

ITM615: Term Project Phase 1 Deliverables

Spring 2020 – Section J

3/16/2020

Airbnb Fair Pricing

Mohammad Samara

Rajeev Tikka



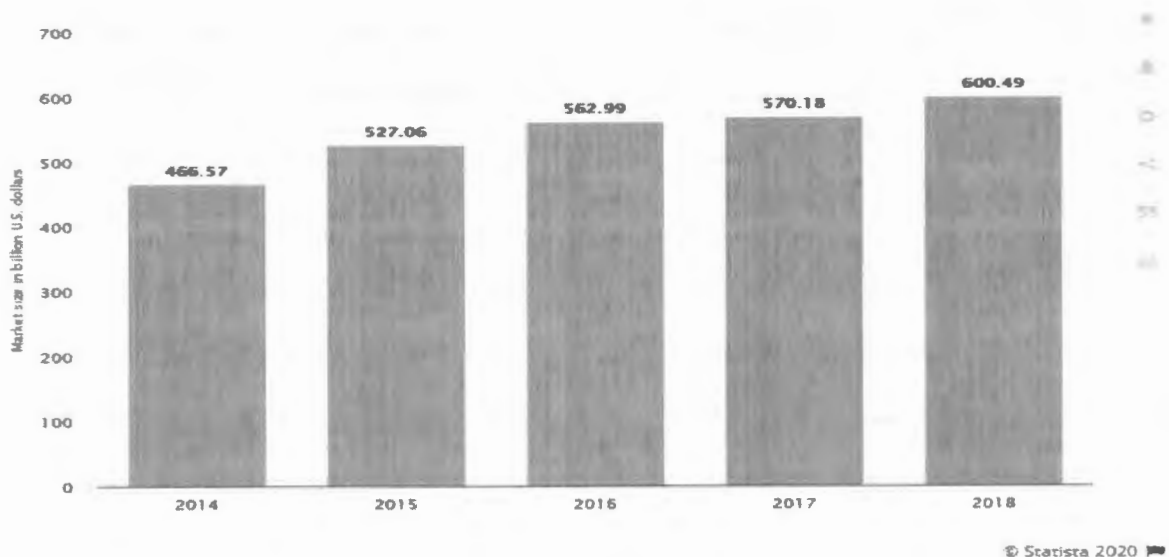
Section 2: Introduction

1- Overview

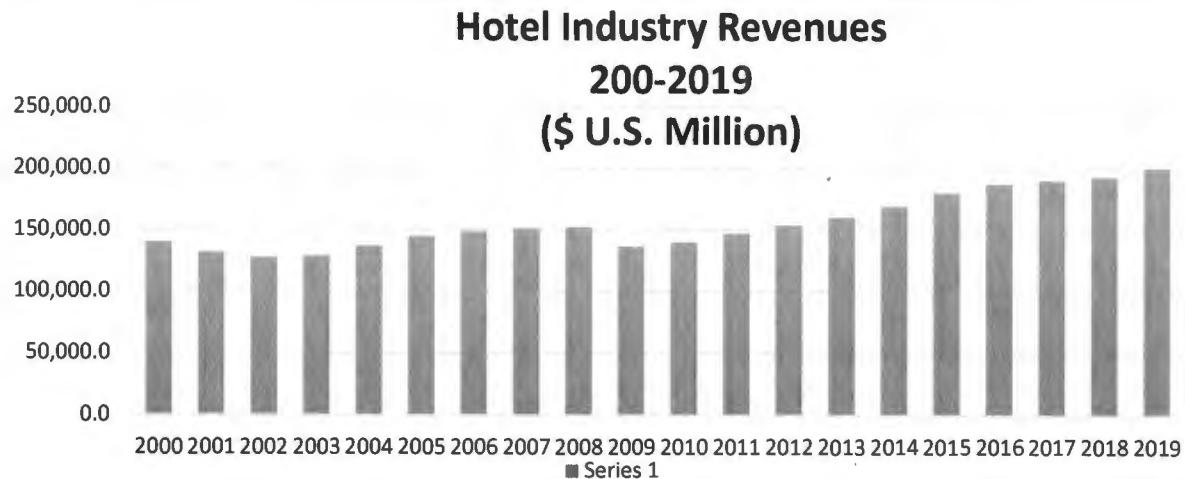
Airbnb is an online marketplace and portal that play the middle role between individuals who need a place to stay and people who have a place to rent. Airbnb does not own any real estate or long-term assets, they only charge a commission fee on both sides, 3% on owners and 6-25% on renters, which varies depending on the place, stay duration, location, and money other specifications (Ting, 2019). Airbnb was founded in 2008 by the roommates; Brian Chesky, Joe Gebbia, and Nathan Blecharczyk (Clifford, 2017) in San Francisco California. The startup has been a preferable choice for travelers and short-term renters, since it solved the problem of long-term lease contracts, high hotel prices, and make it easier to search for a place. On the other hand, the providers find it easier to rent their places than using mass advertising tools such as newspapers, magazines, T. V's, radios, websites, personal contacts, public places, and other media and traditional advertising tools.

2- Industry Analysis

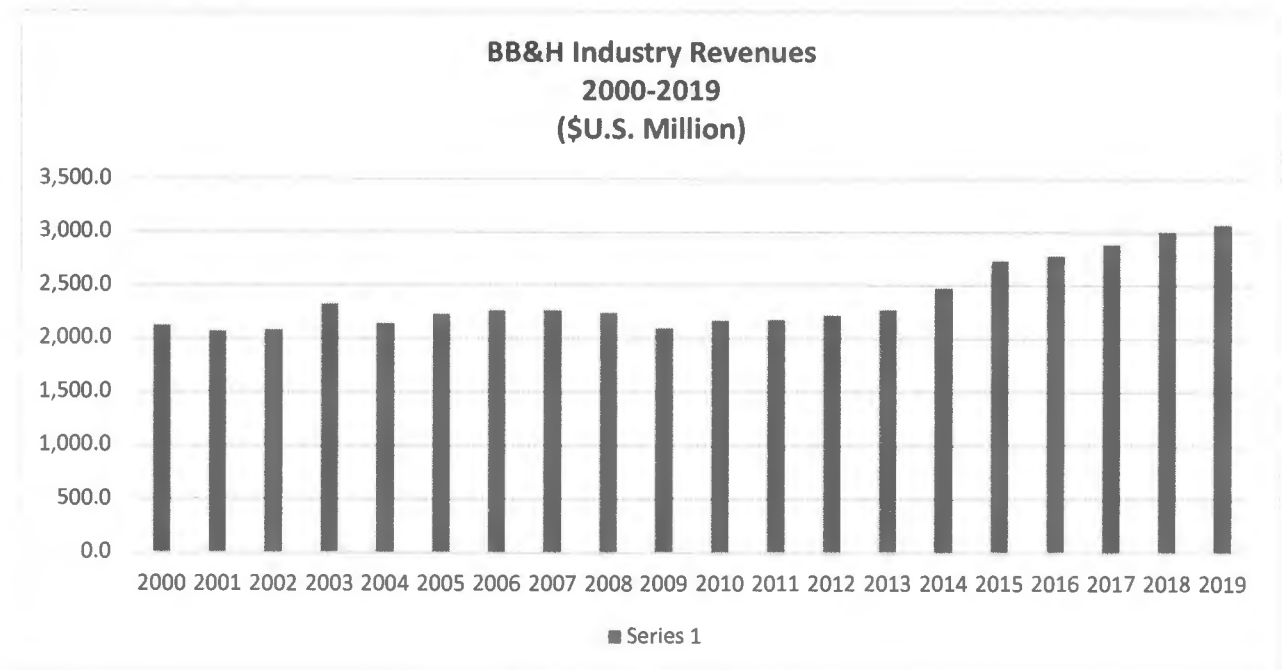
At the beginning of Airbnb, the main competitors were advertising websites like Craigslist, Offer up. Facebook, etc., but early later, the hotels and hospitality industry quickly got alerted of the threat of Airbnb. The threat was of a new product that could be a substitute of theirs, and attractive enough to shift the customers away from their hotels and motels. For example, a new student just traveling to discover the new town and enroll in the university previously needed to look for a nearby hotel or motel for 2 days. The restriction on the student within the availability of the accommodation places and his need to find a place make the nearby hotel or motel to charge higher prices since the bargaining power of the customers is low. With Airbnb, the same student can find a variety of nearby places with different options at lower prices, since he can switch easily and choose the best option tailored to his unique needs. Nowadays, Airbnb is a major player and competitor in the hospitality industry mainly the hotel sector (NAICS 7211). Based on Statista, the global sector size increased on a growth average annual rate of 6.49% (Lock, 2019) as shown below.



The revenues of the sector in the United States have been growing on an average annual rate of 1.9% and achieved \$200 Billion in revenues in 2019 (Hyland, 2019). Competition comes from traditional hotels and motel chains like Hyatt, Marriott, Hilton, 4 Seasons, Sheraton, and others.



The other industry that Airbnb is a major player in the Bed, Breakfast, and Hostel Accommodations (NAICS 72119). This industry is a growing industry if compared to the hotels and motels industry which is considered to be mature. The Bed, Breakfast, and Hostel Accommodations industry recorded profits in 2019 of \$208 million, generated from more than 9 thousand entities with annual revenue in 2019 of \$3.1 billion and annual average growth of 2% (Le, 2019).



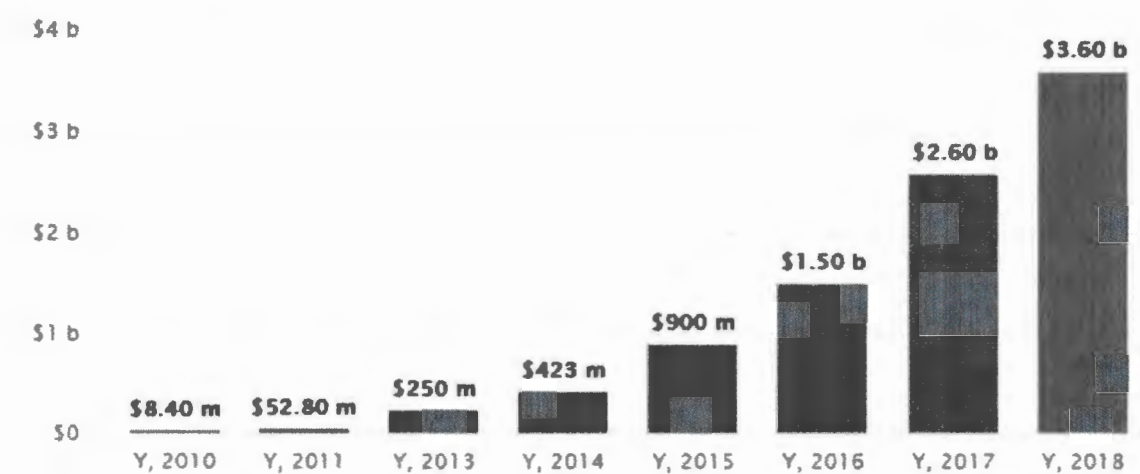
The most serious competition that faces Airbnb is that coming from the Hosting International USA association which owns and operates more than 4000 properties in more than 90 countries. Other new similar online portals compete with Airbnb in this industry like Tripping for example that started in 2009 that has more than 120 thousand property listings in 190 countries, HomeToGo that started in 2014 and operates in more than 200 countries, or HomeAway

(Chan, 2018). Airbnb also influenced a new niche kind of competition, for example, Flipkey, owned by TripAdvisor help adventure seekers to find an appropriate accommodation near the mountains, lakes, oceans, or hiking parks with more than 300 thousand listings in more than 160 countries. VRBO is another example of a niche competitor to Airbnb that focuses on luxury vacation rentals.

3- Company Analysis

Airbnb users reached 500 million users in 2019, which increased from 2017 with 233%, and the rooms rented out through Airbnb reached 4 million in 2017 (Craft, 2019). The growth in the users and rented rooms contributed to the growth in Airbnb revenues which achieved more than \$3 billion in 2018 with an increase of 38.5% than 2017 as shown below. ✓

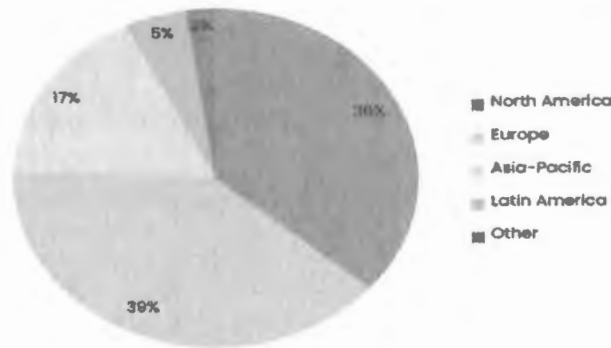
Annual Revenue (\$)



Airbnb revenue was \$3.60 b in Y, 2018 which is a 38.5% year over year increase from the previous period.

Airbnb operates worldwide in more than 190 countries and over 100 thousand cities. The major revenue sources concentrated in North American countries; United States, Europe, and Asia as shown below (AllTheRooms Analytics, 2019). Airbnb has 34 local and overseas offices that employ more than 14 thousand employees worldwide (iPropertyManagement, 2020). ✓

Airbnb: Q2 2019 Gross Revenues By Region



Airbnb is active in Mergers and Acquisitions markets with more than 20 transactions in the last 10 years. Those subsidiaries are operating mainly in the same industry as Accoleo, Crashpadder, and Luxury Retreats that were acquired in 2011, 2012, and 2017 consequentially, or media industry like DailyBooth, Fondu, and Trooly that were acquired in 2012, 2012, and 2017 consequentially. Airbnb also invested in the software and internet industry as it acquired ChangeCoin in 2016 and Deco Software in 2017 (CRUNCHBASE, 2019). All the previous facts and analyses lead to the fact that Airbnb is a very successful startup that can achieve a sustainable competitive advantage on the long term and a strong candidate to file an IPO and turn to a public company, especially that it was valued in 2019 with \$38 billion (Team & Speculations, 2018).

4- Data analytics systems

Airbnb has more than 100 software providers who preferred to call them "Partners". Those partners help Airbnb to hold the day-to-day operations to achieve a win-win result for the partnership. Such partners like Avantio, Lodgify, LiveRez, BookingSyn, and others (AIRBNB, 2020). Those partners either operate in the hospitality industry or related industries such as adventures, media, and vacation planning. A rational and logical explanation for such partnerships is that both Airbnb and partners can share relevant data and achieve the best results after mining, analyzing, and using it in determining the best target market and what influence the client's decision. ✓

Taking in to respect the customers' and users' privacy, Airbnb built its own Enterprise Resource Planning System (ERP), Airpal in 2014. At the beginning of Airbnb, the owners didn't need anything more than excel or similar simple software and a laptop with WI-FI connection to run their business. With outstanding growth, Airbnb engineering and software developers built Airpal and launched it in 2014. The software ease capturing data, analyzing it and display it when retrieved in different visual tools such as tables and charts. Airpal is equipped with capabilities to keep the data secure by limiting access to authorized persons only. After the achievements that Airpal had, many companies started using it such as Jampp (Geeks, 2016). Airbnb collects enormous data from all around the world that would be costly to store them on their own built databases. For that reason, Airbnb partnered with Amazon in 2009 to provide the needed databases that can reduce the related costs and time needed to maintain such huge databases (Amazon Web Services, 2016). ✓

Airbnb's BA maturity status based on DELTA model?

Section3: Business Analytics Problem

Business Model

Airbnb business model revolves around three customer segments.

1. **Hosts:** People who want to earn money by renting their shared space or property to travelers in the Airbnb platform such as their website.
2. **Travelers:** People who book listed places by the host from Airbnb website.
3. **Freelance photographer:** These professional photographers are hired by Airbnb to take high quality photos of the places listed by Airbnb. These photographers are directly paid by Airbnb, depending on the response of the photos.

First the host lists his space on the Airbnb website with details such as price, location and amenities. Airbnb then send a professional freelance photograph to that place to take high quality photos of that place. Travelers search for a property in the website and book the listing according to their needs such as location and amenities. Booking and payment is done through the website by letting the user pay the fees mentioned by the host and additional transaction fees. Host then approves the place to the traveler after looking at his ratings and lets the traveler stay at his place. Finally, Airbnb sends the money to the host after taking commission for themselves.

As mentioned earlier, Airbnb gets revenue from two sources.

1. Transaction fees of 3% in the booking amount from travelers (Parag, 2017)
2. Flat 10% commission from hosts upon every booking (Parag, 2017)

There are two keys problems for this business problem.

1. **Trust issues:** This is the biggest issue faced by both host and traveler. As host may have trust issue renting his property to the traveler, and traveler can also have trust issues such as living in a rented space with strangers and to know the whether the price listed by the host is fair or not.
2. **Traveler retention problem:** Another problem faced by Airbnb is the retention problem of the travelers. As the company needs to grow, it is important for them to retain the frequent travelers so that they don't choose hotel or motel for their next visit. For this reason, trust issues must be improved to retain the customers.

We primarily want to focus the fairness of the price listed by the host in the trust issue as a problem in their current business model of Airbnb. This issue can be resolved using the business analytics tools. Using business analytics models we try to predict the price of the listing and classify whether the price listed by the host is overpriced, fair and underpriced.

1. Overpriced, if the resultant output predicted by the model is less than the price listed by the host.
2. Fair, if the output of the model is almost equal to the host price.
3. Underpriced, if the output of the model is less than the host price.

This model can be seen in other applications such as in the case of "CarGurus" which is an automobile-based shopping website mostly for cars. The website not only lists the cars prices and their features, it also lists whether the price offered by the deal is great, fair or overpriced. By implementing a similar model in Airbnb, we believe that travelers will have more trust, thereby retaining them and increasing the revenue of the company.

The model can be prepared by importing Airbnb data from Kaggle for any city such as New York city, Boston, Berlin etc. The model is trained by using the preprocessed and cleaned data on an IBM SPSS modeler tool. The training models we use in this scenario are Linear Regression, Decision trees and Neural Networks. After getting the continuous output we compare with the output with the listed price of the host and label them as Overpriced, fair or underpriced. This result will be displayed in the website with all the listings.

- Nicely done / interesting topic selection
- Probably the most important part of your next steps would be data cleaning/preparation. Spend enough time on this to make sure your final outcome meaningful.

References

- AIRBNB. (2020). <https://www.airbnb.com/d/software-partners>. Retrieved from <https://www.airbnb.com/d/software-partners>
- AllTheRooms Analytics. (2019). Airbnb: An Analyst's Guide, Part 1: Going Public, Revenues, Business Model & Statistics. Retrieved from <https://www.alltherooms.com/analytics/airbnb-ipo-going-public-revenues-business-model-statistics/#airbnbvenuesgrowth>
- Amazon Web Services. (2016). Airbnb Grows with Flexibility and Responsiveness Using AWS. Retrieved from <https://aws.amazon.com/solutions/case-studies/airbnb-case-study/>
- Chan, P. (2018, March). 10 Airbnb Competitors That You Should Know About. Retrieved from <https://www.tripping.com/industry/rental-companies/9-airbnb-competitors-that-you-should-know-about>
- Clifford, C. (2017, June 30). How the co-founder of Airbnb went from \$25,000 in credit card debt to running his \$30 billion company. Retrieved from <https://www.cnn.com/2017/06/30/airbnb-ceo-went-from-25000-in-debt-to-running-a-30-billion-company.html>
- Craft. (2019). Airbnb stock price, funding rounds, valuation and financials. Retrieved from <https://craft.co/airbnb/metrics>
- CRUNCHBASE. (2019, August). Airbnb Acquisitions. Retrieved from https://www.crunchbase.com/organization/airbnb/acquisitions/acquisitions_list#section-acquisitions
- Geeks,J. (2016, April 13). How we use Jupyter Airpal to improve our Data Analytics processes. Retrieved from <https://medium.com/jampp-engineering/how-we-use-jupyter-airpal-to-improve-our-data-analytics-processes-df27bedafe9d>
- Hyland, R. (2019, December). Feeling at home: Industry revenue growth will likely slow down amid volatility in global markets IBISWorld Industry Report 72111 Hotels & Motels in the US. Retrieved from <https://clients1-ibisworld-com.esearch.ut.edu/reports/us/industry/currentperformance.aspx?entid=1661>
- iPropertyManagement. (2020, March). Airbnb Statistics. Retrieved from <https://ipropertymanagement.com/research/airbnb-statistics>
- Le, T. (2019, July). In good company: The industry will likely benefit from increased internet penetration rates IBISWorld Industry Report 72119 Bed & Breakfast & Hostel Accommodations in the US. Retrieved from <https://clients1-ibisworld-com.esearch.ut.edu/reports/us/industry/default.aspx?entid=1663>
- Lock, S. (2019, December 17). Market size of the global hotel industry from 2014 to 2018. Retrieved from <https://www.statista.com/statistics/247264/total-revenue-of-the-global-hotel-industry/>
- Team, T., & Speculations, G. (2018, May 11). As A Rare Profitable Unicorn, Airbnb Appears To Be Worth At Least \$38 Billion. Retrieved from <https://www.forbes.com/sites/greatspeculations/2018/05/11/as-a-rare-profitable-unicorn-airbnb-appears-to-be-worth-at-least-38-billion/#25ed83532741>
- Ting, D. (2019, May 29). Here's What Airbnb's New Fee Structure Really Means for Travelers. Retrieved from <https://thepointsguy.com/news/airbnb-new-guest-fee-structure/>
- Parag. (2017). How Airbnb Works | Insights into Business & Revenue Model. Retrieved from <https://jungleworks.com/airbnb-business-model-revenue-insights/>