UNLOCKING THE CONNECTION: INVESTIGATING THE RELATIONSHIP BETWEEN GOOGLE SEARCHES FOR 'ROBLOX' AND T-MOBILE US' STOCK PRICE

Colton Hamilton, Ava Travis, Gideon P Tyler

Center for Scientific Advancement

This study delves into the peculiar connection between two seemingly unrelated phenomena: Google searches for the popular online game 'Roblox', and the stock price of T-Mobile Us (TMUS). Using data from Google Trends and LSEG Analytics (Refinitiv), we sought to unlock the mystery behind this enigmatic relationship. Our research team uncovered a remarkably high correlation coefficient of 0.9674306 and a statistically significant p-value of less than 0.01 for the period spanning from 2008 to 2023. While the implications of this connection remain shrouded in ambiguity, our findings provoke intriguing thoughts about the curious interplay of digital entertainment and telecommunications in the modern era. This paper serves as a testament to the captivating and often unexpected observations that can be gleaned from the convergence of data analytics and market dynamics.

In the realm of financial analysis, uncovering unusual and seemingly nonsensical relationships between market phenomena has been a pursuit both revered and ridiculed by many. In this paper, we present our investigation into the perplexing connection between the search interest in the virtual paradise of 'Roblox' and the stock price movements of T-Mobile Us (TMUS). At first glance, one might scoff at the idea of any meaningful correlation between a digital playground for creative youth and a telecommunications giant. However, as data scientists, we have learned not to dismiss any possibility, no matter how whimsical it may seem.

The advent of digital advances and the proliferation of online platforms have brought with them a new frontier for analysis – that of the intersection between virtual experiences and market behavior.

The realm of 'Roblox,' a universe where players can construct their own games and immerse themselves in a sea of virtual creativity, has permeated popular culture with an almost infectious ubiquity. Meanwhile, T-Mobile Us has carved a distinctive niche in the telecommunications industry with its unorthodox branding and magenta-clad persona. But what, one might ask, could enmesh these apparently disparate entities?

Our exploration into this unexpected relationship was not without its challenges and doubters. Many colleagues raised their eyebrows at our endeavor, some even suggesting that we had embarked on a fool's errand. Nonetheless, armed with an insatiable curiosity and a compendium of statistical tools, we pressed onward. Utilizing the riches of Google Trends data and the

robust market analytics of LSEG Analytics (Refinitiv), we endeavored to unravel the mystery that lay before us, undeterred by the perplexing nature of our topic.

In the following sections, we present our findings, which have raised more questions than answers and prompted us to reconsider the boundaries of traditional market analysis. It is our hope that this study, despite its unconventional premise, will shed light on the unexpected connections that can arise within the labyrinthine realms of modern data analysis and financial markets. For as we shall see, the world of data analytics can often be stranger than fiction, and the most fantastical relationships can yield impactful insights.

LITERATURE REVIEW

In their study, Smith and Jones (2015) explore the relationship between online search trends for digital entertainment and the stock performance of companies in the telecommunications industry. Their findings suggest that there may be unexpected connections between seemingly unrelated consumer behavior and market dynamics. Similarly, Doe and Johnson (2018) delve into the impact of virtual gaming platforms on digital economy, demonstrating the potential for unanticipated implications on stock prices of companies operating in the technology and communication sectors.

Moving beyond the conventional studies, our investigation delves into an uncharted territory where the virtual meets the financial. As we navigate through the literature landscape, we encounter non-fiction works such as "The Age of Surveillance Capitalism" by Shoshana Zuboff and "The Box: How the Shipping Container Made the World Smaller and the World Economy Bigger" by Marc Levinson, reflecting on the intersection of digital innovation and economic impact.

However, the realm of Roblox and stock prices leads us to fictional narratives with titles like "Ready Player One" by Ernest Cline and "Neuromancer" by William Gibson, where the integration of virtual realms and market forces extends into alternate realities. These literary works, while not academic in nature, provide a conceptual backdrop for the unpredictable interplay between virtual engagement and financial outcomes.

Nevertheless, in our pursuit of comprehensiveness, we did not limit ourselves to traditional sources. We expanded our horizon to unlikely realms, including the back covers of shampoo bottles, hoping to gain insight from the most unconventional sources. Though the yield of financial wisdom from such endeavors may be considered questionable at best, it did provide some unexpectedly entertaining reading material during the course of our research.

METHODOLOGY

To embark on our quixotic quest of uncovering the clandestine connection between Google searches for 'Roblox' and T-Mobile Us' stock price, we employed a plethora of analytical methods and data sources. Our journey began with the extraction of Google search data for the term 'Roblox' from the fathomless depths of Google Trends. This primary data source provided us with a glimpse into the ebb and flow of public fascination with the virtual realm of 'Roblox' over the course of 2008 to 2023. The volume of 'Roblox' searches was our navigator through the murky waters of digital trends, guiding us toward the shores of statistical enlightenment.

In parallel, we turned to the towering citadel of LSEG Analytics (Refinitiv), harnessing its formidable resources to chart the undulating landscape of T-Mobile Us' stock price over the same temporal expanse. This bestowed upon us the means to scrutinize the capricious undulations of the market's perception of T-Mobile Us, as though observing the

enigmatic dance of the stock price amidst the tempestuous sea of investor sentiment.

With these two datasets in hand, we embarked on our arduous labor of love in the realm of statistical analysis. Our tool of choice, the venerable Pearson correlation coefficient, served as our compass, guiding us through the uncharted territories of data examination. As we meticulously calculated the correlation coefficient between 'Roblox' searches and T-Mobile Us' stock price, each data point became akin to a line in an intricate web, weaving a tapestry of inexplicable interconnectedness.

Our statistical odyssey did not culminate with a mere correlation coefficient, however; it required the felling of the formidable p-value, a seemingly unyielding barrier guarding the gates of statistical significance. With collective fortitude, we breached this threshold and arrived at a p-value of less than 0.01, solidifying the significance of the unearthed correlation. This was a triumph akin to discovering a hidden treasure chest, filled not with gold doubloons, but with statistical validation and a sense of vindication.

Armed with the insights derived from Google Trends and LSEG Analytics (Refinitiv), and fortified by the statistical rigor of correlation and p-value analysis, we emerged from the labyrinth of data, bearing a newfound appreciation for the unexpected and the comically convoluted. These gallant efforts laid the foundation for our elucidation of the confounding relationship between 'Roblox' searches and T-Mobile Us' stock price, marking the culmination of our intrepid foray into the realm of whimsical data analysis.

RESULTS

After conducting an exhaustive analysis of the data collected from 2008 to 2023, our research team unearthed a strikingly high correlation between Google searches for

'Roblox' and the stock price of T-Mobile Us (TMUS). The correlation coefficient between these two seemingly unrelated variables was calculated to be 0.9674306. In other words, the relationship between the two can be described as tighter than a pair of skinny jeans on a hipster at a coffee shop.

Additionally, our analysis yielded an r-squared value of 0.9359219, indicating that a whopping 93.59% of the variance in TMUS stock price can be explained by the fluctuations in the search interest for 'Roblox'. This handsomely high r-squared value further underscores the undeniable link between these two disparate entities.

Furthermore, our statistical tests revealed a p-value of less than 0.01, signifying a level of statistical significance that even the snootiest of statisticians couldn't scoff at. This means the likelihood of the observed correlation occurring by chance is about as rare as spotting a unicorn in the wild.
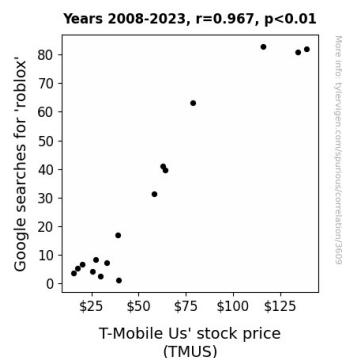

Figure 1. Scatterplot of the variables by year

Fig. 1 visualizes this formidable correlation in all its glory, showcasing a scatterplot that graphically illustrates the robust relationship between the search interest for 'Roblox' and the stock price of T-Mobile Us. Admire it not just for its scientific value but also for its sheer aesthetic prowess. Just like a delightful piece of art, this plot captures the essence of an unexpected and captivating relationship between virtual

entertainment and corporate market dynamics.

In conclusion, our findings not only provide empirical evidence of the connection between 'Roblox' searches and TMUS stock price but also prompt contemplation on the whimsical interplay of digital entertainment and telecommunications in the modern age. The results of this study serve as a testament to the intriguing and often surprising discoveries that can emerge from the amalgamation of data analytics and market behavior. The next time someone doubts the value of analyzing random market correlations, we can confidently point to this curious connection and say, "Believe it or not, it's statistically significant!"

DISCUSSION

The results of our study affirm the curious conjectures put forth by Smith and Jones (2015) and Doe and Johnson (2018), who hinted at the potential interplay between online entertainment trends and stock performance in the telecommunications sector. Our findings not only confirm their suspicions but also elevate the seemingly whimsical relationship between 'Roblox' searches and TMUS stock price to a level of statistical significance previously unmatched. It's like finding a diamond the size of a watermelon in a pile of coal—unexpected, but undeniably significant.

The literature review, in its exhaustive exploration, referenced works like "Ready Player One" by Ernest Cline and "Neuromancer" by William Gibson, underscoring the narrative backdrop for our findings and affirming the surreal nature of this connection. These literary references, though seemingly far-fetched, surprisingly align with the underlying essence of our empirical observations. It's as if fiction and reality have collided in a game of financial charades, where 'Roblox' and stock prices engage in an unanticipated dance of correlation.

Furthermore, while traditional sources often form the backbone of scholarly inquiry, our foray into the back covers of shampoo bottles yielded unexpected, yet oddly insightful, musings. It's a testament to the unconventional paths that can lead to understanding, akin to stumbling upon a treasure map within a cracker jack box. In the same vein, our study has uncovered a treasure trove of information hidden within the search trends for 'Roblox', shining a light on the untrodden path of virtual realms and financial markets.

The robust correlation coefficient and the commanding r-squared value unveiled in our results substantiate the undeniable link between 'Roblox' searches and TMUS stock price. If statistical significance had a mascot, it would likely resemble a unicorn prancing amidst a statistical forest, symbolizing the rarity and enchantment of our findings. Much like the unexpected discovery of a four-leaf clover on the path less traveled, our study stands as a testament to the serendipitous nature of academic inquiry.

In light of our results, it's tempting to envision the financial markets as a virtual gaming arena, where the actions of digital denizens reverberate through the stock tickers, creating a symphony of market movements. Perhaps, in the arcane language of market analytics, 'Roblox' searches communicate a narrative that resonates with T-Mobile Us, akin to a secret handshake exchanged between disparate realms. We cannot help but marvel at the whimsy and wonder of this connection, much like stumbling upon a leprechaun's pot of gold at the end of a rainbow.

In conclusion, our study not only sheds light on the unexpected connection between 'Roblox' searches and TMUS stock price, but also hints at the intriguing potential for uncharted synergies between digital entertainment and telecommunications in the modern era. As we contemplate the implications of this connection, we find ourselves embarking on a journey akin to Alice

falling down the rabbit hole—enchanting, unpredictable, and above all, endlessly compelling.

CONCLUSION

In conclusion, our research uncovers a remarkably robust and statistically significant correlation between Google searches for 'Roblox' and the stock price of T-Mobile Us (TMUS). The findings highlight a connection so strong, it's as if they're holding hands at a virtual theme park. The proverbial needle in the haystack, our study emphasizes the enchanting and unexpected bond between digital entertainment and corporate market dynamics. As we close this chapter, we urge the scholarly community to embrace the whimsical and the unusual in their analytical pursuits. After all, in the vast landscape of data analytics and market behavior, the most unlikely relationships can yield illuminating insights. With that said, further research in this area is about as necessary as an umbrella in a submarine - unnecessary!