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DATA ANALYTICS IN REAL ESTATE: HOW ZILLOW.COM USES SOCIAL MEDIA INFORMATION

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Abstract:

This article is a commentary on Teaching user-friendly web design: A case study on Zillow.com in the real estate industry. The previous article discussed the importance of web design to help a business reach customers. The extension of this principle is a company's social media presence. With the boom in sales in 2021, the real estate market is experiencing unprecedented volume and quick turnaround. A contributing factor to this is the ease of information access across online platforms and Zillow.com is a prime example of how to capitalize on social media to increase traffic and interest in available properties. The use of analytics allows them and other real estate agencies to use the data received to target customers and also provides users with data visualization to help them in their search.

Keywords:

Data Analytics, Real Estate, Data Visualization, Smart Phone, Big Data Frameworks, Property Management

JEL Classification: L85, D12, L84

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Introduction

Zillow.com and similar real estate websites are undeniably helpful in providing home buyers a one-stop shop to browse all the listings in their area, filtered by location, price, number of bedrooms and bathrooms, HOA fees, square footage, and more. It also allows communication with local agents and the ability to schedule walk-through appointments, all from the site or app. In addition, Zillow has a large social media presence with several unaffiliated Instagram accounts run by Samir Mezrahi, including Zillow Gone Wild, Zillow Gone Mild, and Zillow Gone Wild Celebrity Homes that highlights the best (or the best of the worst) listings available. On February 6, 2021, Dan Levy and the cast of *Saturday Night Live* parodied the idea of people browsing the listings and lusting over the available houses. The real estate market has become a source of entertainment, and this social media presence is beneficial to agents at all levels and has become part of the larger online culture. Indeed, with "a significant portion of users are susceptible to develop addictive behaviors related to Facebook use" (Shettar et al 2017) (as well as similar social media sites) the addictive behaviors spread across app function to blur the lines between information and entertainment, especially when it comes to real estate listings. In this article, the application of big data analytics from social media and websites and data visualization online as pertaining to real estate will be discussed.

Advancing Technology Affects Homebuyers

Available houses for sale often have a plastic stand in the front yard with the sales sheet for any interested lookers who happen to pass by, but there are much more effective ways to market that will reach a wider audience. In fact, technology has advanced to the point where potential buyers can do a 3D virtual walk through of a property without leaving their couch, even if it is located 2,000 miles away. Although these systems provide users "convenient access to available real estates," and allow users to "explore the properties by themselves," "they still have some drawbacks," according to Li et al (2018), who are working on "multidimensional visualization methods" to help "less informed users…learn about the local real estate market step by step." By including intuitive and visual designs, data analytics can be built into a website to help home buyers who may not even realize how it works to aid them in their search. An effective analytics system "integrate state-of-the-art interactive visualizations to enable end users to…gain insight into the real estate market" (Sun et al 2013). This is part of the user friendly design of Zillow, to organize listings in a way that appeals to the searcher.

This doesn't only help the homebuyers, but also the company offering listings. 3D technology levels the playing field for SMBs in real estate "the same way Amazon has created a level playing field for all sellers," suggests Rakheja (2018). "3D visualizations give them the power to avail the luxury of easily showcasing even the most complex of projects to clients worldwide." The importance of appearance cannot be underestimated. In fact, when calculating market value, sites like Zillow Trulia and Refin have proprietary formulas to determine market value, which sometimes turns out to be "highly inaccurate" (Poursaeed et al 2017; 2018). Poursaeed et al (2017; 2018) found that "in addition to home characteristics including size, offered price and number of bedrooms… one of the key factors that affects the value of a house is its interior and exterior appearance, which is not considered in calculating automatic value estimates," especially when it comes to

"luxury" listings and including this information outperforms Zillow's automatic estimate formula.

Just as real estate agents have often showcased a home in the past with pictures taken from flattering angles or artfully cropped, which end up being inaccurate at best to highly misleading when compared to reality, data visualization can be skewed in presentation. Pathak (2014) has an insightful observation on the use of data visualization:

> The goal of data visualization is to convey a *story* to the viewer. This story could be in the form of general trends about the data or an insight. Creating effective data visualizations is similar to being good at storytelling: it involves conveying relevant and interesting information at the right level of detail. This makes the data visualization task more of an art and less of an exact science. Along with the core statistical insights that we intend to present, aesthetics of presentation are equally important. This is not to say that we can hide the lacunae of our analysis by clever presentation tricks. Just like clear writing, clear and effective presentation should make our data analysis transparent, so that the viewer can fully understand and appreciate the complete picture.

Big Data Analytics in Real Estate

Data analytics can be complex in any scenario, with a large volume of information that is often rapidly changing. "The analysis of the real estate market is very challenging as the data are high dimensional and have complex spatial and temporal patterns" (Sun et al 2013). However, even though challenging, the use of the available data is worth the effort. "Big data can tackle the ever-present issues of customer regrets related to poor quality of information or lack of information in smart real estate to increase the customer satisfaction using an intermediate organization that can process and keep a check on the data being provided to the customers by the sellers and real estate managers" (Munawar et al 2020). "Perceived attractiveness" can be used as a "quantitative measure" to predict the best ways to present a home for sale (Kostic & Jevremovic 2020; 2021). "Major characteristics of big data can be summarized using the seven Vs, which include variety, volume, variability, value, visualization, veracity, and velocity" (Munawar et al 2020). By focusing on the wants of customers, listings can be targeted to appropriate parties.

There are many examples of how big data analytics can be used to provide information about target audience, market trends, and effective growth or sales strategies. "Internet marketing research contains a large amount of objective user-generated and system-recorded data when users/consumers interact with the target websites" (Xun 2014). Looking at Facebook as an example, the advertisement manager allows the performance of paid ads to be tracked, "including aggregated demographics of Facebook users who clicked on the advertisement, their likes and interests according to their Facebook profiles, and more" (Chang 2011). This data can be used on a macro and micro level. See Figure 1 for a visualization of the vast amount of data that can be generated in just one minute across various websites. Regarding the big picture, combining online Facebook user information with a comparison to a country's overall development and gender gaps can help identify internet and mobile phone gender gaps (Fatehkia et al 2018). When it comes to the micro level, it can provide analytics on the effectiveness of the website itself: "Click analytics is a powerful technique that displays what and where

users are clicking on a webpage…to easily identify areas of high and low usage on a page without having to decipher website use data sets" (Farney 2011). In real estate, as in many industries, the budget for offline marketing is still higher than online, as people do still use traditional methods to search for available properties, but increasing digital services can have a "powerful impact" that Järvinen and Karjaluoto (2015) describe as "radical" when it comes to business performance.

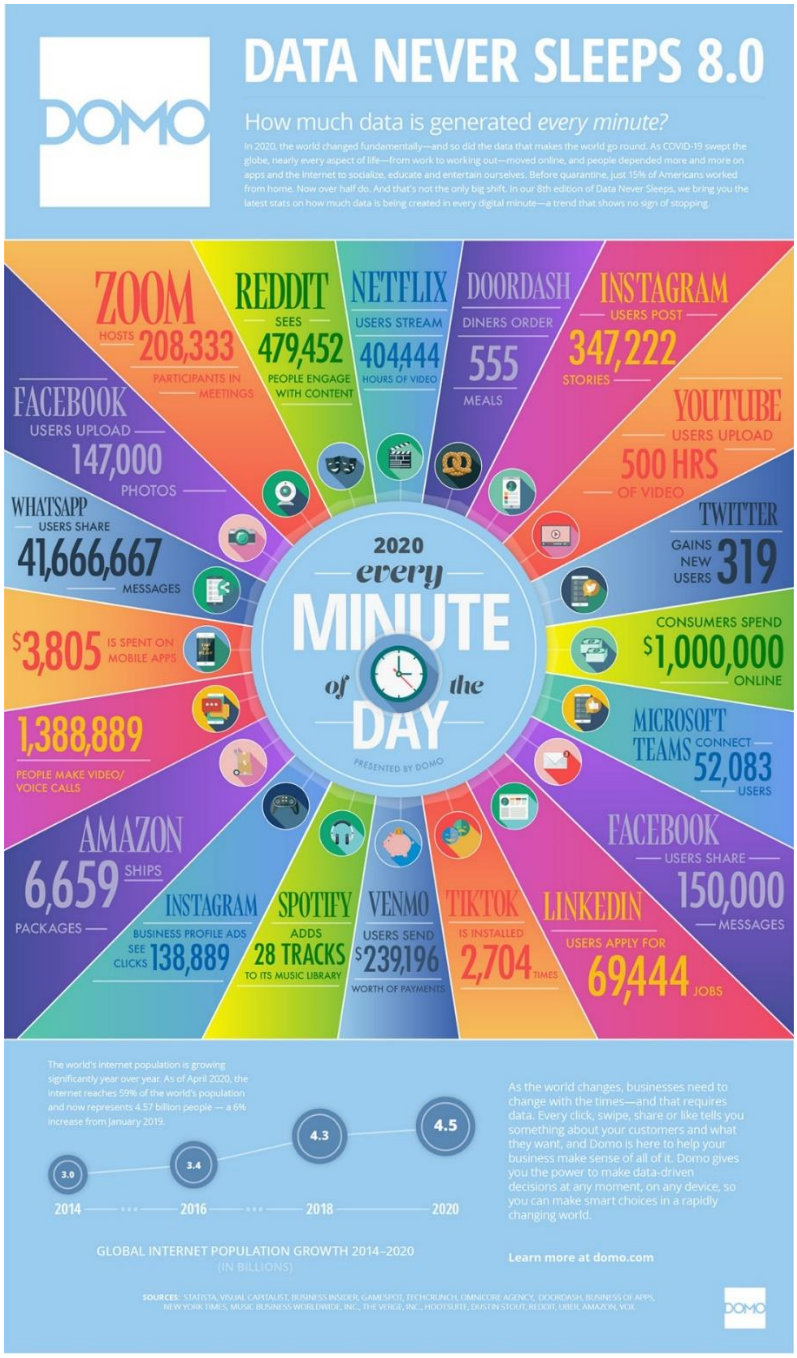

Figure 1. Data Never Sleeps from Domo.com

Analyzing the data can be beneficial when evaluating the best time to invest in real estate, especially when the decision makers are often family members or a group of people with different opinions. The “investment environment” includes factors such as available resources and funds, estate development and social needs and market capacity to maximize profits (Wu & Kou 2016). “Understanding price dynamics in the real estate market constitute an important aspect of diagnosing city growth. Introducing effective policies to stabilize price trends and support a sustainable housing market is reinforced by having representative price indicators that do not neglect spatial heterogeneity and autocorrelation effects” (Agarwal et al 2021). Besides facilitating users’ ability to find their dream property, big data also leads to profits for the company. But, by thinking outside the box, it can affect health and safety as well: “Big data generated from the smart real estate in the form of occupant data, facilities management, and building integration and maintenance can be shared with the disaster risk management and emergency response teams to help prevent, prepare, respond to, or recover from the disasters” (Munawar et al 2020).

Conclusion

The user-friendly nature of the Zillow.com website has had people flocking to it in droves—whether they are serious about buying in the near future or not. By offering a website and app design that mimics the type of social medial posts people like to view, they have increased their market appeal. As Zillow and similar sites use data visualization and data analytics to interpret customer needs and then reflect their desires back to them, they increase the turnaround speed of real estate sales and influence the market. Studying the affect and applying it in the new ways can change not only real estate, but the way people interact as a culture.

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Dr. Barbara A. Manko's interest in the fields of business management and information technology led her to pursue a degree Doctor of Science in Information Systems and Communication after completing her MBA. She has taught university courses in digital marketing, human resources, business analytics, strategic planning, and computer science, for both undergraduate and MBA programs. Her recent research, published in 2019, 2020, and 2021, focuses on analytics, digital, online learning for students, and how online university programs prepare students to work remotely. Her upcoming research teaching case study will be published soon in the scientific Journal *of Information Technology*. The title is *"*How Use of a Smartphone App in Digital Marketing Can Improve Any Business's Bottom Line."

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