

OSN analytics: Inquiring into the Internet Services Complaints On a Customer Complaints Platform

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1 INTRODUCTION

Customers really have a voice when it came to expressing their opinion about companies and their products or services. Luckily, there are many convenient platforms that allow customers to quickly and easily lodge a complaint against a company that wronged them. *ComplaintsBoard.com* is a complaint resolution website where customers' concerns really matter. For more than 18 years they have helped nearly 50000 customers resolve their issues since 2004. As they put it, 'We like to think of ourselves as a virtual conference room where constructive conversations happen between companies and customers'. Among the various categories of complaints, the Internet Services can't be overlooked, inclusive of Hosting Web design and Internet Providers. In this paper, I performed a primary enquiry into Internet Services Complaints by collecting 2,708 specific customer complaints, which were filed over a time period of 15 years against top 20 merchants on one of the largest customer complaint platforms in the world, as well as 525 customer-uploaded images as photographic evidence to control the collecting scale. Besides, I did a thorough investigation on all Internet Services Companies involved by collecting 1,170 companies, which also include their rating stars, total of complaints and solved complaints. I characterized the complaints in terms of merchant being complained, header, user's name, user's address, date of post, content of complaint, anti and support numbers, whether is replied or resolved and img SRCs. Moreover, I succeeded to plot the wordclouds of all of the complaints or each merchants' complaints. This clouds uncovers the key features of Internet Services complaints and the merchants.

2 BACKGROUND

In this section, we detail the lifecycle of a complaint from being filed to completion on ComplaintsBoard.com, one of the most comprehensive online review and complaint sites on the Internet. ComplaintsBoard.com sorts complaints by category, offering consumer tips and trick articles, and allows users to create common interest and complaint groups. When a customer files a complaint on the website, he/she needs to complete a Complaint Registration Form. To file a complaint, the customer needs to take two steps. (1) Customer provides relevant information including the involved merchant, product or service complained about and desire outcome. (2) the customer is required to fill in details including description of complaint and contact address, and is also encouraged to provide evidence in the form of videos or photos, such as order payment information, call history, and commercial contracts, to support the complaint, publicly accessible by default. Last, by clicking Submit the customer confirms that he or she has read and agreed to the FAQ, Terms of Use, and Privacy Policy, and that his or her information is



Figure 1. ComplaintsBoard.com

accurate, true, complete and not misleading.

After submitting the complaint successfully, the moderation process may take from a few hours to 2 business days. Besides, complaints are not checked on weekends, so if you posted your review on Friday evening, it might not show up on the website until Monday. The most featured review posted on the website will be algorithmically chosen and marked. Other users can also click "like" or "dislike" button and comment on the complaints

Afterward, the merchant can either use a complaint tracker to check new/updated complaints against itself or visit its business account to find a complaint it wishes to respond to and post reply. When a customer leaves a negative review for the company, the merchant will receive a notification about it. The customer will receive an almost immediate notification that the business has replied. If the complaint is replied by the merchant, then it will be labelled as "replied". By operating the account profile in the "My Complaints" section, the complaint will be marked as "resolved" and a resolution statement will be added. If the complainant does not respond within 30 days after the merchant's comment, it is considered that either the issue has been resolved or the consumer is no longer interested in the complaint. In this case, the complaint will be marked as "resolved" as well.

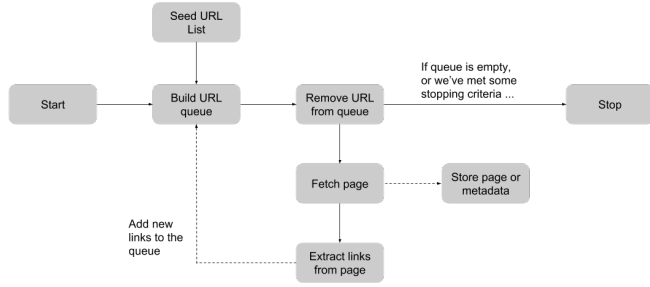


Figure 2. Web Crawling

3 DATA COLLECTION METHODOLOGY

There are multiplexing categories of business reviews and complaints, and I chose the kind of Internet Services complaints for searching. Accessing this page full of companies, I found each merchant on the website is assigned an unique identifier(ID), which usually begins with 'b' or 'cc' and 6 digits following. The complaint on the website is also assigned an unique identifier, which usually begins with 'c' and 7 digits following. By clicking into each merchant, this page can lead to another page or complaints of specific reviews of a merchant. Based on this observation, we crawled all merchants' information in this category and top 20 merchants' all complaints summed 2708. The web crawler was developed using the Selenium WebDriver framework with python programming, and is not equipped with any functions that could bypass any CAPTCHA mechanisms or login prompts. Actually, all complaints are publicly accessible without any login required.

Without some necessary tools, I won't complete the task of web scraping efficiently. Beautiful Soup provides a few simple methods and Pythonic idioms for navigating, searching, and modifying a parse tree: a toolkit for dissecting a document and extracting what you need. The WebDriver protocol has a local end ('client') which sends the commands (test script) to a browser-specific driver. The Selenium helped a lot. The driver executes these commands on its browser-instance. So, if the test script calls for execution on Chrome and Firefox, the ChromeDriver will execute the test on Chrome; the GeckoDriver will do the same on Firefox.

We conducted a comprehensive collection of complaints, posted on the ComplaintsBoard throughout May 2022, spanning a 15-year period (from 2007 to 2022). Our continuous crawl was not noticed by the ComplaintsBoard. Specifically, our IP was never blocked during the measurement period. In addition, we have not been contacted by any operator regarding our browsing activity. Therefore, we believe that our crawl data is valid and has not been tainted by the platform operators.

Our crawled data includes selected complaints and the profiles of merchants on the platform. A complaint normally contains the following information: merchant being complained, header, user's name, user's address, date of post, content of complaint, anti and support numbers, whether is replied or resolved and img SRCs. A merchant's profile on the platform mainly consists of the information about the merchant's name, the sum of complaints received, the sum of complaints replied and the overall star rating.

Table 1. Breakdown of merchants based on the number of complaints against them.

Complaints received	Merchants	Sum of complaints
>100	9(0.7%)	=>1894(27.0%)
10~100	88(7.5%)	=>2284(32.5%)
<10	1073(91.7%)	=>2840(40.5%)

Table 2. Breakdown of merchants based on the reply rate of complaints against them.

Star	Reply rate	Merchants
5	0.8~1.0	=>58(5.0%)
4	0.6~0.8	=>11(0.94%)
3	0.4~0.6	=>38(3.2%)
2	0.2~0.4	=>73(6.2%)
1	0~0.2	=>990(84.6%)

4 DATASET DESCRIPTION

In total, we managed to collect a large dataset about 1,170 merchants, of which all profiles are publicly accessible.

4.1 Breakdown of Merchants

1 provides a breakdown of merchants based on the number of complaints they received. The top 9 merchants, each of which received more than 100 complaints, are *Great Fun*, *GoDaddy*, *GearBubble*, *Scribd*, *AOL*, *DuckDuckGo*, *Cogeco*, *Wix* and *Mozilla*. *Great Fun* is a membership-based service providing discounts for various restaurants, purchases, travel, and leisure activities. *GoDaddy* is used as a web host and domain registrar. *GearBubble* is an e-commerce website builder with print-on-demand functionality. In total, complaints against the 9 merchants account for 27.0%(1,894) of all complaints observed. On the other hand, 20.9%(245) of the total merchants received only one complaint, and 91.7% of merchants received less than 10 complaints during a time period of 15 years. Actually, nearly all those merchants are small and little-known companies, and the complaints against them together account for 40.5% (2,840) of all complaints as well.

Besides, we found that the star rank of a merchant depends upon its reply rate entirely, which equals to the amount of replies divides its total complaints. Every 20% increase of the reply rate corresponds to a more star, from 1 to 5 stars. 2 represents breakdown of merchants based on their star rank and reply rate. Clearly, 990(84.6%) of the companies got a single star. There are 58(5.0%) merchants who are able to achieve the high reply rate of over 80%, and the criteria for ranking and scoring is fairly reasonable. Recognizably, 57 of the merchants have a reply rate of 100%.

5 DATA ANALYSIS AND FINDINGS

In this section, we conduct an in-depth analysis of the content details of complaints, to investigate noticeable issues or scams reported in the complaints and explore the reasons behind those disputes, in order to shed light on various misconducts in Internet Services. There are more than 7,000 Internet Services complaints towards 1170 companies. Our dataset consists the 20 most frequently complained merchants' 2708 specific complaints to record precisely and actively.

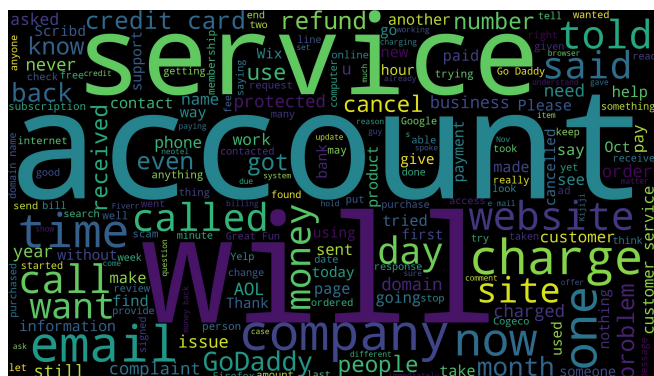


Figure 3. Total word cloud

I plotted 20 word clouds for each companies and one for these all in total.

5.1 Images Attached the Complaints

In all 2,708 complaints, we collected 525 images that consumers uploaded as evidences when handing their complaints. Most of these images are screenshots including chat logs, and some others are photos taken by the complainers.

5.2 Likes and Dislikes towards the Complaints

Every complaints posted on the website can be reflected by other users' stand. Users can reveal their position by simply clicking the *Like* or *Dislike* button on the website. There are several comments receiving much attention or are controversial. For example, the complaint getting the most *Like*(351) is towards *Duck Duck Go*, titled as *Last Chance 'I came to Duck Duck Go specifically to escape the censorship of Google and Big Tech companies. I will give this a week or two for you to STOP injecting bias into your product. If you don't reverse the down ranking of ANY sites, I will never use your products again. I mine as well go back to Google if this is where you take this. I do not need an overlord deciding what is truth and what is propaganda. It is a slippery slope. It will be the reason you become irrelevant. Good luck. The clock is ticking.'*, from a user named Wayne Kool in US.

5.3 Content of all Internet Services Corporations

3 shows the word cloud of the 20 companies' summed complaints content analysis, showing the frequent words mentioned in the complaints.

5.4 Content of single Internet Services Corporation

4,5 and 6 shows the word cloud of the top 3 companies' own complaints content analysis, showing the frequent words mentioned in the complaints.

6 CONCLUSIONS

In this paper, I performed a primary enquiry into Internet Services Complaints by collecting 2,708 specific customer complaints, which



Figure 4. Great Fun



Figure 5. GoDaddy



Figure 6. GearBubble

were filed over a time period of 15 years against top 20 merchants on one of the largest customer complaint platforms in the world, as well as 525 customer-uploaded images as photographic evidence to control the collecting scale. Besides, I did a thorough investigation on all Internet Services Companies involved by collecting 1,170 companies, which also include their rating stars, total of complaints and solved complaints. I characterized the complaints in terms of merchant being complained, header, user's name, user's address, date of post, content of complaint, anti and support numbers, whether is replied or resolved and img SRCs. Through demonstration and part of practice, this paper explores the process of data crawling and basic data analysis of dynamic pages by combining the general Python's story framework with selenium + beautiful soup through crawling the www.ComplaintsBoard.com. Moreover, I succeeded to plot the wordclouds of all of the complaints or each merchants' complaints. This clouds uncovers the key features of Internet Services complaints and the merchants.

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