www.citimortgage.com/ | mortgage loans | 252 | | |  |  |  | | --- | --- | --- | | *Panel B – Competitor’s Most Popular Links and Estimated Traffic* | | | | **URL** | **Keyword** | **Estimated Traffic** | | https://www.chase.com/mortgage/mortgage-resources | mortgage calculator | 85425 | | https://www.chase.com/mortgage/mortgage-resources/affordability-calculator | mortgage affordability | 3043 | | https://www.bankofamerica.com/home-loans/mortgage/mortgage-rates.go | mortgage rates | 9384 | | https://www.bankofamerica.com/home-loans/home-equity-loans/overview.go | home equity loan | 8137 | | http://www.hsbc.co.uk/1/2/mortgages/repayment-calculator | mortgage repayments | 137 | | https://www.us.hsbc.com/1/2/home/personal-banking/mortgages | which mortgage | 35 | | https://www.santanderbank.com/us/personal/borrowing/loans/savings-secured-loan | secured loans | 484 | | https://www.santanderbank.com/us/personal/borrowing/loans/savings-secured-loan | secured loan | 396 | | https://www.lendingclub.com/public/personal-loans.action | loans | 36138 | |

Figure 3.1

It seems that JP Morgan Chase, Bank of America and Lending Club are performing substantially better than Citigroup. However, Citigroup’s Home Mortgage Portal page is particularly popular.

It is possible that the differences in search engine visibility are due to the number of inbound links each page has. Using the Custom Search API, it is possible to define a search for pages containing a specific link (link:) while excluding the root domain of the link (-site:). It is also possible to extract the total amount of results from these queries although, as stated by Google, not all the results may be listed when specifying inbound links (“Links to Your Site”, 2016). However, this method does account for 301 and 302 redirects, and consolidates URL with minor differences (parameters, trailing slashes, etc). Figure 3.2 shows the estimated number of inbound links for Citigroup (panel A) and its competitors (panel B):

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| |  |  | | --- | --- | | **Panel A – Citigroup’s estimated number of inbound links to web pages** | | | **URL** | **Estimated # of Inbound Links** | | https://www.citimortgage.com/ | 13900 | | https://www.citicards.com/cards/wv/html/cm/know-the-rules/how-credit-cards-work/cash-advances.html | 8 | | https://online.citi.com/US/JRS/pands/detail.do?ID=LLInstallmentLoan | 2 | | https://online.citi.com/US/JRS/portal/template.do?ID=mortgage\_fixed\_rate\_home\_equity\_loan | 0 | | https://online.citi.com/US/JRS/portal/template.do?ID=mortgage\_home\_mortgage | 0 | | https://online.citi.com/US/JRS/pands/detail.do?ID=PersonalLinesAag | 0 | | |  |  | | --- | --- | | **Panel B – Competitor’s estimated number of inbound links to web pages** | | | **URL** | **Estimated # of Inbound Links** | | https://www.chase.com/mortgage | 352000 | | https://www.chase.com/auto-loans | 287000 | | https://www.bankofamerica.com/auto-loans/ | 324000 | | https://www.bankofamerica.com/auto-loans/auto-loans-financing.go | 264000 | | https://www.us.hsbc.com/1/2/home/personal-banking/mortgages | 8590 | | http://www.hsbc.co.uk/1/2/mortgages/repayment-calculator | 2620 | | https://www.santanderbank.com/us/business/borrowing/small-business-borrowing/small-business-line-of-credit | 2820 | | https://www.santanderbank.com/us/personal/borrowing/loans/personal-loans | 1790 | | https://www.lendingclub.com/ | 118000 | | https://www.lendingclub.com/public/personal-loans.action | 4140 | |

Figure 3.2

These results provide an indication of Citigroup’s search engine visibility. One of the key aspects in search engine ranking is the quantity and quality of links pointing to a webpage. While it wouldn’t hurt to make the links more search-engine friendly (making them more relevant to the targeted queries and structuring them hierarchically), it is observed in Figure 3.2 that Citigroup has a great room for improvement in the number of inbound links to their site. Doing so could greatly improve Citigroup’s link profile and search engine visibility.

Reference

Granka, Laura A., Thorsten Joachims, and Geri Gay. "Eye-tracking analysis of user behavior in WWW search." *Proceedings of the 27th annual international ACM SIGIR conference on Research and development in information retrieval*. ACM, 2004.

"Links to Your Site." *Search Console Help*. Google.com. Web. 04 June 2016.