



Impact of Investor Attention on Stock Price and Volume

Name (PGID) | ISB CBA Practicum | Date of Submission

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Executive Summary

Analysis of information sought by investors on search portals such as Google, suggests that fairly strong correlation exists between volume traded and not so much with price of stock. This makes sense from two point of view – a) information asymmetry is not very high amongst various investors leading to small time gap between investor attention & stock performance and b) stock price is predominantly governed by other business fundamentals which do not get affected in a small time frame. Such analysis at best can be used for either futures and options market or leading indicator to potential implications otherwise e.g. on other product lines or trend against competition.

BUSINESS PROBLEM

Assess implications of investors (and in general public) attention/ focus on a particular brand/ company on its stock market performance. Understand if there are any leading indicators that may prove useful to drive company's strategy by reacting faster to these trends.

INTRODUCTION

Maggi, Nestle India's top brand, faced heat from Indian food regulators and consumers during 2015. This was on account of higher lead content and MSG found in its products considered harmful for consumption. As per instructions from FSSAI (Food Safety and Standards Authority of India), Nestle had to pull off all Maggi noodles stocks from Indian market. The purpose behind this study is to understand impact of general public sentiments around such issues on Nestlé's stock performance and see if they can be generalized.

MOTIVATION FOR THE STUDY

While there are multiple technical and fundamental analyses that are performed on a company's stock performance; for this particular study we wanted to establish connection (if any) between behavioral science and stock performance. Behavior here is studied in terms of what general public is trying to look for about a given company or issue it is facing. In today's information search age aided by Google, much of what investors (or public in general) are seeking information for is easily available to study and build inferences which was not the case say 2 decades ago.

QUESTIONS & HYPOTHESIS

Following are some of the key questions/ hypothesis that we would like to answer/ test:

- a) Does general information search about a company has any correlation between its stock price and trading volume?
- b) Is there any 'lead' indicator present in this information which can prove to be useful if known and used timely?
- c) Does any other product line (here e.g. Maggi Ketchup) get affected?
- d) Does your competitor get benefited by this?

METHODOLOGY & TOOLS

- a) Assess and understand different events (and timeline) that took place around the Maggi noodles debacle in 2015 (more of exploratory understanding about the issue in little more detail)
- b) Collect and analyze search term trends on "Maggi", "nestle", "lead", etc.
- c) Check for *correlation* between search trends with Nestle India's stock price and volume traded around the similar timeframe
- d) Look for interest on other product lines from Nestle such as "Ketchup"
- e) Also look for any pattern w.r.t. to your competitor (or potential competitor) products such as "Top Ramen", "Patanjali", "Knoor", etc.

MS Excel with different graphical visualizations tools and correlation technique is predominantly followed to understand the above patterns and test our hypothesis mentioned earlier.

DATA COLLECTION & CLEANING

Google Trends and Yahoo Finance were predominantly used as data source for this study.

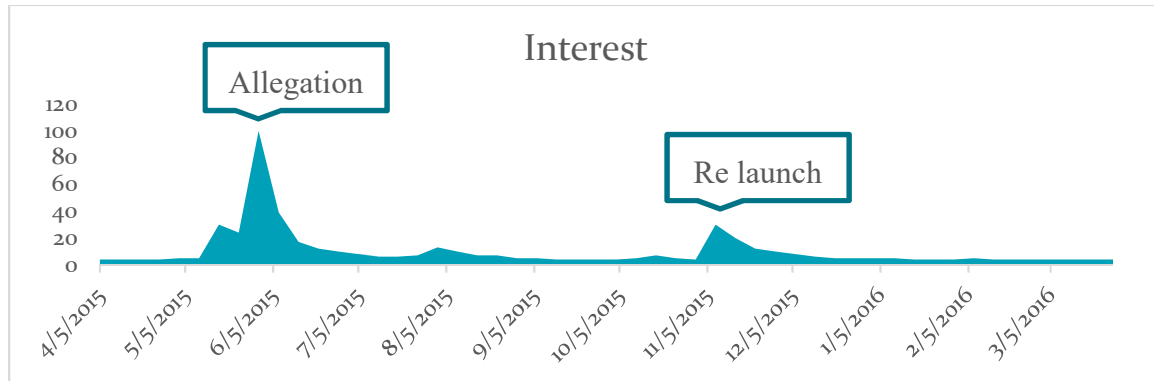
- a) Using "Maggi" as keyword in <https://www.google.co.in/trends/>, download interest data from 1st April 2015 till 30th Sep 2016.
- b) Collect data for Nestle India Limited (NESTLEIND) NSE stock price and volume on a weekly basis (since Google Trends data is also weekly) for the same time period from <https://in.finance.yahoo.com>
- c) Download data on "Related topics" and "Related queries" as well for the same "Maggi" search term to get possible keywords for potential other product line, competitor, etc.

Most of the data available is fairly clean (did not find any missing or incorrect data), we just aligned weeks from google trends and Yahoo finance data.

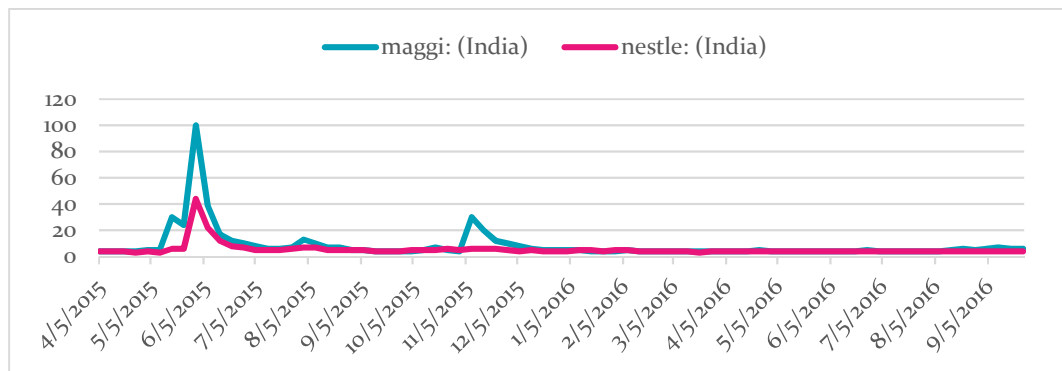
Similar data collection was followed for Infosys and Adani for this study's robustness test.

ANALYSIS & RESULTS

1. Significant increase in “Maggi” search trend observed using Jun’15 when Maggi noodles were banned and Nov’15 when it was relaunched (post lifting of ban)



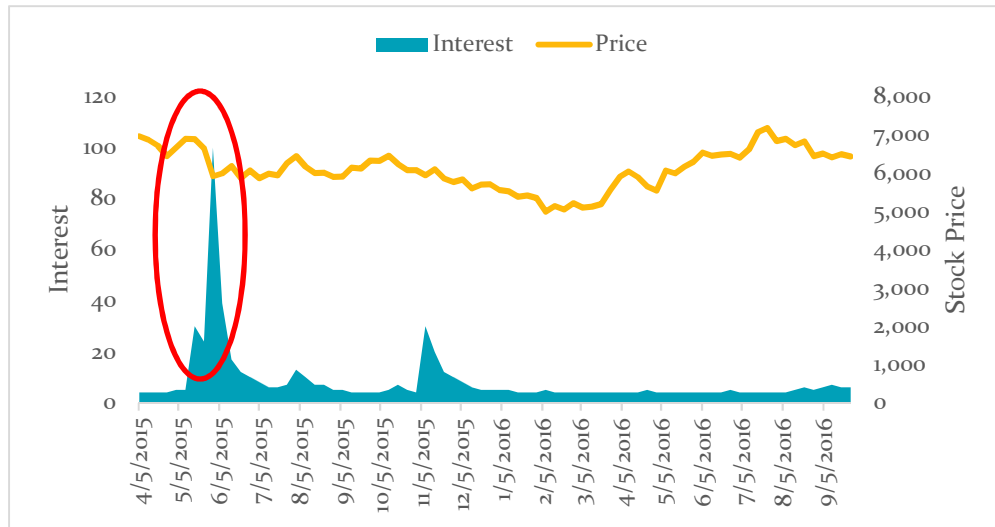
2. Increase in interest over “Nestle” increased significantly as well (indicator of implications on its stock performance)



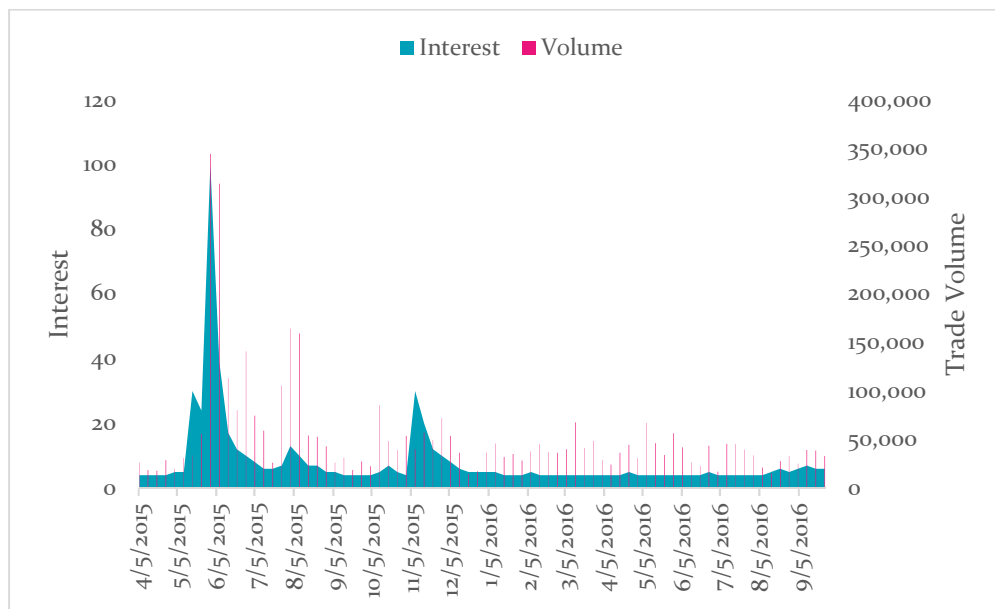
3. Nestlé’s stock price dropped by ~11.5% (basis 4week avg. pre and post) – actual Ban introduced on 5th June.

Week	Interest	Price
3-May-15	5	6,665
10-May-15	5	6,896
17-May-15	30	6,887
24-May-15	24	6,646
31-May-15	100	5,918
7-Jun-15	39	5,992
14-Jun-15	17	6,183
21-Jun-15	12	5,865

4. Correlation between Interest and Stock price is not very high over longer term (0.12) which is understandable as there are bunch of other company fundamentals that would affect this more. Also that at times price could have +vie correlation and -vie on other time (depending on context), neutralizing it over longer time



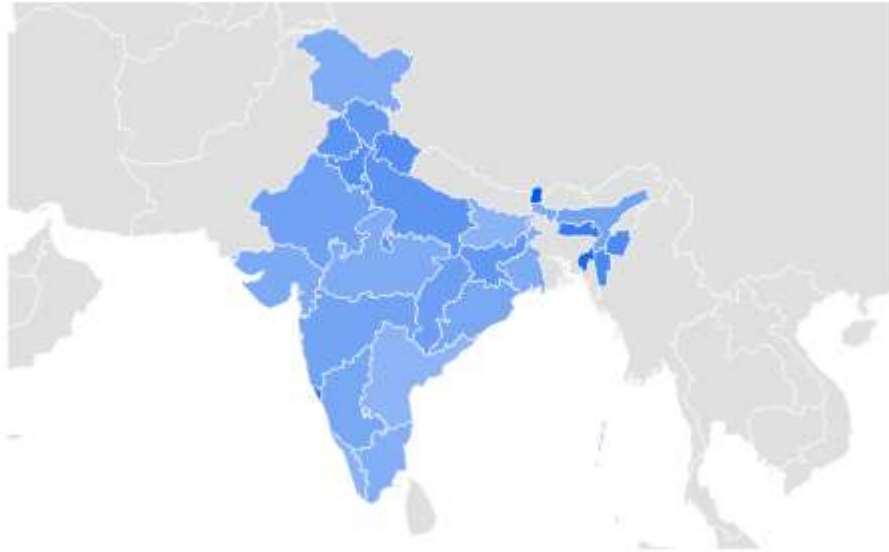
5. Stoke trading volume significantly increased during allegation period (not as much during relaunch). Also statistically very strong correlation (0.77) exists between interest and volume of trade.



6. From the above graphs it is also visible that actual interest on the topic increased 2 weeks before actual price drop and volume increase.

7. Visually analyzing interest across various parts of India indicates broadly it was a pan India affect (as the consumer base is fairly well spread across India)

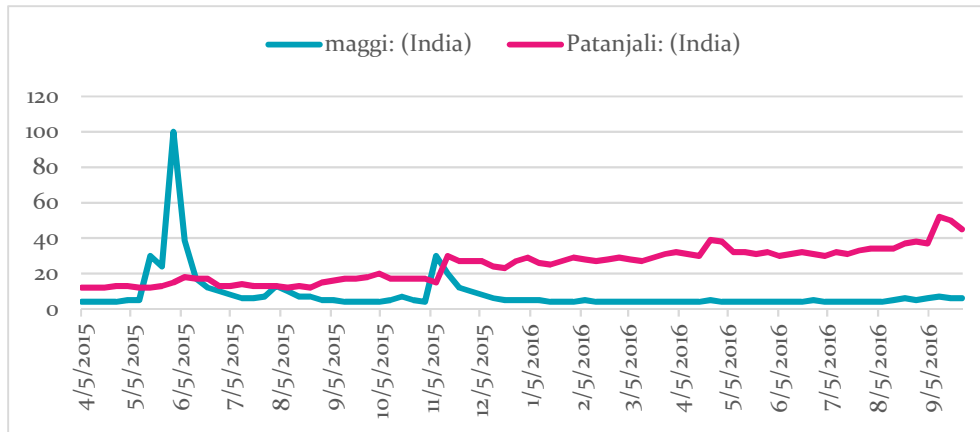
Interest by subregion ?



8. Following were the other top related topics and queries

Related topics ?		Rising ▼ ⋮	Related queries ?		Rising ▼ ⋮
1	lead - Chemical Element	Breakout	1	lead in maggi	Breakout
2	Mumbai High Court - Court	Breakout	2	maggi hot heads	Breakout
3	Teri Meri - Award-Winning Work	Breakout	3	ban on maggi	Breakout
4	Patanjali Ayurved - Company	Breakout	4	maggi ban news	Breakout
5	Ramdev - Spiritual teacher	+3,750%	5	patanjali noodles	Breakout

Pat Anjali & Rammed mention under top relevant searches, indicative of any benefit and/or similar effect being faced by them. Following search trend alongside “Maggi” gave interesting information. On cross checking found that Patanjali actually introduced noodles in Nov’15 when ban on Maggi was lifted and it was reintroduced into the market.



9. In order to understand if this Maggi fiasco could potentially have affected any of the other product lines of Nestle, we looked at change in interest on Google for Maggi Ketchup, Nescafe and Nestle Everyday (milk product). We did not find any effect on these (from interest basis google trends). Refer [Appendix 1](#).

ROBUSTNESS TESTS

We checked similar correlations in some other cases as well and they held up (w.r.t. stock traded volume). Cases analyzed were –

- a) Adani group during 2014 general elections
- b) 1st time external CEO consideration for Infosys (Vishal Sikka in June 2014)

Refer [Appendix 2](#)

CONCLUSION

Overall from the analysis, we could get directional sense on implication of investor attention (in general public) on company's stock performance. However, we observed stock volume being traded lot more correlated to investor attention than stock price. Investor attention was observed to increase almost in line with witnessing stock performance change.

RECOMMENDATIONS AND BUSINESS SOLUTION

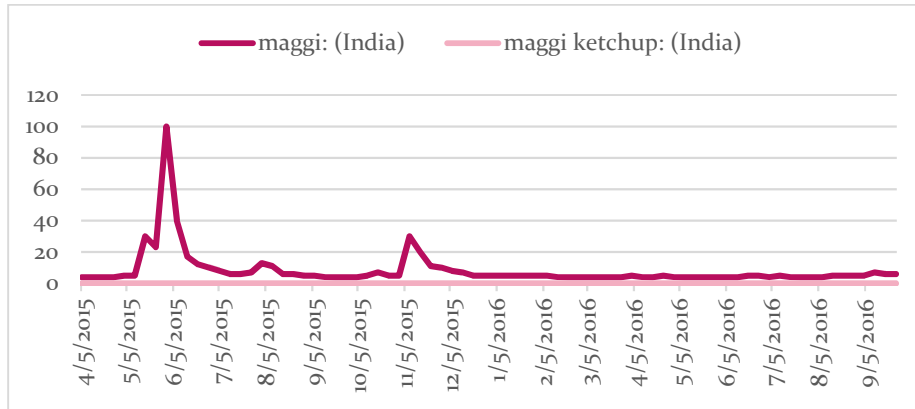
Observing some of the interesting patterns during the study, it is reasonably evident that information discovery does happen almost parallel to actual stock performance change (if any). Given that the time gap is not very significant, it may not be possible to act on fixing issues/ fundamentals. Such information may be more useful for investors dealing in futures and options market. Also, such approach on data analysis can be extended to day to day business monitoring like changes observed in interest towards competition, specific product lines, etc. Identifying root cause and fixing them can lead to significantly better results as they can be more proactive/ leading indicators.

FEASIBILITY AND LIMITATIONS

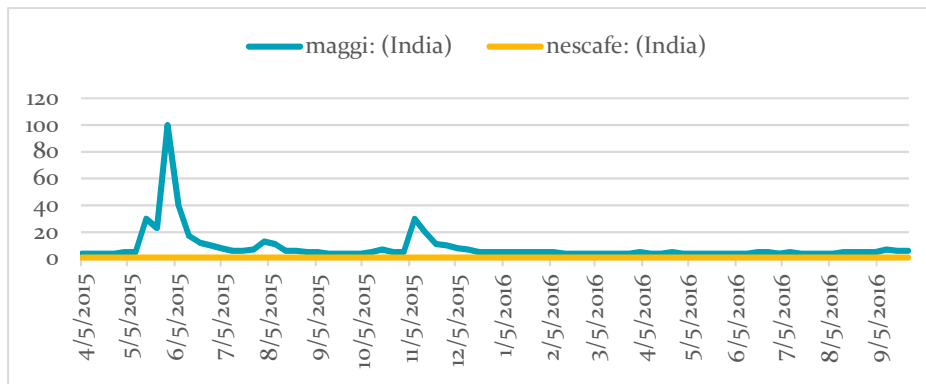
Availability of implications on sales & profitability could have led to better conclusions on correlation with stock performance by observing changes to company's fundamentals alongside. In absence of doing such study holistically, some of the correlations observed in this study could also be spurious. Also, given that this study was performed in a fairly simplified form (largely to cover report writing skills), much more rigorous analysis and research on the subject is needed to be able to come up with more actionable insights and make more meaningful recommendations.

APPENDIX 1: IMPACT ON RELATED PRODUCT LINES

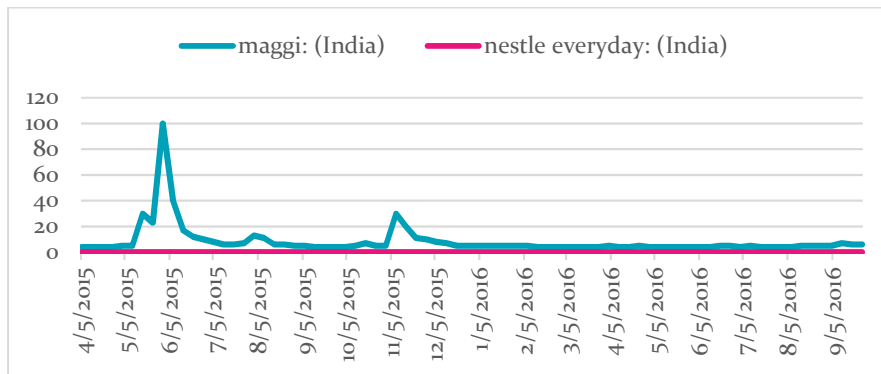
Maggi vs Maggi Ketchup



Maggi vs Nescafe

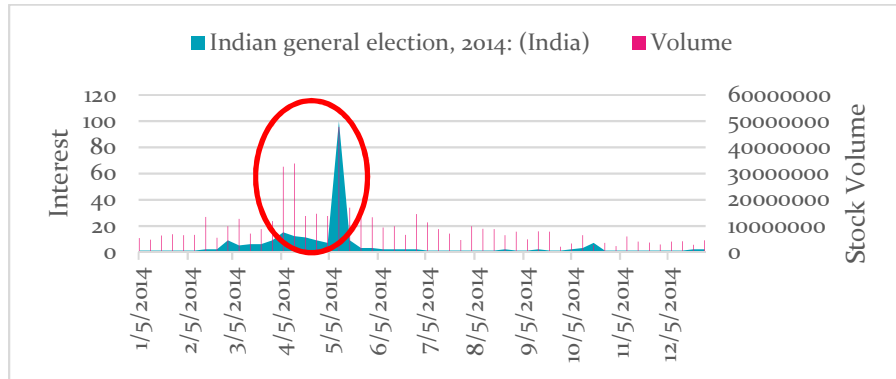


Maggi vs Nestle Everyday

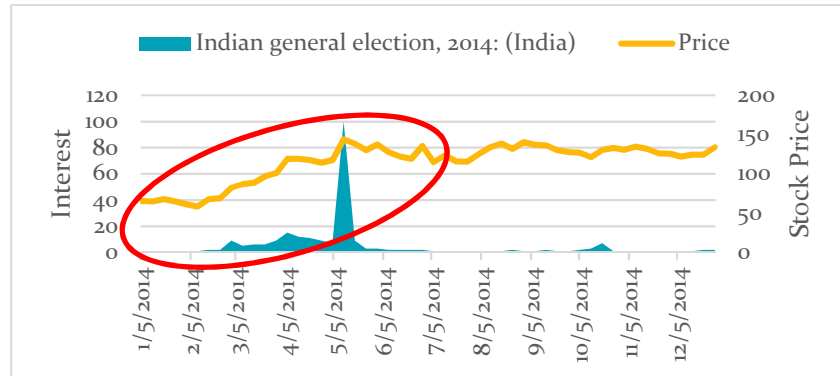


APPENDIX 2: TESTS ON OTHER CASES

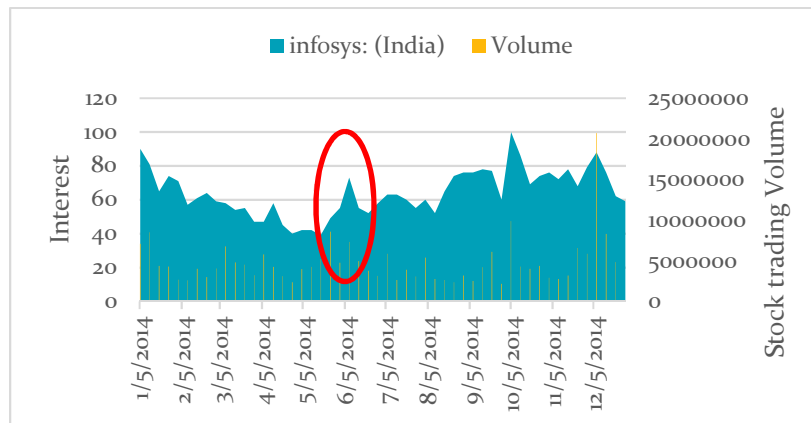
Adani group stock volume during 2014 general elections – correlation of ~77%

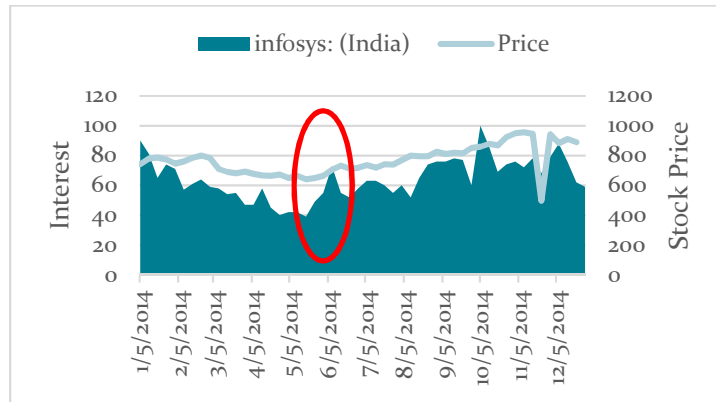


Adani group stock price during 2014 general elections – correlation of ~16%



1st time external CEO consideration for Infosys (Vishal Sikka in June 2014) – correlation of ~38% and ~62% with volume and price respectively.





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