

GrabFood in Vietnam & Philippines

Final Presentation



OUR TEAM

Dao Thanh Tung

Le Van Tuan Long

Matthew Ang Wei Ming

Patrick Tan Kun Wei

Rainean Young Calabad

Tan Keng Yew

Situation

- GrabFood expanded into Vietnam and Philippines in 2018
 - > 3000 restaurants in Ho Chi Minh City
 - > 1000 restaurants in Taguig City

Problem

Given the **limited resources** and **urgency to capture market share quickly**, Grab has to address the following questions:

- What are the popular restaurants in the identified cities?
- What are the consumers' sentiments toward these restaurants?
- What are cuisines / food types are popular among the consumers?

Executive Summary

Problem	How can GrabFood effectively expand their presence in Vietnam and Philippines market?		
Issues	Cities Which cities should Grab expand to?	Restaurants Which restaurants in the city should Grab target to onboard?	Cuisines What cuisines/food types should Grab promote in the city?
Methodology	Secondary research & discussion with GrabFood team	Sentiment Analysis Social Media Analysis	Topic Modelling of Restaurants Review
Deliverables	<div style="border: 1px solid green; padding: 10px;"> Top ranking restaurants in a particular city </div> <div style="border: 1px solid green; padding: 10px;"> Top popular food trends and food types in a particular city </div>		

Goal: Allow GrabFood to strategically and efficiently expand in the targeted cities - meeting the unique needs of the respective locals

GrabFood should focus on Ho Chi Minh City for Vietnam and Taguig for Philippines



Cities

Restaurants

Cuisines



Focus: Ho Chi Minh City



Focus: Taguig City

Validated our city choice with Grab

- Many working professionals
- Most populated city
- Early adopters in online commerce

- Many working professionals
- Most millennials head to Taguig City to work
- Working professionals / millennials order the most online

Food Review Websites and Social Media Platform are used to collect relevant restaurant's data points



Cities

Restaurants

Cuisines

Which restaurants in the city should Grab target to onboard?

Local sentiment of the restaurants

Social media presence of the restaurants

Food review websites
Foody (Vietnam) & Zomato (Philippines)

Ratings of the restaurants on the platform

Sentiment Analysis of the restaurants' reviews

Ratings Score

Sentiment Score

Social media platform
Instagram (Vietnam & Philippines)

Number of posts with restaurant's geo-tagging

Engagement level of the posts

Post's owners' followers / following

Outreach Score

Final score for Restaurant's Ranking

Review Rating Score

Cities

Restaurants

Cuisines

Review Rating Score

Sentiment Score

Outreach Score

IMPLEMENTATION



Phuong
via Android • 3/11/2018 0:07

Cực kì hài lòng ❤

Tối đói bụng mà ngái ra đường nên mình lên đây tìm thử thi ra được quán này,lại được giảm 30% nữa,minh order 2 món là cơm trộn và canh kim chi.
Điểm cộng là lúc giao tới vẫn còn nóng hỏi,hợp dụng sạch sẽ và lịch sự,có đầy đủ khăn giấy tẩm xia ràng các kiểu...khá là chu đáo a. Độ ngọt thì khỏi phải nói rồi quán ném ném rất là vừa ăn,do nhiều quán ăn nước sốt mì nồng quá mình ăn k dc và đó cũng là lý do mình ngai ăn đồ hàn quốc,mình dùng lo nén mới ném thử thi sót rất hợp ý với mình,canh nóng hỏi húp muỗng đầu tiên vào là ám bụng luôn đó ạ. Đây chắc chắn sẽ là nơi mình nghỉ tới mỗi khi đói bụng khuya,lần sau mình sẽ thử order các món khác xem sao. 😊😊

- This review is the subjective opinion of a Foody's Member and not of Foody Corp. -

9.0

Can we use this score as it is?

User's Interpretation of Scoring Scale

E.g. a 7/10 score is subjective for different users

User's Behaviour

Some users are more stingy /generous with their scoring

User's Credibility

Some users are more credible than others

To improve accuracy of the score



1

User's number of historical reviews

2

User's Historical Ratings

Review Rating Score

Cities

Restaurants

Cuisines

Review Rating Score

Sentiment Score

Outreach Score

IMPLEMENTATION

To improve accuracy
of the score



1

User's Historical Ratings

2

User's Number of Reviews

Score Rating Transformation and Normalisation



Step 1

Perform **standard score normalisation for each rating** with user's historical mean and standard deviation rating score

Step 2

With each reviewer's number of historical reviews, we calculate overall **total weighted average score rating** of the restaurant



Step 3

(0-1)
Scaling

Normalised
Review Rating
Score (0-1)



Review Rating Score
(used for ranking between restaurants)

Review Rating Score

Cities

Restaurants

Cuisines

Review Rating Score

Sentiment Score

Outreach Score

RESULTS

	name	profile_based_adjusted_rating
1	Royaltea - Cityland Center Hills	1.0
2	Ong Cha Milk Tea	0.987616788855558
3	Ong Nâu Spaghetti	0.9502152517826064
4	Thân Thiệu Nhiên - Vịt Quay Sốt Tiêu Xanh Hong Kong	0.7194717847134305
5	Mặc Mặc - Sữa Tươi Trân Châu Đường Đen - Nguyễn Bình Khiêm	0.7176633341692362
6	Royaltea Vietnam By Hongkong - Thoại Ngọc Hầu	0.715914177121944
7	Hanuri - Quán Ăn Hàn Quốc - Sư Vạn Hạnh	0.6845402133038644
8	King Castella - Bánh Bông Lan Đài Loan - Trần Hưng Đạo	0.6814417821716806
9	The Fitchicken - Chicken And More - Shop Online	0.6670301030581042
10	Gà Cơ Bắp - Chuyên Các Món Gà	0.6425234718691903

Using the **Review Rating Score**, we rank all the restaurants to get the **top 10** restaurants out of the 100 restaurants in our dataset

The score above is a function of the 3 attributes below to give a more accurate rating of the restaurant

User's Review Rating of the Restaurant

Standard Normalised Rating based on user's historical rating

Weighted average score for the restaurant based on users' historical number of reviews

Sentiment Score

Cities

Restaurants

Cuisines

Rating Score

Sentiment Score

Outreach Score

IMPLEMENTATION

Data Collection



16,000 Reviews
from Foody
website of
Top 100
Restaurants
In HCM City

Data Preprocessing



(For Vietnam
Data only)

Cleaning of
Vietnamese
reviews:
**Replacement
of slangs**

(For Vietnam
Data only)

Translation
from
Vietnamese
to English
using Google
APIs

Sentiment Analysis



Removal of
stopwords and
**special
characters**

**Tokeni-
zation**

**Lemmati-
zation**

VADER
Sentiment
(Normalised)

Sentiment Score

Cities

Restaurants

Cuisines

Rating Score

Sentiment Score

Outreach Score

RESULTS

	name	normalized_average_sentiment_score
0	Sủi Cảo Thiên Thiền - Hẻm 191 Hà Tôn Quyền	1.000000
1	Mặc Mập - Sữa Tươi Trân Châu Đường Đen - Nguyễn...	0.952516
2	Ong Nâu Spaghetti	0.930512
3	The Fitchicken - Chicken And More - Shop Online	0.925606
4	Bún Thịt Nướng Kiểu Bảo	0.901513
5	Mì Quán - Quãng Tân Nơi	0.888058
6	Cơm Gà Singapore 99 - Chicken Rice - Võ Văn Tần	0.882401
7	Gà Cơ Bắp - Chuyên Các Món Gà	0.863385
8	Bánh Su Kem Chewy Junior - Nguyễn Tri Phương	0.862678
9	Texas Chicken - Phạm Thái Bường	0.861598

Vader Sentiment gives the result between **-1 and 1**.

However, we would want to perform **(0,1) scaling** for easy comparison between restaurants

Why performing sentiment analysis on reviews if we already have the user's rating?

Rating and the sentiment from user's reviews might differ because of user's interpretation of scoring scale



Sentiment Analysis of the reviews gives another dimension for us to more accurately rank the restaurants

Outreach Score

Cities

Restaurants

Cuisines

Rating Score

Sentiment Score

Outreach Score

IMPLEMENTATION

Scraping Methodology



The Cook by Hongleepark

4.2/5



Scrape restaurant name from Zomato / Foody

Scrape the following data points on instagram using restaurant and location name

Collection the following data-points

1

Total number of posts

2

Total number of likes

3

Total number of comments

4

Total combined number of followers for all the post

5

Average Engagement Rate

Outreach Score

Cities

Restaurants

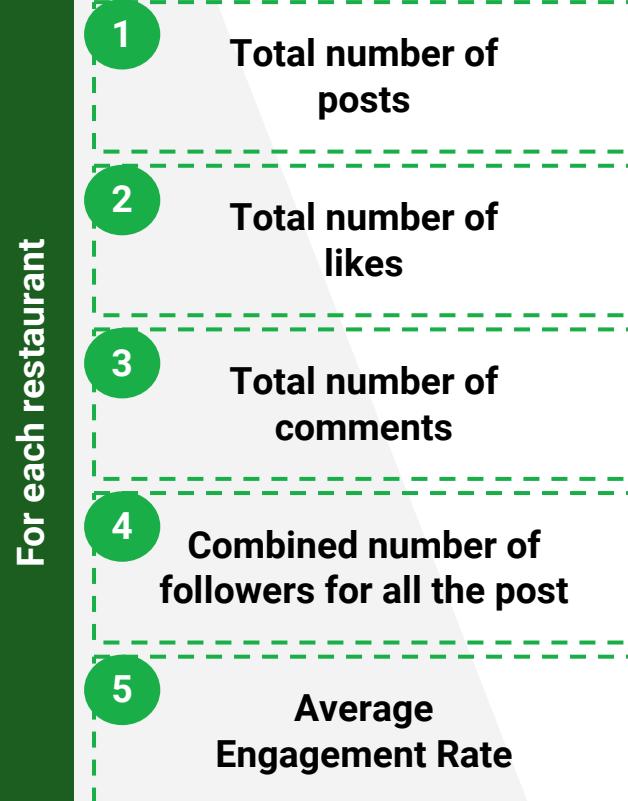
Cuisines

Rating Score

Sentiment Score

Outreach Score

IMPLEMENTATION



Normalised scores all restaurants (0,1)

0,1

0,1

0,1

0,1

0,1

Average
normalised
variables
score

```

graph LR
    A[0,1] --- B[0,1]
    B --- C[0,1]
    C --- D[0,1]
    D --- E[0,1]
    E --- F[Average normalised variables score]
  
```

Outreach Score
(Used to rank across different restaurants)

Outreach Score

Cities

Restaurants

Cuisines

Rating Score

Sentiment Score

Outreach Score

RESULTS

	instagram_total_score	name
0	1.000000	San San - Mì Gà Quay - Hoàng Sa
1	0.669220	Chị Tuyền - Bún Thịt Nướng
2	0.586633	Bà Bắc - Bánh Tráng Cuốn Trộn
3	0.582365	Starbucks Coffee - Phạm Hồng Thái
4	0.508275	Trà Sữa Tiên Hường - Cống Quỳnh
5	0.504169	Sủi Cảo 193 - Hà Tôn Quyền
6	0.485659	Bánh Mì Huỳnh Hoa - Bánh Mì Pate
7	0.484229	Royaltea Vietnam By Hongkong - Thoại Ngọc Hầu
8	0.477343	Cơm Tấm Ba Ghiền
9	0.462741	Bún Thịt Nướng Kiều Bảo

The **Outreach Score** takes into account all the identified **social media measurements**

The Outreach Score would give the analyst a comparative overview of the restaurant's social media presence and influence which can be a major factor in identifying popular restaurants

Final Score Ranking

Cities

Restaurants

Cuisines

Rating Score

Sentiment Score

Outreach Score

Combined Final Score

IMPLEMENTATION

Review Ratings Score

Ratings of the users adjusted using users' profile data (historical review ratings)

Sentiment Score

Average normalised sentiment score of all the restaurant's reviews

Outreach Score

Measurement of restaurant's social media outreach (posts, likes, comments, followers, engagement rate)



30%



30%



40%

Final Score
(for each restaurant)

Final Score Ranking

Cities

Restaurants

Cuisines

Sentiment Score

Ratings Score

Outreach Score

Combined Final Score

RESULTS

	name	normalized_average_sentiment_score	profile_based_adjusted_rating	instagram_total_score	final_score
0	Ong Nâu Spaghetti	0.930512	0.950215	0.341525	0.700828
1	San San - Mì Gà Quay - Hoàng Sa	0.606489	0.367245	1.000000	0.692120
2	Bún Thịt Nướng Kiều Bảo	0.901513	0.599022	0.462741	0.635257
3	Chị Tuyển - Bún Thịt Nướng	0.710547	0.470930	0.669220	0.622131
4	Starbucks Coffee - Phạm Hồng Thái	0.702019	0.579670	0.582365	0.617452
5	Royaltea - Cityland Center Hills	0.674631	1.000000	0.267674	0.609459
6	Texas Chicken - Phạm Thái Bường	0.861598	0.610651	0.412993	0.606872
7	Mập Mập - Sữa Tươi Trần Châu Đường Đen - Nguyễ...	0.952516	0.717663	0.260652	0.605314
8	Royaltea Vietnam By Hongkong - Thoại Ngọc Hầu	0.655047	0.715914	0.484229	0.604980
9	Hanuri - Quán Ăn Hàn Quốc - Sư Vạn Hạnh	0.797952	0.684540	0.368753	0.592249

Top 10 Restaurants

Top 10 Restaurants Final Scores

The result above shows the top 10 ranking restaurants of the 100 ranked restaurants.
The same process can be applied and scaled to more restaurants

Topic Modelling is used to identify popular food trends and cuisines from popular restaurants

Cities

Restaurants

Cuisines

Approach: Topic Modelling of Restaurant's Reviews

IMPLEMENTATION

Data Collection



Reviews
from Foody
websites of
Top 100
Restaurants
In HCM City

Data Preprocessing



Vietnamese
Tokenization with
Longest Matching
Algorithm
(9000 bi-grams and
9000 tri-grams)

Vietnamese Stop-
words Removal
(List of 1000
stopwords)

Topic Modelling



Word
Vectorisation
(gensim.corpo
ra library)

Linear Discriminant
Analysis - LDA
(Generating 3 topics for
each restaurant with 5
words each)

Topic Modelling is used to identify popular food trends and cuisines from popular restaurants

Cities

Restaurants

Cuisines

Approach: Topic Modelling of Restaurant's Reviews

RESULTS

A	B	C
Restaurant	LDA_VN	LDA_EN
Ong Nâu Spaghetti	[4, '0.028***"ān"" + 0.022***"thầy"" + 0.021***"phàn"" + 0.017***(" + 0.015***"hơi""), (0, '0.016***"ngon"" + 0.016***"beafsteak"" + 0.005***"Món"" + 0.009***"ghé"" + 0.009***"Sẽ""), (2, '0.021***"y"" + 0.021***"mý"" + 0.015***"bò"" + 0.015***"3"" + 0.008***"Sót"")]	(eat, understand, portion , (abit) , (delicious, beefsteak, dish, visit, will), (italian, spaghetti, beef, 3, sauce)
San San - Mì Gà Quay - Hoàng Sa	[4, '0.029***"ān"" + 0.017***"nhúh"" + 0.011***"mì"" + 0.009***"2"" + 0.009***"gỏi""), (2, '0.024***"xe"" + 0.016***"ăn"" + 0.015***"không"" + 0.013***"quán"" + 0.009***"cô""), (3, '0.026***"ān"" + 0.021***"mì"" + 0.017***"quán"" + 0.015***"gà"" + 0.014***"thầy"")]	(eat, like, spaghetti, 2, portion),(vechicle, eat, not, store, auntie),(eat, spaghetti, store, chick, feel)
Bún Thịt Nướng Kiều Bảo	[2, '0.038***"xe"" + 0.012***"không"" + 0.010***"nhưng"" + 0.009***"nhân_vien"" + 0.009***"ra""), (4, '0.032***"ān"" + 0.019***"bún"" + 0.015***"thêm"" + 0.012***"nướng"" + 0.012***"quán""), (1, '0.029***"ān"" + 0.018***"quán"" + 0.015***"nướng"" + 0.013***"bún"" + 0.013***"khá"")]	(vehicle, not, but ,staff, go out),(eat, bun, more, grill, store),(eat, store, grill, bun , quite)
Chị Tuyền - Bún Thịt Nướng	[3, '0.012***"môte"" + 0.011***"nuốc_mắm"" + 0.009***"and"" + 0.007***"l"" + 0.007***"had""), (1, '0.014***"món"" + 0.013***"ān"" + 0.011***"thầy"" + 0.008***"nói"" + 0.008***"tay""), (2, '0.016***"thịt"" + 0.012***"bún"" + 0.010***"nướng"" + 0.009***"nhưng"" + 0.008***"lám"")]	(one, fish sauce, and, I had), (dish ,eat, feel , talk ,hand),(meat, bun, grill, but , very)



Topic Modelling is used to identify popular food trends and cuisines from popular restaurants

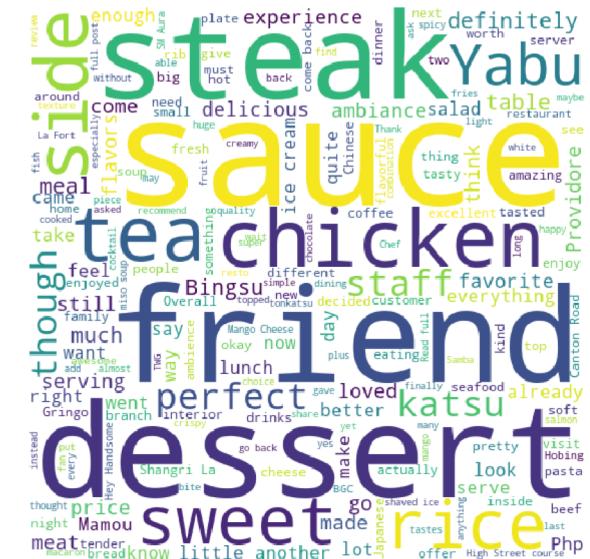
[Cities](#)
[Restaurants](#)
[Cuisines](#)

Approach: Topic Modelling of Restaurant's Reviews

RESULTS

Topic Modelling

Restaurant	Topics
Mamou	<p>Good steak & truffle pasta: 'steak the mamou truffle pasta good it not we like'</p> <p>Key lime pie to share with family: 'back family family friend coming back coming die pie lime lime pie key key lime'</p> <p>Healthy choices available: 'php combination vegetable post al menu choice their linguini change fact the last healthy pick'</p> <p>Cream veggie: 'sauce the place meat veggie veggie cream the noodle instead cream night want'</p> <p>Flavourful soup: 'sinigang sourness liking soup first soup friendly good juicy flavorful di good well'</p>
Providore	<p>General positive comment: 'the good got it providore like food taste also we'</p> <p>Chicken is winner: 'winner dinner chicken dinner winner winner winner chicken chicken steak butter garlic garlic onion'</p> <p>Providore is in Aura SM: 'read providore post read full full post full com aura sm aura sm'</p> <p>Good price & service: 'great worth food serving price coming back service coming they place'</p> <p>Maple syrup waffle: 'hunger against hunger against syrup waffle help restaurants maple classic waffle restaurants against'</p>
Yabu	<p>Good katsu rice set: 'katsu the set rice sauce cabbage good not tonkatsu soup'</p> <p>Good price & service: 'food place staff great the service very price staff very the place'</p> <p>Menchi, katsu & tori: 'menchi menchi katsu katsu tori tori menchi love cheese try best house katsu'</p> <p>Other Yabu branches available: 'branch always others hire this yabu hot bit hire katsu satisfied'</p> <p>Yabu also in Aura SM: 'sm aura sm aura yabu sm yabu dine branch aura branch last week'</p>



THANK YOU

Any questions?

