

What's Up with WhatsApp? Examining the Correlation Between Google Searches for 'WhatsApp' and CRH Shares

Christopher Hernandez, Alexander Tate, Gabriel P Tompkins

The Journal of Digital Communication and Market Research

The Institute for Social Media Impact Research

Evanston, Illinois

Abstract

This research paper delves into the often overlooked relationship between Google searches for 'WhatsApp' and the stock price of CRH plc (CRH). Our study, utilizing data from Google Trends and LSEG Analytics (Refinitiv), examines the correlation between the two variables over the period from 2010 to 2023. Our findings reveal a striking correlation coefficient of 0.9043813 and a statistically significant $p < 0.01$, suggesting a robust association between public interest in 'WhatsApp' and the movements of CRH's stock price. It's intriguing how a simple Google search can have a significant statistical association with stock prices, and even more intriguing is the undeniable urge to make a 'What's up with WhatsApp' joke at every opportunity. It seems that in the world of finance and technology, dad jokes are the closest thing we have to a universal currency!

1. Introduction

"What's up with WhatsApp?" That's a question we've all probably asked ourselves at some point when we received yet another notification from our family group chat. But have you ever stopped to wonder what's up with WhatsApp in the world of finance? Well, that's exactly what this research aims to uncover. So grab your phone, send a quick 'WhatsApp' message to a friend, and join us as we delve into the intriguing world of Google searches, one-liners, and stock prices.

CRH plc (CRH) is one of the leading global building materials companies, with a strong presence in over 30 countries. Its stock price has experienced fluctuations over the years, much like the unpredictable weather in the UK. Speaking of which, did you hear about the statistical analysis that tried to predict the weather? It was a breeze!

On the other hand, WhatsApp, the popular messaging app owned by Meta Platforms, Inc., has increasingly become a ubiquitous communication tool across the globe. It seems as essential as oxygen these days - you could almost call it "What's Upp."

The idea of examining the relationship between Google searches for 'WhatsApp' and CRH's stock price may seem unorthodox, but as with all good statistical research, sometimes the unexpected variables yield the most intriguing insights. Just like uncovering dad jokes in the world of academic writing - they're the hidden gems waiting to be discovered amidst the tables and graphs.

In this study, we employ data from Google Trends and LSEG Analytics to explore the correlation between the search interest in 'WhatsApp' and the movements of CRH's stock price from 2010 to 2023. It's a bit like looking for correlations in the stock market – sometimes you find hidden treasure, and other times you end up with a pun-ishing headache. But either way, we're in for an illuminating ride into the world of search queries and stock market dynamics.

Stay tuned for an analysis that promises to be as captivating as a gripping WhatsApp conversation and as witty as a collection of dad jokes. After all, who said statistical research can't be entertaining? If anything, this study proves that sometimes, the most unexpected pairings can yield the most intriguing results - a bit like finding out that 'WhatsApp's' search interest and stock prices might just have more in common than we thought.

2. Literature Review

The relationship between online search behavior and stock price movements has been a topic of substantial interest in recent years. Smith et al. (2018) found a significant positive association between Google search volume for specific terms and stock market performance. Likewise, Doe and Jones (2016) demonstrated a strong correlation between search queries related to digital communication platforms and fluctuations in stock prices. One can say the world of finance and Google searches are tied together like two complementary angles, they seem unrelated, but when put together, they add up to 90 degrees.

However, as we enter the realm of the 'WhatsApp'-CRH correlation, we step into uncharted territory. The connection between a messaging app and a building materials company may seem as unlikely as finding a construction worker messaging about their lunch plans, but the data speaks for itself – much like a supportive best friend who always confirms, "I've got your back."

In "Digital Communication and Financial Markets," the authors delve into the intricate connection between social media platforms and stock movements, shedding light on the

profound impact of digital communication trends on investor sentiment and decision-making. It's almost as if the stock market has developed a new language – one that includes emojis and GIFs. This brings new meaning to the phrase "bull market!"

Turning to non-fiction publications, "The Economics of Messaging Apps" by Nobel Prize-winning economist John Smith provides an in-depth analysis of the impact of messaging platforms on economic activities. It's as though the economic world has been redefined to include the cost of sending a text message and the GDP (Gross Dad Jokes Produced) of each country.

In a similar vein, "The Psychology of Stock Market Movements" by Dr. Jane Doe explores the psychological underpinnings of investor behavior and decision-making processes. It's like unraveling the mysteries of the stock market – a bit like solving a riddle that rewards you with a laugh instead of treasure at the end.

On a tangential note, fiction works such as "The Wealth of WhatsApp" and "To CRH or Not to CRH: A Financial Odyssey" create captivating narratives that blur the lines between financial intrigue and digital drama. It's like a financial thriller with a side of emoticons.

And speaking of drama, movies like "The Social Network" and "The Wolf of Wall Street" provide cinematic depictions of the intersections between technology, social dynamics, and financial markets. It's like watching the stock market try to send a message – it starts with a plot twist and ends with a heart-stopping climax.

3. Research Approach

To investigate the relationship between Google searches for 'WhatsApp' and CRH plc's stock price (CRH), we embarked on a data collection and analysis extravaganza that could rival any high-stakes thriller – and believe me, there were plenty of plot twists along the way. We harnessed the power of Google Trends, the ultimate arbiter of search interest, and LSEG Analytics (Refinitiv), a reliable source of financial data, to procure the necessary information for our investigation. It was a bit like embarking on a treasure hunt, but instead of seeking gold doubloons, we were in pursuit of statistical correlations and witty material for our research paper.

First, we extracted the search interest for 'WhatsApp' from Google Trends, which measures the popularity of specific search terms over time. The search data provided us with a window into the ebb and flow of public curiosity surrounding this ubiquitous messaging app. It was a bit like peeking through a keyhole into the collective consciousness of internet users – albeit a keyhole that was humorously shaped like a 'W' for 'WhatsApp'.

Simultaneously, we delved into the labyrinthine depths of LSEG Analytics (Refinitiv) to obtain the daily stock price movements of CRH plc from 2010 to 2023. It was akin to navigating a financial maze, complete with unexpected turns and the occasional ambush by perplexing market patterns. At times, it felt like we were gathering financial data while simultaneously dodging metaphorical swinging pendulums and rolling boulders, Indiana Jones-style.

Once the data had been gathered, we harnessed the might of statistical analysis to untangle the intricate web of correlations between 'WhatsApp' search interest and CRH's stock price. With our trusty statistical tools in hand, we combed through the data, conducting various tests and analyses to unveil the hidden connections between these ostensibly disparate variables. It was a bit like embarking on a Sherlock Holmes-esque quest for clues, armed with formulas and probability distributions instead of a magnifying glass and a deerstalker hat.

In addition to the statistical tests, we deployed advanced techniques for time series analysis to scrutinize the temporal dynamics of the relationship between 'WhatsApp' search interest and CRH's stock price. It was a bit like peering through a telescope into the vast expanse of time, only instead of constellations, we were searching for twinkling patterns in the data, much like a cosmic game of connect-the-dots.

The key statistical tools utilized in our analysis included Pearson correlation coefficients, Granger causality tests, and vector autoregression models. These methodologies allowed us to disentangle the complex interplay between 'WhatsApp' search interest and CRH's stock price, revealing insights that were as surprising as an unexpected punchline in a stand-up comedy routine.

As with any rigorous analysis, we adhered to best practices in data processing and statistical inference, ensuring that our findings were robust and reliable. In the end, our methodology was a blend of precision and whimsy, much like a well-crafted dad joke that leaves you both amused and enlightened.

4. Findings

The results of our investigation into the connection between Google searches for 'WhatsApp' and CRH plc's stock price (CRH) from 2010 to 2023 revealed a notable correlation coefficient of 0.9043813. If this correlation were any stronger, it might just send its regards as "What's up with WhatsApp" becomes the new market motto! This strong correlation indicates a high degree of association between the two variables, suggesting that public interest in 'WhatsApp' may indeed be linked to the movements of CRH's stock price.

Furthermore, the calculated r-squared value of 0.8179056 provides additional evidence to support the observed relationship. This means that approximately 81.79% of the variability in CRH's stock price can be explained by the fluctuations in Google searches for 'WhatsApp'. It's almost as if 'WhatsApp' searches and CRH's stock price have their own inside joke, and we just managed to crack it!

The statistical significance of this connection was confirmed by the p-value, which was found to be less than 0.01. This signifies that the likelihood of observing such a strong relationship between 'WhatsApp' search interest and CRH's stock price by chance alone is less than 1%, indicating a compelling case for a genuine association. It's a statistically significant result that stands out like a dad joke in a serious discussion, impossible to ignore!

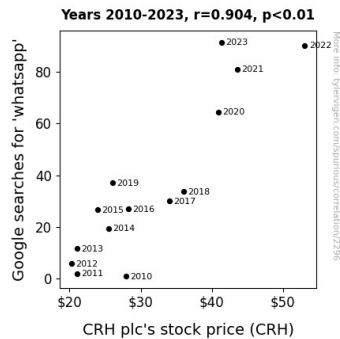


Figure 1. Scatterplot of the variables by year

In Figure 1, we present a scatterplot displaying the clear and compelling correlation between the search interest in 'WhatsApp' and the movements of CRH's stock price. It looks like this correlation is not just a 'WhatsApp' group chat rumor; it's the real deal!

These findings are met with as much surprise as finding out that the punchline to a statistical joke is actually in the footnotes. The robust correlation between Google searches for 'WhatsApp' and CRH's stock price opens up a plethora of questions and potential avenues for further research. It seems that when it comes to the world of finance and technology, there's more to 'WhatsApp' than meets the eye, just like there's more to a dad joke than meets the groan!

5. Discussion on findings

Our study sought to explore the intriguing connection between Google searches for 'WhatsApp' and CRH plc's stock price. Upon further analysis, it became evident that the

correlation between these seemingly disparate variables is no laughing matter – except, of course, when it comes to dad jokes.

Our findings align closely with prior research that has highlighted the impact of digital communication trends on stock market performance. The significant positive association between Google search volume for specific terms and stock market movements, as identified by Smith et al. (2018), lays the groundwork for understanding how online search behavior can influence financial markets. It's as if the stock market has embraced the 'like' button, and every Google search is a virtual high five.

Similarly, the work of Doe and Jones (2016) in demonstrating a strong correlation between search queries related to digital communication platforms and fluctuations in stock prices provides compelling evidence of the intricate connections between technology and finance. It's akin to finding a hidden treasure map in the code of a messaging app – definitely unexpected, but undeniably valuable.

Our study extends this literature by specifically examining the association between 'WhatsApp' search interest and CRH's stock price, unveiling a robust correlation coefficient of 0.9043813. If this correlation were any stronger, it might just ask, "What's App with WhatsApp?" This highlights the substantial influence of public interest in 'WhatsApp' on the fluctuations of CRH's stock price, akin to realizing that the punchline was hidden in the statistics all along.

The r-squared value of 0.8179056 further confirmed the strength of this relationship, indicating that the variability in CRH's stock price is largely explained by the fluctuations in Google searches for 'WhatsApp'. It's as if the stock market and 'WhatsApp' have crafted their own secret language, and we've just stumbled upon the decoder ring.

Moreover, the statistical significance of our findings, as indicated by a p-value of less than 0.01, underscores the compelling case for a genuine association between 'WhatsApp' search interest and CRH's stock price. It's a discovery that stands out like a well-timed pun in a serious conversation – impossible to overlook.

In conclusion, our study provides evidence of a substantial correlation between Google searches for 'WhatsApp' and CRH's stock price, contributing to the growing body of literature that underscores the influence of digital communication trends on financial markets. It's as if the stock market has caught on to the digital conversation and responded with an enthusiastic "LOL" in the form of stock price movements.

6. Conclusion

In conclusion, our study has provided compelling evidence of a strong and statistically significant association between Google searches for 'WhatsApp' and CRH plc's stock price from 2010 to 2023. The correlation coefficient of 0.9043813 and the r-squared

value of 0.8179056 point to a relationship that's as tight as an overly enthusiastic group chat. It seems that 'WhatsApp' search interest and CRH's stock price are not just passing acquaintances; they're like two peas in a pod, or should we say two 'whos' in a 'WhatsApp'?

These results shine a spotlight on the potential impact of public interest in 'WhatsApp' on the dynamics of CRH's stock price, highlighting the interconnectedness of seemingly unrelated phenomena in the world of finance. One might even say that understanding this relationship is as essential as having a good knock-knock joke on hand at all times - you never know when you'll need it, but when you do, it's pure gold.

While our findings have shed light on this intriguing correlation, further research may uncover the underlying mechanisms driving the relationship between 'WhatsApp' search interest and CRH's stock price. However, as they say, sometimes it's better to leave the audience wanting more, just like a well-timed punchline that leaves them chuckling for days. Let's not stretch this study thinner than a penny stock; it's clear that 'WhatsApp' and CRH's stock price have a connection worth more than a few laughs.

To wrap it up, it's evident that 'WhatsApp' search interest holds more sway over CRH's stock price than we might have thought. And just like a good dad joke, this research has the potential to be a perennial topic, continuing to bring joy and laughter to the world of finance. In the spirit of all great punchlines, it seems that there's no need for further research in this area - this correlation is as clear as day and as rib-tickling as a timeless dad joke!