New Etsy Shops' Chance of Exposure

Etsy is an e-commerce website where independently owned businesses primarily sell vintage items and handicrafts. Etsy was founded in 2005 and has grown to 44.8 million buyers and 2.5 million sellers. The saturation of sellers, however, appears to make it difficult for new sellers to gain attention on the website's marketplace (measured in terms of "favorers") and convert exposure into sales. Common questions and forums on Etsy's community pages support the assumption that Etsy's marketplace is too overcrowded to gain virality and have a profitable business. Just based off these public forums and increasing complaints, one can predict that a NBD counts model will reveal a strong right skew (with an overwhelming majority of shops failing to gain any substantial exposure) and a couple of outliers (i.e. shops that went viral and gained substantial exposure). An important distinction in the usage of favorers counts rather than sales counts is that a virtual following does not equate to profit.

The NBD models used to prove this hypothesis are created from data extracted using web scraping techniques and Etsy web API, including a total count of 20,000 Etsy shops created in November and December 2019 with a few chosen attributes to analyze what could have contributed to success. Success is in this paper is measured in favorer counts, which can be seen as analogous to followers on an Instagram shop. Virality and continuous growth

The attribute chosen for further analysis in the paper is whether the Etsy store is U.S. based or not. As 66% of Etsy sales are made in the U.S. (Expanded Ramblings), there are many factors that could dissuade Etsy's consumer majority (i.e. Americans) from doing business with an international seller. This is because shipping costs on Etsy fall upon the seller or the buyer. The NRF surveyed Americans on free shipping and found that 75% of respondents (results published January 2019) expect free shipping, even on orders under $50 – an increase from 68% from 2018. This free shipping expectation then leads sellers to hide shipping costs by raising product prices. Higher (hidden) international shipping costs could impact interest in sellers located outside of the United States.

Other factors such as trust may also weigh into lack of interest in new international Etsy shops as buyers may foresee greater difficulties in holding foreign sellers accountable to upholding product authenticity, quality, and timely shipping. These hunches tie into the second prediction that newness coupled with lack of locality contributes to a lower chance of success for international Etsy shop owners.

Below, Exhibit A captures a sample of the raw data. As seen in the raw data, ~26.7% of new sellers did not list their location. These sellers were filtered out in later analyses comparing success of United States shops and international shops. The negative numbers in the raw data found in the sales count convey how many of these new Etsy sellers are experiencing negative revenue and are losing money by running these shops on Etsy's platform. The scattering of negative sales in the raw data support the first prediction that Etsy is a difficult platform for small-scale independent sellers to gain initial exposure.

Exhibit A

| creation_c | listing_active_count | num_favorers | currency_code | is_shop_us_based | sale_mess | sales_cour | review_co | shop_location |
|---|---|---|---|---|---|---|---|---|
| 19-Nov | 3 | 1 | USD | TRUE | FALSE | 0 | 0 | Kansas City, Missouri |
| 19-Nov | 13 | 1 | AUD | FALSE | FALSE | 2 | 0 | None |
| 19-Nov | 0 | 0 | USD | TRUE | FALSE | -99 | -99 | None |
| 19-Nov | 40 | 1 | USD | FALSE | FALSE | 0 | 0 | Kharkiv, Ukraine |
| 19-Nov | 7 | 1 | USD | TRUE | FALSE | 0 | 0 | New York, United States |
| 19-Nov | 0 | 40 | USD | TRUE | FALSE | 14 | 1 | None |
| 19-Nov | 1 | 0 | USD | TRUE | FALSE | 0 | 0 | None |
| 19-Nov | 0 | 0 | USD | FALSE | FALSE | 0 | 0 | None |
| 19-Nov | 8 | 1 | USD | TRUE | FALSE | 0 | 0 | None |
| 19-Nov | 7 | 1 | USD | TRUE | FALSE | 0 | 0 | None |

Exhibit B is an aggregate NBD model that includes all 20,000 Etsy shops in the data set and actual versus expected frequency of favorer counts. From a glance, the expected and actual counts appear to match very well with no noticeable gaps. Despite the right skew, there aren't any outliers to this dataset.

Exhibit B
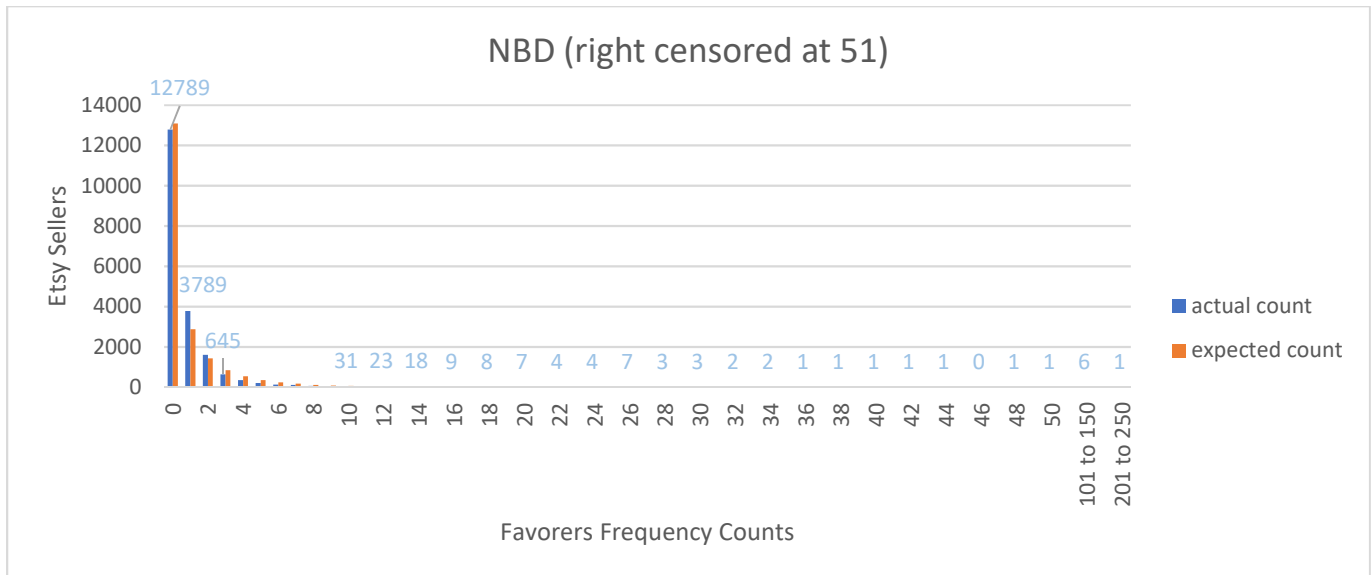


The aggregate NBD model is a good fit for the data set with expected counts falling below 0 starting at 24 favorer counts. A right censor was performed at 51 favorers with the creation of four larger bins: 51-100 favorers, 101-150 favorers, 151-200 favorers, and 201-250 favorers. This right censoring was done because the higher favorer counts were less frequent and contribute to a strong right skew in the model. The right censoring and strong right skew contribute to an extremely large chi-square value of 2.59E+19 and a p-value so small that it cannot be displayed. The extremely small p-value supports that the NBD model is a good fit as it is well below zero.

The parameters r and alpha are 0.282 and 0.287 respectively, showing high heterogeneity in the data. High heterogeneity is not surprising as Etsy has 15 top level categories for product search with many subcategories within each one. The average count of active listing per new Etsy seller

is 7.34 active listings, supporting the idea of newer shops typically being smaller and having a very specific niche. This over specificity of products sold by each new seller could also affect chances of success in gaining exposure. Sellers who sell in oversaturated categories and subcategories will struggle to stand out amongst more established and more popular Etsy shops.

Overall, within the first 1-2 months of creating an Etsy shop, sellers should expect a 65.6% chance of receiving 0 favorers and conclusively minimal to no exposure. The slim chances of getting 22 or more favorers and going viral in this timeframe is 0.0354%. These results support the first prediction that Etsy is a difficult platform to open and grow a small-scale business.
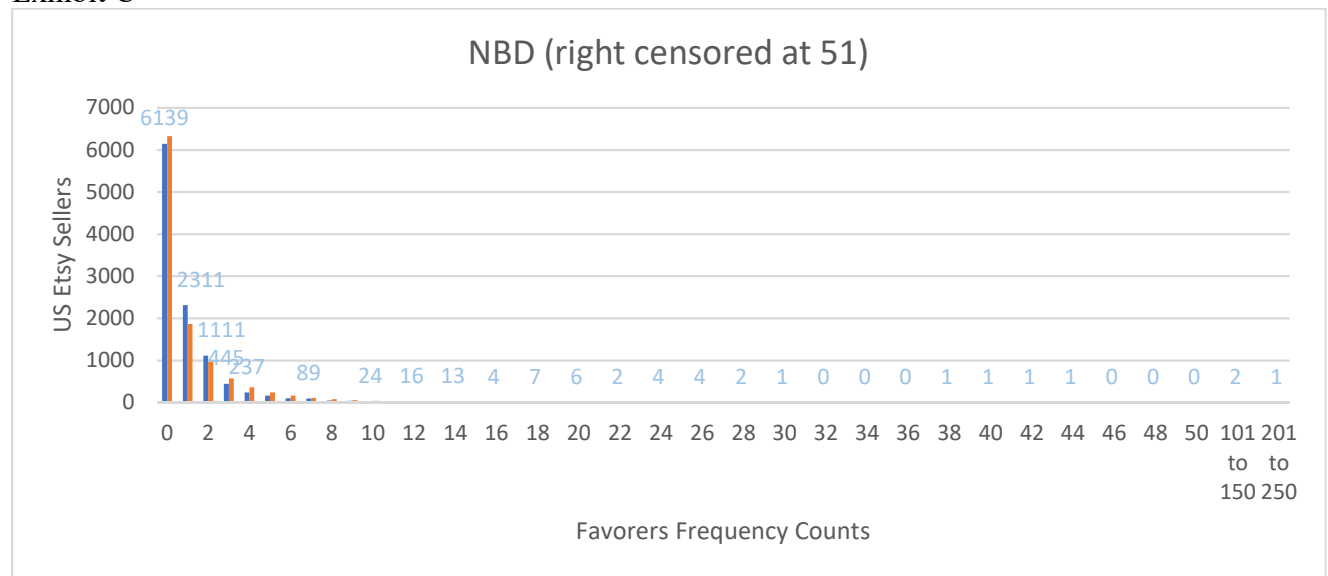
Exhibit C



Exhibit C shows the NBD model for U.S. based Etsy shops' actual versus expected frequency of favorer counts. The same right censoring as the aggregate NBD model was performed on the U.S. based NBD model. The parameters r and alpha are higher in the U.S. based model compared to the aggregate model and are 0.397 and 0.347 respectively, indicating less heterogeneity amongst American Etsy shops. The chi-square value is still very high at 2.187E+23 and the p-value is too small to display and is therefore less than 0.05. The chi-square and p-value show that the right censored NBD is a good model.

In the first two months of creation, U.S. sellers should expect 58.4% chance of receiving 0 favorers and conclusively minimal to no exposure, a 7.2% improvement from the aggregate NBD model. The chances of getting 22 or more favorers and going viral in this timeframe is 0.0209%, which is 0.0145% lower than the aggregate model. The shared maximum of 223 favorers between the United States specific NBD and aggregate NBD loosely indicate that new American sellers have better chances of gaining substantial interest and a following.
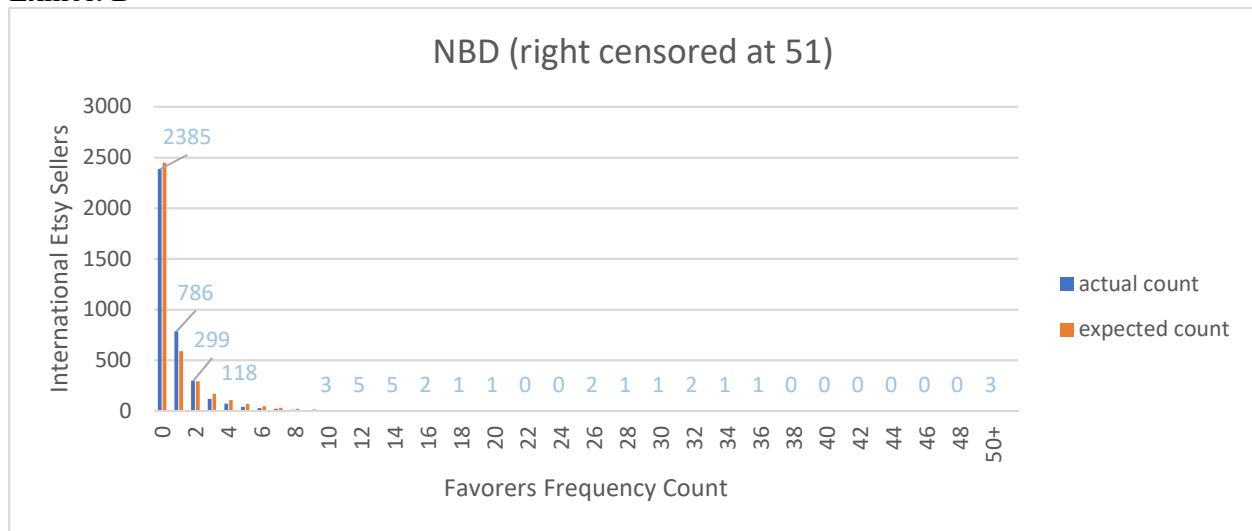
Exhibit D



Exhibit D shows the NBD model for international Etsy sellers with a right censor at 50 as the maximum number of favorers is 63 for international Etsy sellers. The parameters r and alpha are 0.320 and 0.331 respectively. The chi-square value is still very high at 2.187E+23 and the p-value is too small to display and is therefore less than 0.05. The chi-square value 262441.8187 is high and p-value show that the right censored NBD is a good model.

The maximum is ~72% lower than the maximum for U.S. sellers and the aggregate model is 223 favorers. The chances of failure more closely imitate those of the aggregate NBD as well with a 64.01% chance of gaining 0 followers in the first two months. International sellers are expected to have a 0.0109% chance of gaining 22 or more favorers, which is twice as small as the chances for American sellers.

In conclusion, the first prediction is proven to be mostly true where the NBD models have revealed a strong right skew although there weren't any distinguishable outliers on the right tails. The hypothesis that an American seller would have better success than an international seller has also been proven true. Newly created American shops have roughly a 6% lower probability for flopping on the Etsy marketplace, are twice more likely to succeed in gaining favorers, and will have larger amounts of favorers compared to international shops. And yet regardless of shop location, the chance of failure is larger than 50% with the chance of success being less than 1%, indicating that gaining traction and monetizing through Etsy alone is insufficient. To drive more sustainable presence and growth, new Etsy shop owners need to look for digital marketing strategies or utilize other digital platforms to encourage virtual store traffic.

Works Cited

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Shearman, J. Craig, and VP J. Craig Shearman. "NRF Study Says More Online Shoppers Want Free Shipping." *NRF*, 15 Jan. 2019, nrf.com/media-center/press-releases/nrf-study-says-more-online-shoppers-want-free-shipping.