BY Bumble Bee Team

SENTIMENT PREDICTION FROM THE TRIPADVISOR PLATFORM

Using Sentiment Analysis Method and Logistic Regression Algorithm
Data from Kaggle

Hotel

BUSINESS

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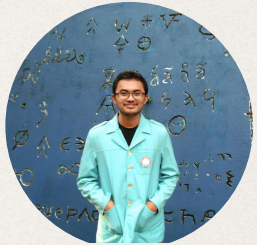

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BUSINESS UNDERSTANDING

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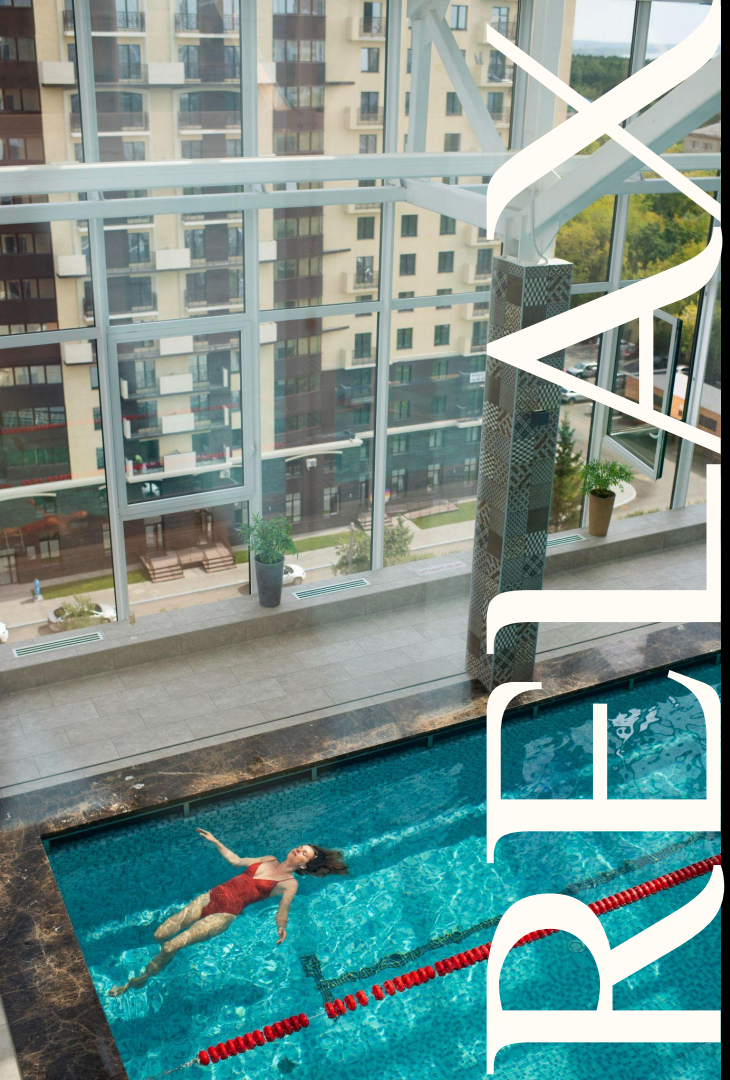
BUSINESS UNDERSTANDING

01 Latar Belakang

02 Rumusan Masalah

03 Tujuan

04 Manfaat



LATAR BELAKANG

Analisis sentimen terhadap **20.491** data ulasan hotel yang tersedia di *website* TripAdvisor yang bertujuan untuk mengetahui prediksi sentimen ulasan layanan dari seluruh hotel di dunia yang diulas dalam TripAdvisor. Data yang diperoleh merupakan **data dummy** yang digunakan sebagai ***data sampel*** untuk melakukan percobaan terkait Analisis Sentimen. Hasil dari analisis sentimen berupa pengelompokan *rating* ulasan, yaitu bintang 1-2 bernilai negatif, bintang 3 bernilai netral, dan bintang 4-5 bernilai positif. Hasil analisis sentimen ini diharapkan dapat membantu setiap hotel dalam menentukan tindakan berikutnya agar dapat terus meningkatkan kualitas pelayanan hotel melalui pengembangan dan perbaikan kelengkapan bisnis.

RUMUSAN MASALAH

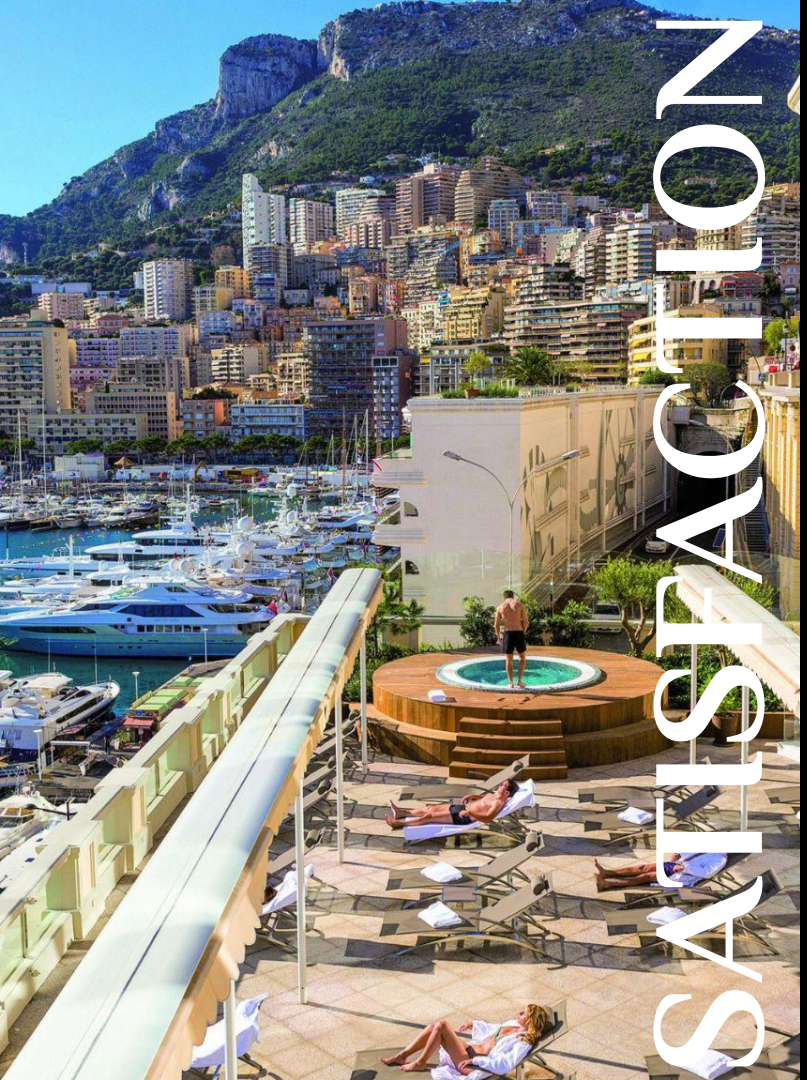
Bagaimana Analisis Sentimen dengan algoritma *logistic regression* dapat membantu setiap hotel untuk mengetahui tingkat kepuasan wisatawan terhadap pelayanan?

Bagaimana Analisis Sentimen memprediksi sentimen ulasan yang ada pada TripAdvisor khususnya untuk setiap hotel beserta hasilnya?

Apa saja masalah yang dihadapi oleh setiap hotel berdasarkan dari *review negative* yang diberikan oleh wisatawan?

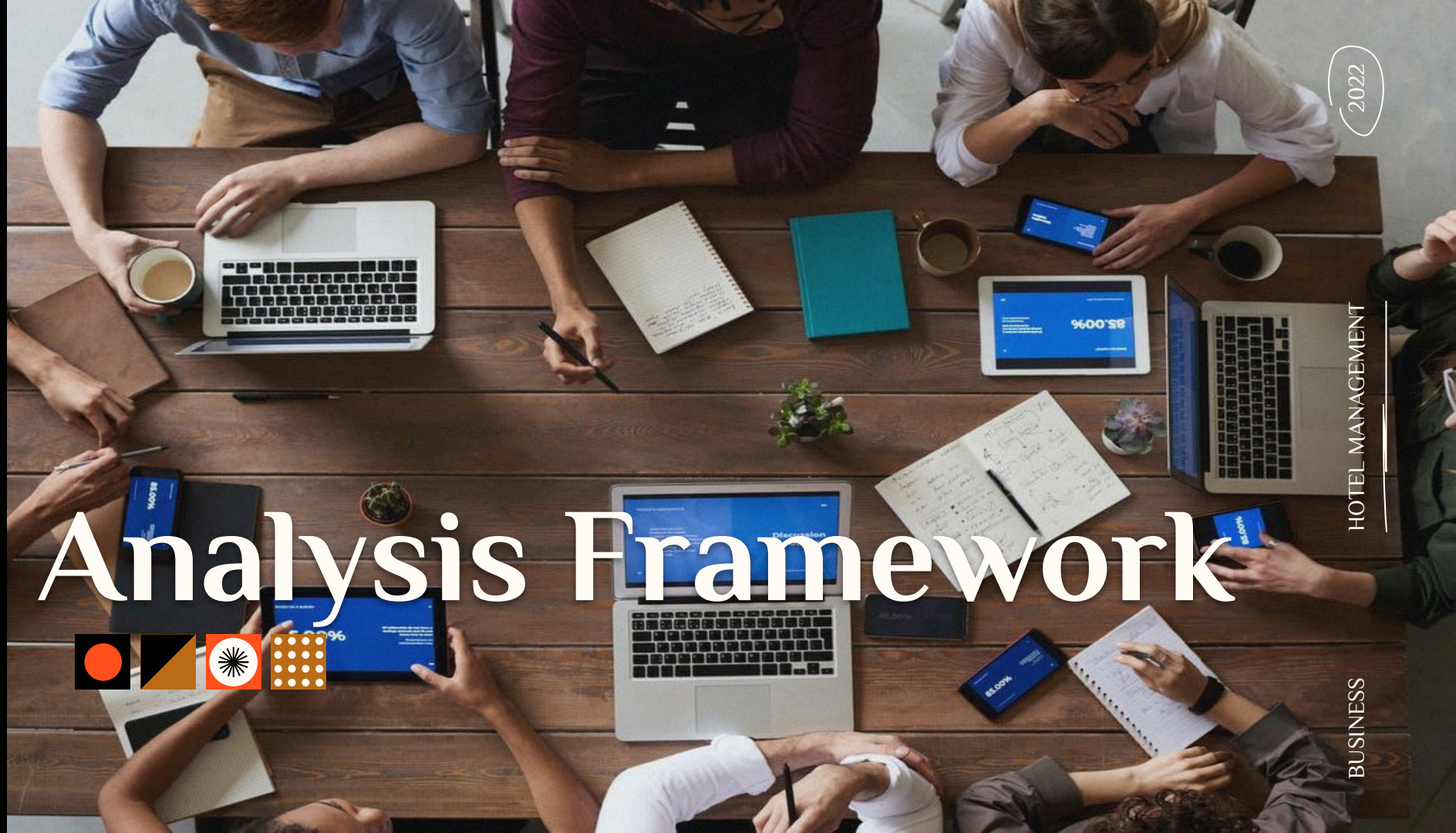
TUJUAN

1. Sebagai syarat kelulusan dari kegiatan Kampus Merdeka program Studi Independen *Data Analytics* dari GreatEdu serta mengimplementasikan materi yang telah dipelajari pada program Studi Independen *Data Analytics.*
2. Hasil analisis sentimen diharapkan dapat membantu setiap hotel dalam menentukan tindakan dan kebijakan berikutnya agar dapat terus meningkatkan kualitas dan kenyamanan hotel.



MANFAAT

Project ini akan menjadi portofolio tambahan bagi penulis dan sebagai *insight* berupa saran dan masukan yang membangun bagi **setiap hotel** untuk meningkatkan pelayanan yang optimal bagi wisatawan.



Analysis Framework

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OVERALL ANALYSIS FRAMEWORK

10%

Pengumpulan Data

Proses pengumpulan data dari beberapa sumber untuk diolah dan dikelola supaya menghasilkan suatu *insight* atau informasi sebagai landasan dalam menentukan keputusan.

25%

Exploratory Data Analysis

Proses pendekatan pada data untuk mengetahui karakteristik data, deskripsi data, dan persebaran data yang kemudian akan divisualisasi terlebih dahulu.

70%

Data Preprocessing

Teknik data mining yang dilakukan untuk mengubah data mentah menjadi format yang mudah untuk dipahami dan dianalisis oleh komputer.

100%

Analisis dan Pembuatan Model

Analisis dan pembuatan model bertujuan untuk memperoleh informasi yang berguna dari data yang ada. Pemahaman mengenai data yang digunakan mempengaruhi pada model yang akan diterapkan.

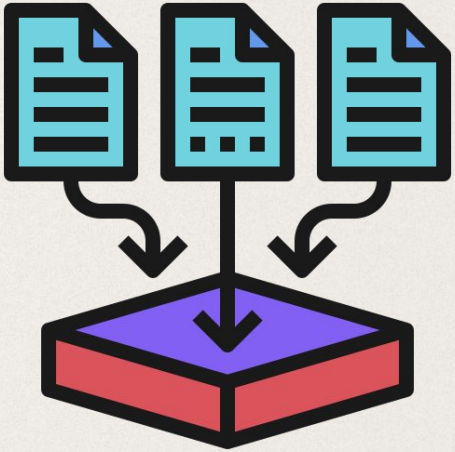
Data Collection

What?

Pengumpulan data (*data collection*) merupakan proses pengumpulan data dari beberapa sumber untuk diolah dan dikelola supaya menghasilkan suatu *insight* atau informasi sebagai landasan dalam menentukan keputusan.

Why?

Data collection sangat dibutuhkan sebagai langkah pertama membuat sebuah laporan yang berorientasi dengan fakta.



EXPLORATORY DATA ANALYSIS

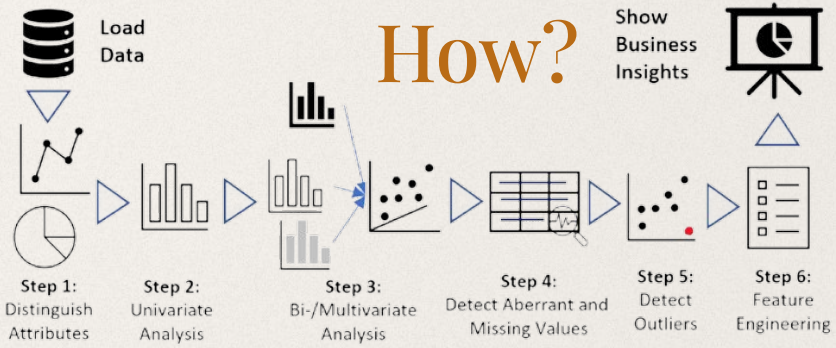
What?

Exploratory Data Analysis merupakan metode eksplorasi data dengan menggunakan teknik aritmatika sederhana dan teknik grafis dalam meringkas data pengamatan.

Why?

Untuk mengetahui karakteristik data, menemukan *missing data*, mengetahui hubungan antar variabel pada data, serta memperkirakan metode pengolahan data yang tepat.

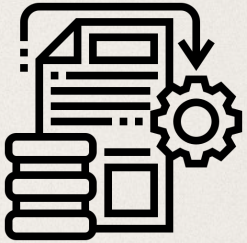
How?



DATA PREPROCESSING

What?

Data preprocessing adalah teknik data mining yang dilakukan untuk mengubah data mentah menjadi format yang mudah untuk dipahami dan dianalisis oleh komputer.



How?

Data Cleaning

Proses mengoreksi data, menambahkan data yang hilang, memperbaiki atau menghapus data yang salah dan tidak relevan

Data Transformation

Mengubah data yang sesuai dengan data mining dengan beberapa teknik: normalization, pemilihan attribute, discretization.

Data Reduction

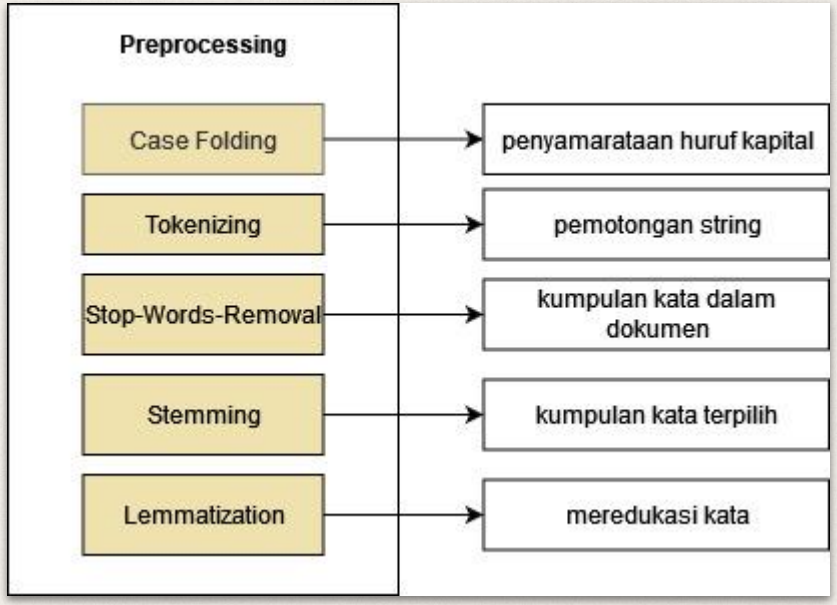
Bertujuan untuk meningkatkan efisiensi penyimpanan serta mengurangi biaya

Text Preprocessing

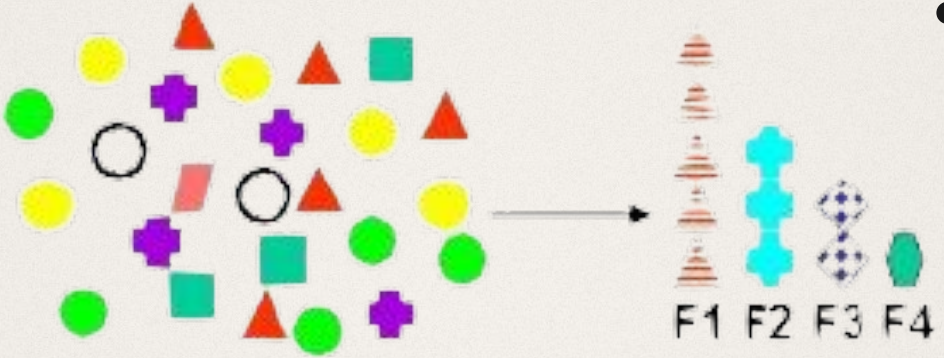
What?

Proses untuk menyeleksi data text agar menjadi lebih terstruktur

How?



Feature Extraction



What?

Proses eliminasi data *looping* dengan mengekstrak dan menggabungkan beberapa data dari beberapa variabel untuk membentuk variabel baru.

Logistic Regression

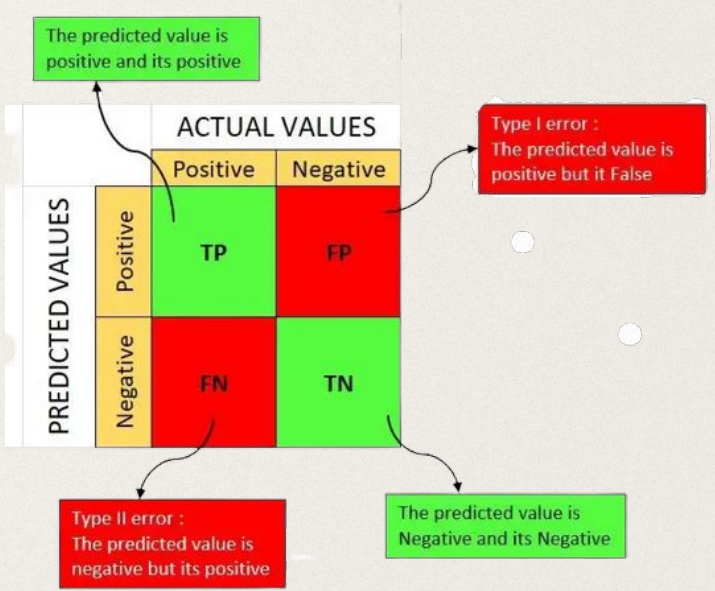
What?

Logistic Regression merupakan salah satu metode statistika yang digunakan untuk **menganalisis data** yang mendeskripsikan antara variabel respon dengan satu atau lebih variabel prediksi. Variabel respon dari Logistic Regression bersifat dikotomi yang hanya bernilai 1 (ya) dan 0 (tidak),

Confusion Matrix

Metode evaluasi dengan menggunakan Confusion matrix hanya dapat dilakukan pada algoritma Supervised Learning, dalam hal nya kali ini yaitu **Logistic Regression**.

Setiap data dari masing-masing kelas dalam tabel ***Confusion matrix*** akan menunjukkan jumlah prediksi yang dibuat guna mengklasifikasikan kelas benar atau salah.



Model Evaluation

Urutan kerja yang biasanya digunakan untuk mengevaluasi pada umumnya terbagi menjadi empat tahapan, sebagai berikut.

Accuracy

$$\frac{TP + TN}{Total}$$

Rasio prediksi benar (positif dan negatif) dengan keseluruhan data

Precision

$$\frac{TP}{FP + TP}$$

Rasio prediksi benar positif dibandingkan dengan keseluruhan hasil yang diprediksi positIf.

Recall

$$\frac{TP}{FN + TP}$$

Rasio prediksi benar positif dibandingkan dengan keseluruhan data yang benar positif.

F1-Score

$$2 * \frac{precision * recall}{precision + recall}$$

Merupakan rata-rata harmonik dari Precision dan Recall

Development Tools

Everything that used in the analysis

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DEVELOPMENT TOOLS

Google Sheet

Software atau perangkat lunak berbasis web yang dikembangkan oleh Google, untuk membuat tabel, perhitungan sederhana, atau pengolahan data.

Tableau

Tools untuk visualisasi data, yang mampu mempermudah pembuatan analisis visual interaktif yang disajikan dalam bentuk *dashboard.*

Python

Bahasa pemrograman tingkat tinggi yang banyak digunakan dalam aplikasi web, pengembangan perangkat lunak, ilmu data, dan machine learning (ML).

DEVELOPMENT TOOLS

NumPy

Sebuah *library* yang disediakan oleh python yang fokus pada *scientific computing* yang digunakan untuk proses analisis data.

Pandas

Sebuah library yang disediakan oleh python dengan lisensi BSD dan open source yang menyediakan struktur data dan analisis data yang mudah digunakan untuk membuat tabel, mengubah dimensi data, mengecek data.

Matplotlib

Sebuah library yang digunakan untuk visualisasi data yang digunakan untuk membuat plot grafik untuk satu sumbu atau lebih (sumbu x (horizontal) dan sumbu y (vertikal))

Library

DEVELOPMENT TOOLS

Scikit-learn

Sebuah library machine learning open source berbasis python yang digunakan dalam data science

NLTK

Sebuah library yang digunakan untuk membangun program NLP menggunakan python.

Seaborn

Sebuah library yang digunakan untuk membuat grafik dan statistik menggunakan python

Data Understanding

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20k

review data

Analisis sentimen untuk memprediksi *rating*

Sumber data:

https://www.kaggle.com/datasets/andrewmvd/trip-advisor-hotel-reviews

Data

[2]:

	Review	Rating
0	nice hotel expensive parking got good deal sta...	4
1	ok nothing special charge diamond member hilto...	2
2	nice rooms not 4* experience hotel monaco seat...	3
3	unique, great stay, wonderful time hotel monac...	5
4	great stay great stay, went seahawk game aweso...	5
...	...	...
20486	best kept secret 3rd time staying charm, not 5...	5
20487	great location price view hotel great quick pl...	4
20488	ok just looks nice modern outside, desk staff ...	2
20489	hotel theft ruined vacation hotel opened sept ...	1
20490	people talking, ca n't believe excellent ratin...	2

20491 rows × 2 columns

Terdapat 20491 rows x 2 columns. Kolom yang tersedia yaitu kolom ***review*** yang menampilkan hasil ulasan para wisatawan dan kolom ***rating*** yang menampilkan penilaian berupa skala 1-5 yang diberikan oleh para wisatawan terhadap Hotel

Data

3	unique, great stay, wonderful time hotel monac...	5	89	600	positive	25/10/2020	Italy
4	great stay great stay, went seahawk game aweso...	5	191	1281	positive	18/08/2021	Spanyol
...	...	...	...	...	...	...	...
20486	best kept secret 3rd time staying charm, not 5...	5	109	733	positive	27/07/2021	Spanyol
20487	great location price view hotel great quick pl...	4	39	306	positive	25/08/2021	Malaysia
20488	ok just looks nice modern outside, desk staff ...	2	63	443	negative	02/09/2021	Spanyol

Pada data mentahan terdapat 2 columns yaitu columns **review** & ***rating***. Setelah pengolahan data diperoleh 5 columns, yaitu **Count_word** yang merupakan column yang akan menghitung jumlah kata dari setiap ulasan. **Count_chart** yang merupakan column yang akan menghitung jumlah karakter dari setiap ulasan. **Sentimen** yang berisikan nilai negative, neutral, dan positive. **Date** yang berisikan tanggal diberikannya ulasan tersebut. Dan **Country** yang berisikan sebaran hotel pada setiap negara. Sehingga total keseluruhan data menjadi: **20491 rows x 7 columns**

No		*Column*	*Description*
1		Review	Ulasan dari para wisatawan
2		Rating	Penilaian yang diberikan dengan skala 1-5
3		count_word	Jumlah kata dari setiap ulasan
4		count_chart	Jumlah character dari setiap ulasan
5		Sentimen	Rating 1-2 = *Negative*, Rating 3 =*Neutral*, *Rating 4 = Positive*
6		Date	*Randomized date*1 Jan 2020 - 31 Dec 2021
7		*Country*	*Randomized branch* dari hotel di setiap negara yang tersebar yaitu Indonesia, Malaysia, Turkey, Spanyol, USA, Italy

Added Columns Explanation

count_word
Kolom yang berisi jumlah kata pada *review*.

count_chart
Kolom yang berisi total karakter pada *review.*

sentimen
Kolom yang berisi kategori sentimen, yakni nilai negatif untuk rating 1-2, neutral untuk rating 3, dan positive untuk rating 4-5.

Date
Kolom yang berisi tanggal diberikannya ulasan oleh para wisatawan terhadap hotel.

Country
Kolom yang berisi sebaran hotel di beberapa negara.

Exploratory Data Analysis

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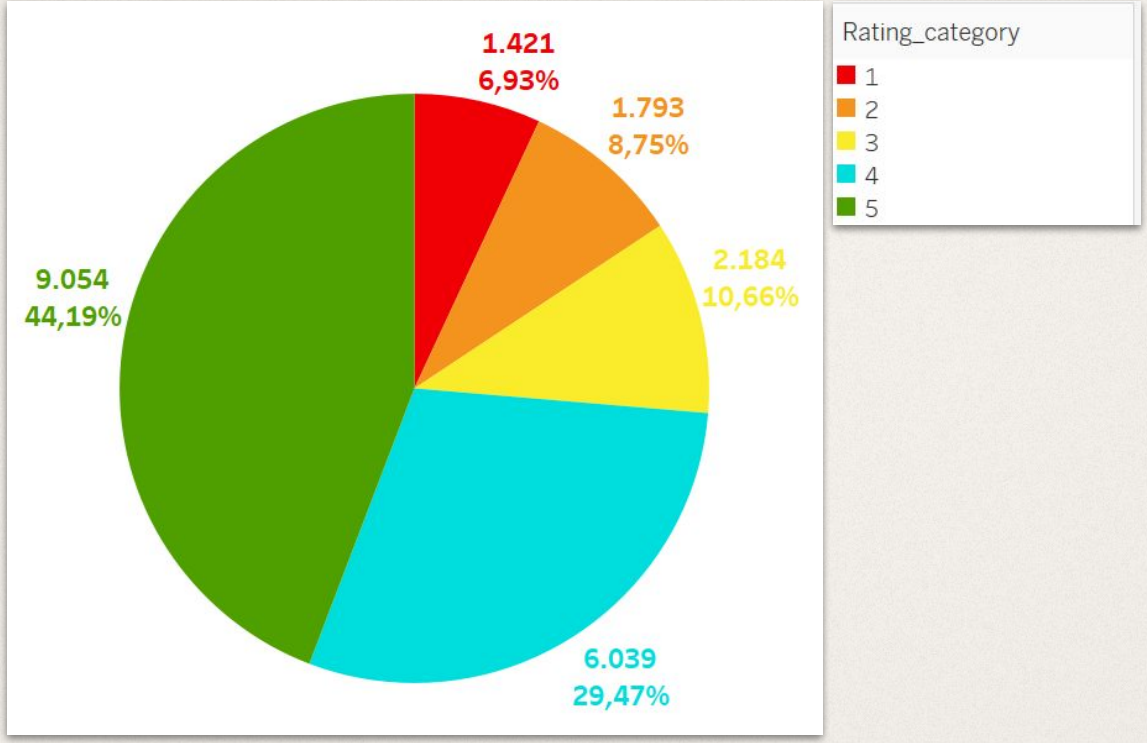
Distribusi Jumlah Ulasan per Rating



Penilaian dengan *rating* 5 memiliki rasio tertinggi yaitu **44,19%** dengan total ulasan **9.054.** Dan rating 1 memiliki rasio terendah dengan persentase **6,93%** dengan jumlah ulasan **1.421** buah ulasan

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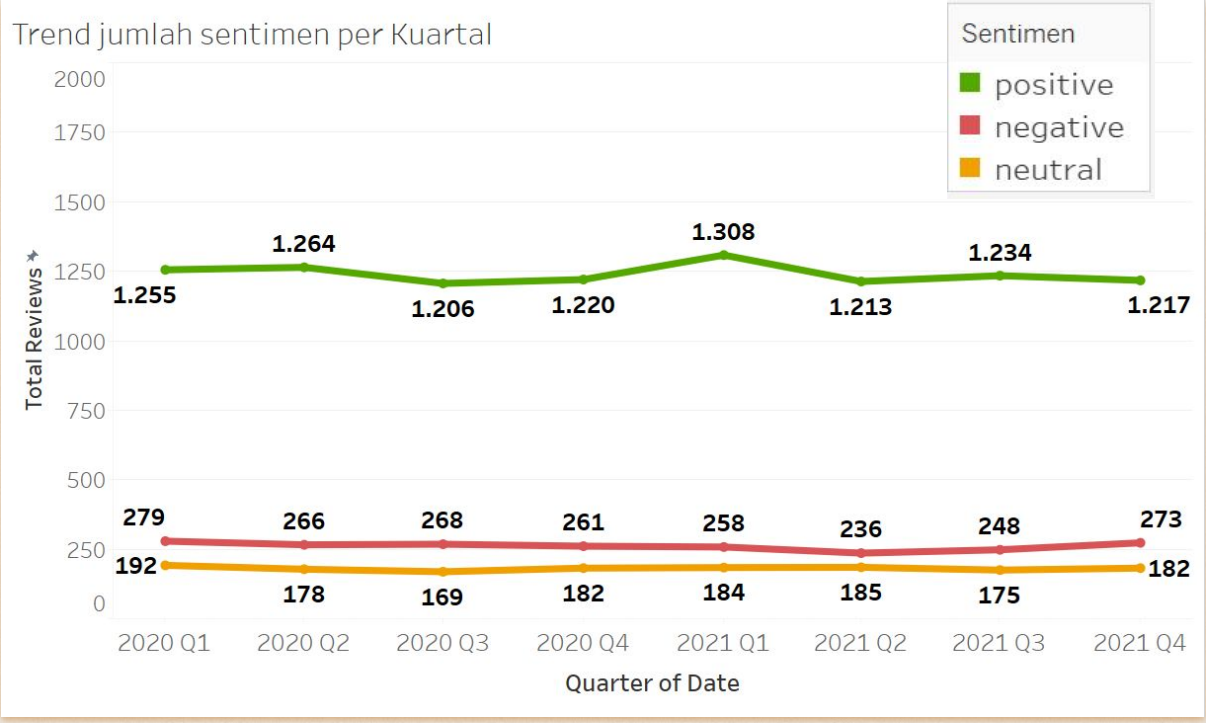
Trend Reviews per-Kuartal Tahun 2020-2021

Trend terhadap sentimen positif mengalami peningkatan pada **Q1 tahun 2021** dengan total sentimen sebesar **1.308** dan kembali menurun pada **Q2 tahun 2021.** Sedangkan pada sentimen negatif dan netral cenderung stabil dengan adanya sedikit kenaikan dan penurunan pada kuartal **Q2 tahun 2021.**



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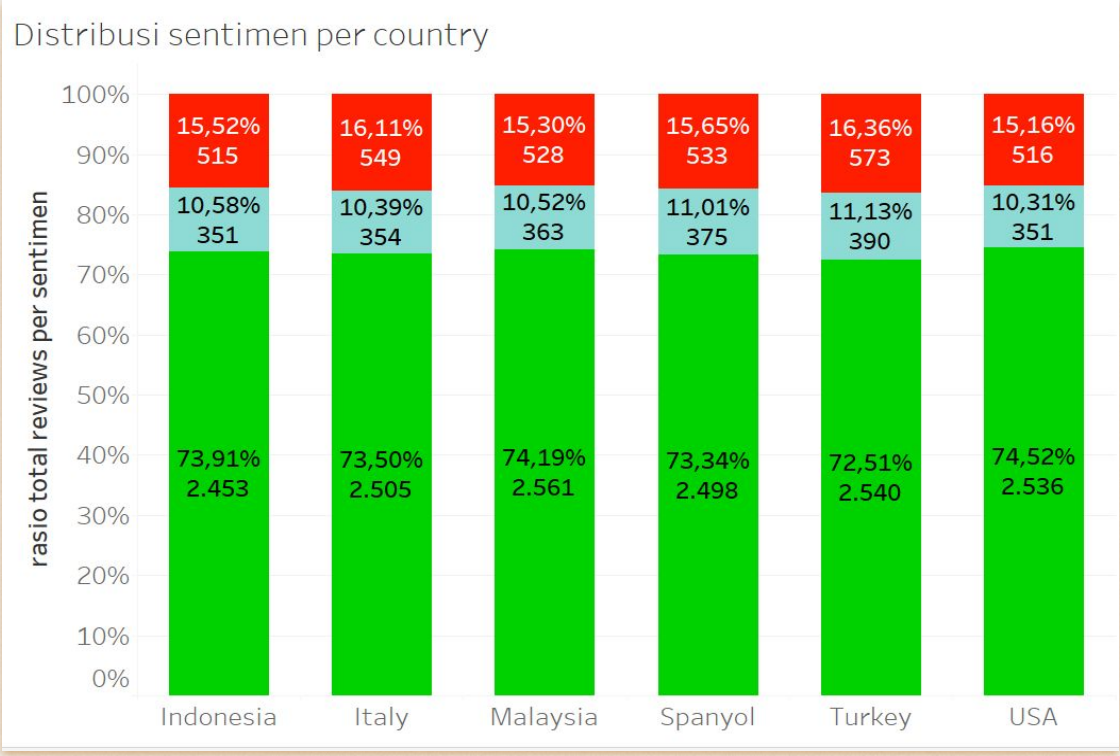
Distribusi Sentimen Setiap Negara



Sentimen reviews negara **Turki** menjadi negara dengan total sentimen Negatif, dan Neutral tertinggi dibandingkan lima negara lainnya (Indonesia, Italy, Malaysia, Spanyol, USA) juga menjadi negara dengan total sentimen Positif terendah dibandingkan lima negara lainnya

notes

Perbandingan Jumlah Rata-rata Karakter dan Kata pada *Reviews* Hotel

Average count and word per sentimen

Sentimen	Average Character	Average word
negative	824.7	120.3
neutral	785.2	114.7
positive	695.6	99.5

Sentimen
- negative
- neutral
- positive

Sentimen *negative* cenderung memiliki rata-rata karakter dan kata *reviews* terbanyak, yaitu sebanyak **824.7 karakter** dalam **120.3 kata** *reviews*

Sedangkan **sentimen *positif*** cenderung memiliki rata-rata karakter dan kata *reviews* yang sedikit, yaitu sebanyak **695.6 karakter** dalam **99.5 kata**

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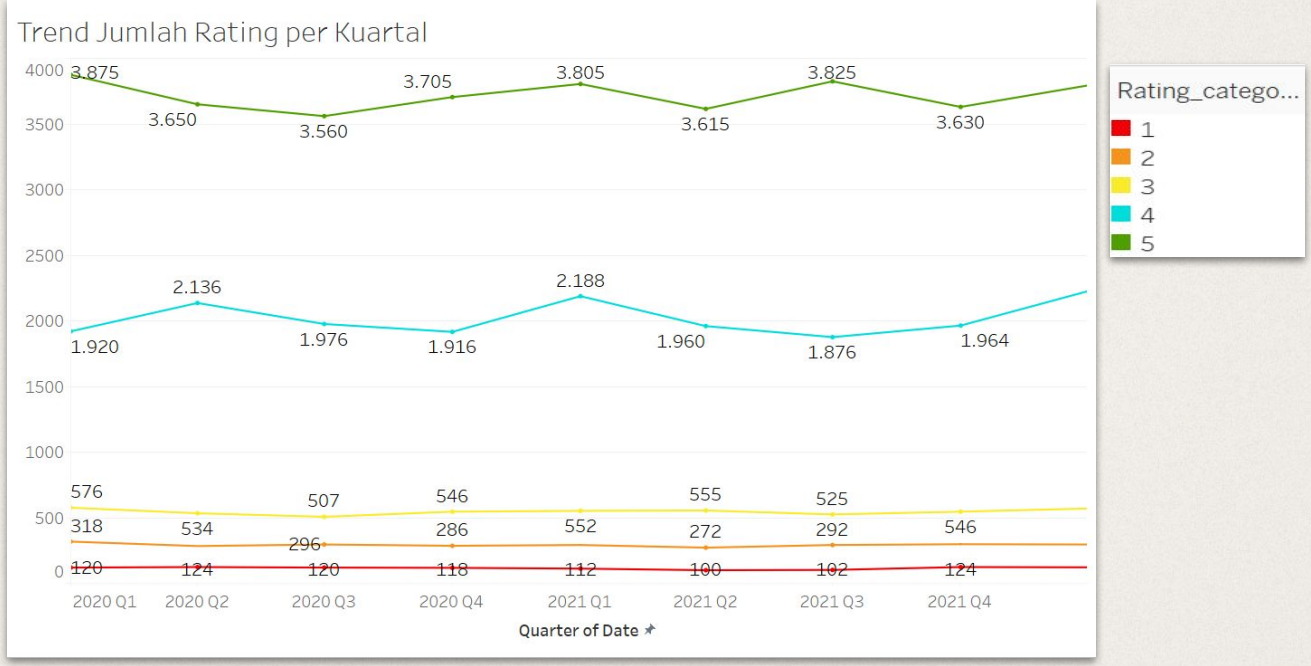
Trend Rating per-Kuartal Tahun 2020-2021



Penilaian dengan ***rating* 1** cenderung stabil dengan kisaran **112-125 *reviews*** pada setiap kuartal tahunnya. Sedangkan penilaian dengan ***rating* 4 dan 5** cukup fluktuatif dengan kisaran **1876-3875 reviews** pada setiap kuartal tahunnya.

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Data Preprocessing

Cleansing data by removing NA data and duplicate data. Then applying text preprocessing by removing numeric value, symbols, meaningless words, stop words, stemming, and lemmatization.

Data Preprocessing

01 Data Cleansing

- Remove missing value
- Remove duplicate value
- Remove empty string

02 Text Preprocessing

- Case Folding
- Remove Numeric Value
- Remove Symbol
- Remove Punctuation
- Remove Meaningless Words
- Remove Stop-Words
- Stemming & Lemmatizing

Data Preprocessing

Cek *missing value* pada masing-masing kolom
`monaco_hotel.isna().sum()`

```
# check for nulls
monaco_hotel.isna().sum()

Review          0
Rating          0
count_word      0
count_chart     0
sentimen        0
Date            0
country         0
dtype: int64
```

```
# check duplicate value
monaco_hotel.duplicated()

0        False
1        False
2        False
3        False
4        False
         ...
20486    False
20487    False
20488    False
20489    False
20490    False
Length: 20491, dtype: bool
```

Cek nilai duplikat
`monaco_hotel.duplicated()`

Cek data *string* pada kolom 'review'
`len(monaco_hotel[monaco_hotel.Review== ' '])`

```
# check for empty string reviews
len(monaco_hotel[monaco_hotel.Review == ''])

0
```

Data Preprocessing

```
monaco_hotel.dropna()
```

	Review	Rating	count_word	count_chart	sentimen	Date	country
0	nice hotel expensive parking got good deal sta...	4	87	593	positive	06/07/2021	Turkey
1	ok nothing special charge diamond member hilto...	2	250	1689	negative	12/08/2022	USA
2	nice rooms not 4* experience hotel monaco seat...	3	217	1427	neutral	10/09/2022	Italy
3	unique, great stay, wonderful time hotel monac...	5	89	600	positive	25/10/2020	Italy
4	great stay great stay, went seahawk game aweso...	5	191	1281	positive	18/08/2021	Spanyol
...	...	...	...	...	...	...	...
20486	best kept secret 3rd time staying charm, not 5...	5	109	733	positive	27/07/2021	Spanyol
20487	great location price view hotel great quick pl...	4	39	306	positive	25/08/2021	Malaysia
20488	ok just looks nice modern outside, desk staff ...	2	63	443	negative	02/09/2021	Spanyol
20489	hotel theft ruined vacation hotel opened sept ...	1	781	5557	negative	23/12/2022	Spanyol
20490	people talking, ca n't believe excellent ratin...	2	90	620	negative	24/12/2022	Malaysia

20491 rows × 7 columns

2022

Menghilangkan missing value dengan:

`monaco_hotel.dropna()`

Data Cleansing

Text Preprocessing

01

Case Folding

02

Remove Numeric Value

03

Remove symbol

04

Remove punctuation

05

Remove meaningless words

06

Remove stop-words

07

Stemming

08

Lemmatization

Case Folding

syntax

```
# case folding. change a sentence to be lower case
monaco_hotel['cleansed_review'] = monaco_hotel['Review'].str.lower()
```

output

1 to 40 of 40 entries Filter

index	Review	Rating	count_word	count_chart	sentimen	Date	country	cleansed_review
0	nice hotel expensive parking got good deal stay hotel anniversary, arrived late evening took advice previous reviews did valet parking, check quick easy, little disappointed non-existent view room room clean nice size, bed comfortable woke stiff neck high pillows, not soundproof like heard music room night morning loud bangs doors opening closing hear people talking hallway, maybe just noisy neighbors, aveda bath products nice, did not goldfish stay nice touch taken advantage staying longer, location great walking distance shopping, overall nice experience having pay 40 parking night,	4	87	593	positive	06/07/2021	Turkey	nice hotel expensive parking got good deal stay hotel anniversary, arrived late evening took advice previous reviews did valet parking, check quick easy, little disappointed non-existent view room room clean nice size, bed comfortable woke stiff neck high pillows, not soundproof like heard music room night morning loud bangs doors opening closing hear people talking hallway, maybe just noisy neighbors, aveda bath products nice, did not goldfish stay nice touch taken advantage staying longer, location great walking distance shopping, overall nice experience having pay 40 parking night,
1	ok nothing special charge diamond member hilton decided chain shot 20th anniversary seattle, start booked suite paid extra website description not, suite bedroom bathroom standard hotel room, took printed reservation desk showed said things like tv couch ect desk clerk told oh mixed suites description kimpton website sorry free breakfast, got kidding, embassy suits sitting room bathroom bedroom unlike kimpton calls suite, 5 day stay offer correct false advertising, send kimpton preferred guest website email asking failure provide suite advertised website reservation description furnished hard copy reservation printout website desk manager duty did not reply solution, send email trip guest survey did not follow email mail, guess tell concerned guest.the staff ranged indifferent not helpful, asked desk good breakfast spots neighborhood hood told no hotels, gee best breakfast spots seattle 1/2 block away convenient hotel does not know exist, arrived late night 11 pm inside run bellman busy chating cell phone help bags.prior arrival emailed hotel inform 20th anniversary half really picky wanted make sure good, got	2	250	1689	negative	12/08/2022	USA	ok nothing special charge diamond member hilton decided chain shot 20th anniversary seattle, start booked suite paid extra website description not, suite bedroom bathroom standard hotel room, took printed reservation desk showed said things like tv couch ect desk clerk told oh mixed suites description kimpton website sorry free breakfast, got kidding, embassy suits sitting room bathroom bedroom unlike kimpton calls suite, 5 day stay offer correct false advertising, send kimpton preferred guest website email asking failure provide suite advertised website reservation description furnished hard copy reservation printout website desk manager duty did not reply solution, send email trip guest survey did not follow email mail, guess tell concerned guest.the staff ranged indifferent not helpful, asked desk good breakfast spots neighborhood hood told no hotels, gee best breakfast spots seattle 1/2 block away convenient hotel does not know exist, arrived late night 11 pm inside run bellman busy chating cell phone help bags.prior arrival emailed hotel inform 20th anniversary half really picky wanted make sure good, got

before

after

Step ini bertujuan untuk menyeragamkan ukuran huruf pada teks sebelum diproses lebih lanjut, Penyeragaman ini bisa dengan mengubah semua huruf menjadi *all lower case* atau *all upper case*.

Remove Numeric Value

syntax

```
# remove numeric value
monaco_hotel['cleansed_review'] = monaco_hotel['cleansed_review'].str.replace('\d+', '',regex=True)
```

output

```
monaco_hotel
```

	Review	Rating	count_word	count_chart	sentimen	Date	country	cleansed_review
0	nice hotel expensive parking got good deal sta...	4	87	593	positive	06/07/2021	Turkey	nice hotel expensive parking got good deal sta...
1	ok nothing special charge diamond member hilto...	2	250	1689	negative	12/08/2022	USA	ok nothing special charge diamond member hilto...
2	nice rooms not 4* experience hotel monaco seat...	3	217	1427	neutral	10/09/2022	Italy	nice rooms not * experience hotel monaco seatt...
3	unique, great stay, wonderful time hotel monac...	5	89	600	positive	25/10/2020	Italy	unique, great stay, wonderful time hotel monac...
4	great stay great stay, went seahawk game aweso...	5	191	1281	positive	18/08/2021	Spanyol	great stay great stay, went seahawk game aweso...

Step ini bertujuan untuk menghapus teks berupa angka. Penghapusan angka pada teks dilakukan untuk mempermudah *machine learning* dalam mengolah data teks.

Remove Symbol

syntax

```
#remove symbol
monaco_hotel['cleansed_review'] = monaco_hotel['cleansed_review'].replace(r'[^\w\s]|_', '', regex=True)
```

output

```
monaco_hotel
```

	Review	Rating	count_word	count_chart	sentimen	Date	country	cleansed_review
0	nice hotel expensive parking got good deal sta...	4	87	593	positive	06/07/2021	Turkey	nice hotel expensive parking got good deal sta...
1	ok nothing special charge diamond member hilto...	2	250	1689	negative	12/08/2022	USA	ok nothing special charge diamond member hilto...
2	nice rooms not 4* experience hotel monaco seat...	3	217	1427	neutral	10/09/2022	Italy	nice rooms not experience hotel monaco seattl...
3	unique, great stay, wonderful time hotel monac...	5	89	600	positive	25/10/2020	Italy	unique great stay wonderful time hotel monaco ...
4	great stay great stay, went seahawk game aweso...	5	191	1281	positive	18/08/2021	Spanyol	great stay great stay went seahawk game awesom...

Step ini bertujuan untuk menghapus simbol. Penghapusan simbol pada teks dilakukan untuk mempermudah *machine learning* dalam mengolah data teks.

Remove Punctuation

syntax

```
# remove punctuation
monaco_hotel['cleansed_review'] = monaco_hotel['cleansed_review'].str.replace('[^\w\s]','',regex=True)
```

output

```
monaco_hotel.tail(5)
```

	Review	Rating	count_word	count_chart	sentimen	Date	country	cleansed_review
20486	best kept secret 3rd time staying charm, not 5...	5	109	733	positive	27/07/2021	Spanyol	best kept secret rd time staying charm not sta...
20487	great location price view hotel great quick pl...	4	39	306	positive	25/08/2021	Malaysia	great location price view hotel great quick pl...
20488	ok just looks nice modern outside, desk staff ...	2	63	443	negative	02/09/2021	Spanyol	ok just looks nice modern outside desk staff n...
20489	hotel theft ruined vacation hotel opened sept ...	1	781	5557	negative	23/12/2022	Spanyol	hotel theft ruined vacation hotel opened sept ...
20490	people talking, can't believe excellent ratin...	2	90	620	negative	24/12/2022	Malaysia	people talking can't believe excellent ratings...

Step ini bertujuan untuk menghapus tanda baca. Penghapusan tanda baca pada teks dilakukan untuk mempermudah *machine learning* dalam mengolah data teks.

Remove Meaningless Words

syntax

```
# remove meaningless words using nltk
def clean_sent(sent):
    return " ".join(w for w in nltk.wordpunct_tokenize(sent) \
     if w.lower() in words or not w.isalpha())
monaco_hotel['cleansed_review'] = monaco_hotel['cleansed_review'].apply(clean_sent)
```

Step ini bertujuan untuk menghilangkan kalimat yang tidak memiliki makna. Penghapusan kata tanpa arti pada teks dilakukan untuk mempermudah *machine learning* dalam mengolah data teks.

Remove Meaningless Words

output

index	Review	Rating	count_word	count_chart	sentimen	Date	country	cleansed_review
14	great hotel night quick business trip, loved little touches like goldfish leopard print robe, complaint wifi complimentary not internet access business center, great location library service fabulous,	4	27	202	positive	14/06/2021	USA	great hotel night quick business trip little like goldfish leopard print robe complaint complimentary not access business center great location library service fabulous
15	horrible customer service hotel stay february 3rd 4th 2007my friend picked hotel monaco appealing website online package included champagne late checkout 3 free valet gift spa weekend, friend checked room hours earlier came later, pulled valet young man just stood, asked valet open said, pull bags didn__Ã‡_Ã©_ offer help, got garment bag suitcase came car key room number says not valet, car park car street pull, left key working asked valet park car gets, went room fine bottle champagne oil lotion gift spa, dressed went came got bed noticed blood drops pillows sheets pillows, disgusted just unbelievable, called desk sent somebody 20 minutes later, swapped sheets left apologizing, sunday morning called desk speak management sheets aggravated rude, apparently no manager kind supervisor weekend wait monday morning, young man spoke said cover food adding person changed sheets said fresh blood rude tone, checkout 3pm package booked, 12 1:30 staff maids tried walk room opening door apologizing closing, people called saying check 12 remind package, finally packed things went downstairs check, quickly signed paper took, way took closer look room, unfortunately covered food offered charged valet, called desk ask charges lady answered snapped saying aware problem experienced monday like told earlier, life treated like hotel, not sure hotel constantly problems lucky ones stay recommend anybody know,	1	214	1413	negative	29/05/2021	Indonesia	horrible customer service hotel stay th my friend picked hotel appealing package included champagne late free valet gift spa weekend friend checked room came later valet young man just stood valet open said pull offer help got garment bag suitcase came car key room number not valet car park car street pull left key working valet park car went room fine bottle champagne oil lotion gift spa dressed went came got bed blood disgusted just unbelievable desk sent somebody later left morning desk speak management rude apparently no manager kind supervisor weekend wait morning young man spoke said cover food person said fresh blood rude tone package booked staff tried walk room opening door people saying check remind package finally went downstairs check quickly paper took way took closer look room unfortunately covered food valet desk ask lady snapped saying aware problem experienced like told life like hotel not sure hotel constantly lucky stay recommend anybody know

Before

After

Remove Stopwords

syntax

```
nltk.download('words')
nltk.download('stopwords')
nltk.download('wordnet')
nltk.download('omw-1.4')
words = set(nltk.corpus.words.words())
```

```
#remove stop-words
print(stopwords.words('english'))
```

```
['i', 'me', 'my', 'myself', 'we', 'our', 'ours', 'ourselves', 'you', "you're", "you've", "you'll", "you'd",
```

List kata yang masuk ke dalam eliminasi *stop words*

syntax

```
# Remove Stop Words from Text in DataFrame Column
stop_words = stopwords.words('english')
monaco_hotel['cleansed_review'] = monaco_hotel['cleansed_review'].apply(
    lambda x: ' '.join([word for word in x.split() if word not in (stop_words)]))
```

Step ini bertujuan untuk menghapus beberapa kata yang dirasa tidak berpengaruh terhadap hasil analisis. Penghapusan tersebut dilakukan untuk mempermudah *machine learning* dalam mengolah data teks.

Remove Stopwords

output

2	nice rooms not 4* experience hotel monaco seattle good hotel n't 4* level.positives large bathroom mediterranean suite comfortable bed pillowsattentive housekeeping staffnegatives ac unit malfunctioned stay desk disorganized, missed 3 separate wakeup calls, concierge busy hard touch, did n't provide guidance special requests.tv hard use ipod sound dock suite non functioning. decided book mediterranean suite 3 night weekend stay 1st choice rest party filled, comparison w spent 45 night larger square footage room great soaking tub whirlpool jets nice shower.before stay hotel arrange car service price 53 tip reasonable driver waiting arrival.checkin easy downside room picked 2 person jacuzi tub no bath accessories salts bubble bath did n't stay, night got 12/1a checked voucher bottle champagne nice gesture fish waiting room, impression room huge open space felt room big, tv far away bed chore change channel, ipod dock broken disappointed in morning way asked desk check thermostat said 65f 74 degrees warm try cover face night bright blue light kept, got room night no, 1st drop desk, called maintainence came look thermostat told play settings happy digital box wo n't work, asked wakeup 10am morning did n't happen, called later 6pm nap wakeup forgot, 10am wakeup morning yep forgotten.the bathroom facilities great room surprised room sold whirlpool bath tub n't bath amenities, great relax water jets going,	3	217	1427	neutral	10/09/2022	Italy	nice experience hotel good hotel large bathroom mediterranean suite comfortable bed housekeeping unit stay desk separate concierge busy hard touch provide guidance special hard use sound dock suite non decided book mediterranean suite night weekend stay st choice rest party filled comparison w spent night square footage room great soaking tub whirlpool nice stay hotel arrange car service price tip reasonable driver waiting easy downside room picked person tub bath bubble bath stay night got checked voucher bottle champagne nice gesture fish waiting room impression room huge open space felt room big far away bed chore change channel dock broken morning way desk check thermostat said f warm try cover face night bright blue light kept got room night st drop desk came look thermostat told play happy digital box wo work morning happen later nap forgot morning yep bathroom great room room sold whirlpool bath tub bath great relax water going

Before

After

Stemming & Lemmatizing

syntax

```python
# Stemming and Lemmatization
def stemming_lemmatizing(text):
    clean_text = text.split()

    #stemming
    sentence = []
    for word in clean_text:
        stemmer = SnowballStemmer('english')
        sentence.append(stemmer.stem(word))
    #lematizing
    sentence = []
    for word in clean_text:
        lemmatizer = WordNetLemmatizer()
        sentence.append(lemmatizer.lemmatize(word, 'v'))

    return ' '.join(sentence)

monaco_hotel['cleansed_review'] = monaco_hotel['cleansed_review'].apply(stemming_lemmatizing)
```

Step stemming bertujuan untuk menghapus imbuhan dan/atau sisipan pada kata hingga tersisa kata dasarnya tanpa mengetahui konteks dari kata tersebut. **Step Lemmatizing** merupakan proses pengambilan kata dasar dari suatu kata dengan mengetahui konteks atau arti dari kata tersebut

Stemming & Lemmatizing

output

index	Review	Rating	count_word	count_chart	sentimen	Date	country	cleansed_review
1	ok nothing special charge diamond member hilton decided chain shot 20th anniversary seattle, start booked suite paid extra website description not, suite bedroom bathroom standard hotel room took printed reservation desk showed said things like tv couch ect desk clerk told oh mixed suites description kimpton website sorry free breakfast, got kidding, embassy suits sitting room bathroom bedroom unlike kimpton calls suite, 5 day stay offer correct false advertising, send kimpton preferred guest website email asking failure provide suite advertised website reservation description furnished hard copy reservation printout website desk manager duty did not reply solution, send email trip guest survey did not follow email mail, guess tell concerned guest.the staff ranged indifferent not helpful, asked desk good breakfast spots neighborhood hood told no hotels, gee best breakfast spots seattle 1/2 block away convenient hotel does not know exist, arrived late night 11 pm inside run bellman busy chating cell phone help bags.prior arrival emailed hotel inform 20th anniversary half really picky wanted make sure good, got nice email saying like deliver bottle champagne chocolate covered strawberries room arrival celebrate, told needed foam pillows, arrival no champagne strawberries no foam pillows great room view alley high rise building good not better housekeeping staff cleaner room property, impressed left morning shopping room got short trips 2 hours, beds comfortable.not good ac-heat control 4 x 4 inch screen bring green shine directly eyes night, light sensitive tape controls.this not 4 start hotel clean business hotel super high rates, better chain hotels seattle,	2	250	1689	negative	12/08/2022	USA	nothing special charge diamond member decide chain shoot th anniversary start book suite extra description suite bedroom bathroom standard hotel room take print reservation desk say like couch desk clerk tell oh mix description sorry free breakfast get embassy sit room bathroom bedroom unlike suite day stay offer correct false advertise send prefer guest failure provide suite reservation description furnish hard copy reservation desk manager duty reply solution send trip guest survey follow mail guess tell concern staff range indifferent helpful desk good breakfast neighborhood hood tell gee best breakfast block away convenient hotel know exist late night inside run bellman busy cell phone help arrival hotel inform th anniversary half really picky make sure good get nice say like deliver bottle champagne chocolate cover room arrival celebrate tell foam arrival champagne foam great room view alley high rise build good better housekeep staff cleaner room property leave morning shop room get short good control x inch screen bring green shine directly night light sensitive tape start hotel clean business hotel super high better chain

Before

After

Step ini bertujuan untuk mengubah sebuah kata ke dalam bentuk kata dasarnya.
Perubahan kata yang dilakukan bertujuan untuk mempermudah *machine learning* dalam proses identifikasi dan olah data teks.

2022

HOTEL MANAGEMENT

Modelling

Building the analysis model with sklearn

BUSINESS

Logistic Regression Algorithm

- Pembuatan model menggunakan algoritma *logistic regression*
- Dataset di-*split* menjadi 2 yaitu data train dan data test
- Hasil prediksi akan diukur performanya menggunakan *confusion matrix*

Modelling

```
# x_train = sentiment (dependent variable)
# y_train, y_test = review
x_train,x_test, y_train, y_test = train_test_split(monaco_hotel['cleansed_review'],
                                                   monaco_hotel['sentimen'],
                                                   test_size = 0.2, random_state=42)
```

train_test_split adalah fungsi dari model sklearn yang digunakan untuk memisahkan data menjadi 2: data train (*column sentiment*) data test (*column review*)

```
tfidf = TfidfVectorizer()
data_train = tfidf.fit_transform(x_train)
data_test = tfidf.transform(x_test)
```

TfidfVectorizer() adalah mengkonversi kumpulan data mentah menjadi matriks fitur TF-IDF

```
log = LogisticRegression(penalty='l2',max_iter=1000)
log.fit(data_train, y_train) #how computer can learn from program
predict = log.predict(data_test)
```

Max_iter adalah Jumlah maksimum iterasi yang diambil oleh pemecah untuk konvergen.

Modelling

```
accuracy_score(y_test, predict)
```

```
0.8558184923151988
```

Tingkat akurasi dari model memiliki performa yang bagus yaitu 0.856 atau setara dengan **86%**

```
print(confusion_matrix(y_test,predict))
```

```
[[ 468   38  119]
 [  85   74  273]
 [  36   40 2966]]
```

Perbandingan hasil prediksi dari model *machine learning* dengan menggunakan *confusion matrix.*

Modelling

```
print(classification_report(y_test,predict))
```

	precision	recall	f1-score	support
negative	0.79	0.75	0.77	625
neutral	0.49	0.17	0.25	432
positive	0.88	0.98	0.93	3042
accuracy			0.86	4099
macro avg	0.72	0.63	0.65	4099
weighted avg	0.83	0.86	0.83	4099

* **Precision**

Persentase nilai prediksi yang benar

Tingkat *precision* sentimen *negative* dan *positive* dapat dikatakan cukup baik, yakni sebesar **79%** untuk sentimen *negative* dan **88%** untuk sentimen *positive*.

Prediksi yang dilakukan di setiap sentimen berada di tingkat **>75%** **benar** untuk sentimen *positive* dan *negative*. Namun, hanya **49%** **benar** dalam memprediksi sentimen *neutral*

Modelling

```
print(classification_report(y_test,predict))
```

	precision	recall	f1-score	support
negative	0.79	0.75	0.77	625
neutral	0.49	0.17	0.25	432
positive	0.88	0.98	0.93	3042
accuracy			0.86	4099
macro avg	0.72	0.63	0.65	4099
weighted avg	0.83	0.86	0.83	4099

* **Recall**

Persentase kasus positive yang ditangkap

Tingkat *recall* dari sentimen *negative* dan *positive* bernilai sangat baik dengan nilai *recall* sebesar **75%** untuk sentimen *negative* dan **98%** untuk sentimen *positive*.

>70% prediksi sentimen *positive* dan *negative* ditangkap sebagai kasus *positive* sedangkan persentase kasus *positive* yang ditangkap untuk sentimen *neutral* hanya sebesar **17%**

Modelling

```
print(classification_report(y_test,predict))
```

	precision	recall	f1-score	support
negative	0.79	0.75	0.77	625
neutral	0.49	0.17	0.25	432
positive	0.88	0.98	0.93	3042
accuracy			0.86	4099
macro avg	0.72	0.63	0.65	4099
weighted avg	0.83	0.86	0.83	4099

* **F1-Score**

rata-rata harmonik tertimbang dari presisi dan recall

Nilai *precision* dan *recall* dari prediksi model klasifikasi sentimen negatif bernilai **0.77**, sentimen positif bernilai **0.93**, dan sentimen *neutral* bernilai **0.25**.

Nilai F1-Score untuk sentimen *positive* dan *negative* dikatakan sudah cukup baik dalam memprediksi kinerja model yang dihasilkan. Namun, kinerja model sentimen *neutral* yang berarti nilai F1-Score yang dihasilkan masih buruk.

2022

HOTEL MANAGEMENT

BUSINESS

Data Visualization:

Word Cloud & N-Gram

Word Cloud

Word Cloud merupakan representasi visual dari data teks. Dilakukan dengan cara membandingkan antara data review yang memiliki 3 kategori yaitu sentimen *positive*, sentimen neutral dan sentimen negative. Perbandingan tersebut bertujuan untuk mengetahui kata apa saja yang paling sering muncul dalam suatu ulasan/review yang diberikan oleh para reviewer yang pernah menginap di setiap Hotel.

Import library

```
from wordcloud import WordCloud
import matplotlib.pyplot as plt
import matplotlib as mpl
from sklearn.feature_extraction.text import CountVectorizer
```

Membuat variabel baru untuk menyimpan ulasan per sentimen

```
negative_sentiment = monaco_hotel[monaco_hotel.sentimen == 'negative']
```

```
neutral_sentiment = monaco_hotel[monaco_hotel.sentimen == 'neutral']
```

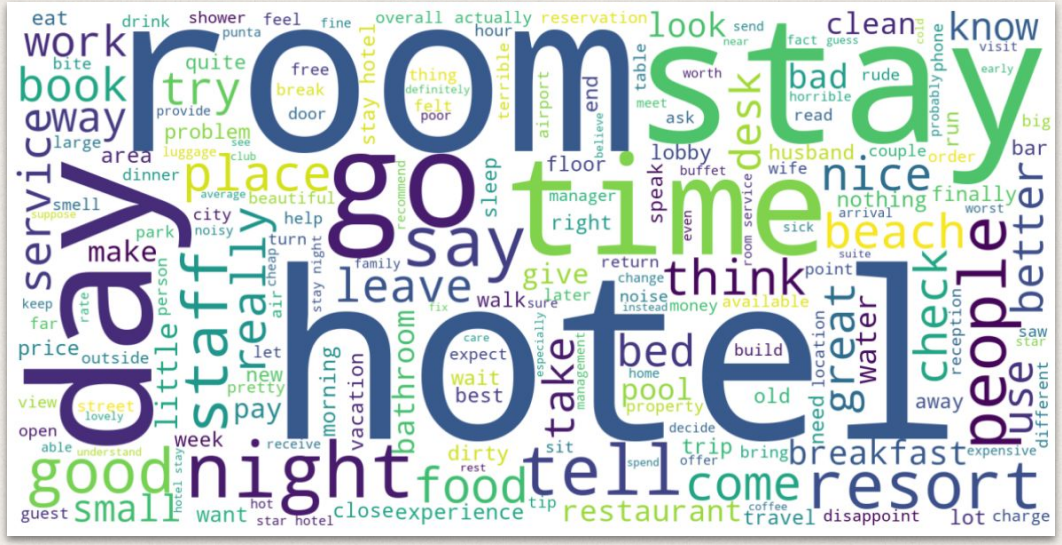
```
positive_sentiment = monaco_hotel[monaco_hotel.sentimen == 'positive']
```

Word cloud dari sentimen negatif

```
# make a word cloud from negative sentiment
plt.figure(figsize=(15,15))
word_cloud = WordCloud(
max_words = 200
, min_font_size = 10
, height = 800
, width = 1600
, background_color = "white"
).generate(' '.join(negative_sentiment['cleansed_review']))
plt.axis('off')

plt.imshow(word_cloud)
```

Word Cloud



Word cloud negative sentiment menampilkan kata yang sering muncul pada *review* negatif kepada pihak Hotel dengan kata ukuran besar, yaitu kata *hotel*, *room*, *stay*, *day*, dll. Kata-kata tersebut memiliki pengaruh yang sangat besar pada sentimen negatif. Kejadian ini bisa diakibatkan oleh beberapa faktor internal maupun eksternal.

Positive Sentiment

Word Cloud

room
hotel
nice
time
day
go
good
really
little
small
people
great
place
lot
pool
book
price
take
location
bar
food
stay
hotel
Want
know
night
resort
beach
come
staff
friendly
excellent
say
work
area
way
away
use
check
lobby
wonderful
best
great hotel
think
make
eat
city
amaze
better
try
look
close
lovely
give
fun
trip
travel
breakfast
need
problem
leave
street
restaurant
hotel
tell
stay
vacation
minute
walk
perfect
friendly helpful
different
dinner
service
pretty
tip
family
morning
expect
hotel staff
overall
bad
table
open
door
airport
available
bring
high
local
right
great place
visit
actually
free
beautiful
build
enjoy
expensive
fabulous
choose
sure
drink
nearby
even
meet
pay
stay night
experience
definitely
feel
quiet
consider
keep
tour
recommend hotel
highly recommend
bite
home
room clean
new york
huge
set
especially
dinner
see
worth
bed
hour
pursuit
hotel good
thing
cool
nothing
town
make sure
definitely stay
stay
couple
bu
stop
great
location
room service
park
offer
plus
property
read
great time
good
food
disappoint
near
busy
husband
fantastic
staff helpful
fine
shop
ye
awesome
easy
reception
th floor
taxi
help
wait
walk distance
place stay
hotel stay
week
hotel hotel
door
bring
overall
order
far
turn
quite
able
desk
hotel hotel
open
hotel good
nice hotel
new
town
run
watch
large
long
plenty
felt
end
saw
walk
club
outside
provide
lounge
water
ask
fact
early
big
probably
happy
buy
room clean
recommend hotel
bite
come
beach
resort
excellent
staff
friendly
lot
pool
book
people
small
place
great
hotel
great
restaurant
street
time
good
nice
room
hotel
day
go
really
little
travel
fun
trip
great hotel
wonderful
best
use
lobby
check
area
way
away
say
great
think
make
eat
city
amaze
better
try
look
close
lovely
give
breakfast
need
problem
leave
stay night
experience
sure
drink
nearby
even
meet
pay
visit
right
great place
keep
tour
recommend hotel
highly recommend

Neutral Sentiment

Word Cloud

room
hotel
time
day
stay
food
small
resort
breakfast
staff
place
night
nice
beach
great
people
really
good
little
service
restaurant
pool
better
area
look
take
tell
water
need
say
bad
clean
price
work
close
bathroom
shower
desk
lot
leave
bar
walk
eat
way
use
want
best
think
make
street
park
pay
coffee
bite
city
comfortable
feel
trip
room clean
great location
average
build
new
long
different
probably
overall
expect
morning
hour
lovely
bed
go
book
airport
experience
recommend
far
away
bring
buffet
travel
big
definitely
sure
nothing
return
excellent
fun
floor
right
pretty
table
staff friendly
stay hotel
disappoint
lobby
check
quite
view
available
couple
stay night
beautiful
speak
safe
money
door
vacation
expensive
problem
felt
dinner
week
huge
thing
kind
set
drink
local
taxi
enjoy
line
reception
cheap
provide
help
run
decent
old
outside
person
cost
buy
plenty
tiny
location
order
visit
charge
early
business
tour
choice
good location
yes
friendly
standard
rate
cleaning
large
happy
easy
free
know
consider
quiet
ask
tip
give
noise
especially
start
fine
safe
money
cheap
room clean
pretty
sure
definitely
nothing
return
excellent
fun
floor
shower
close
bathroom
right
work
bar
sure
big
lot
desk
leave
hour
expect
overall
people
great
eat
way
husband
walk
bad
say
need
trip
old
little
good
tell
water
take
restaurant
better
pool
area
look
food
small
bite
city
comfortable
come

N-Gram

N-Gram merupakan potongan sejumlah karakter dari suatu string tertentu atau potongan jumlah (n) kata dari suatu kalimat. Jadi setiap string diproses akan menjadi potongan-potongan n kata. Tim kami menggunakan trigram untuk pengkategorian teks tersebut kedalam n-gram.

```
def get_top_n_gram(corpus, n=None, gram=None):
    vec = CountVectorizer(ngram_range=(gram,gram)).fit(corpus)
    bag_of_words = vec.transform(corpus)
    sum_words = bag_of_words.sum(axis=0)
    words_freq = [(word, sum_words[0,idx]) for word, idx in vec.vocabulary_.items()]
    words_freq = sorted(words_freq, key = lambda x: x[1], reverse=True)
    return words_freq[:n]
```

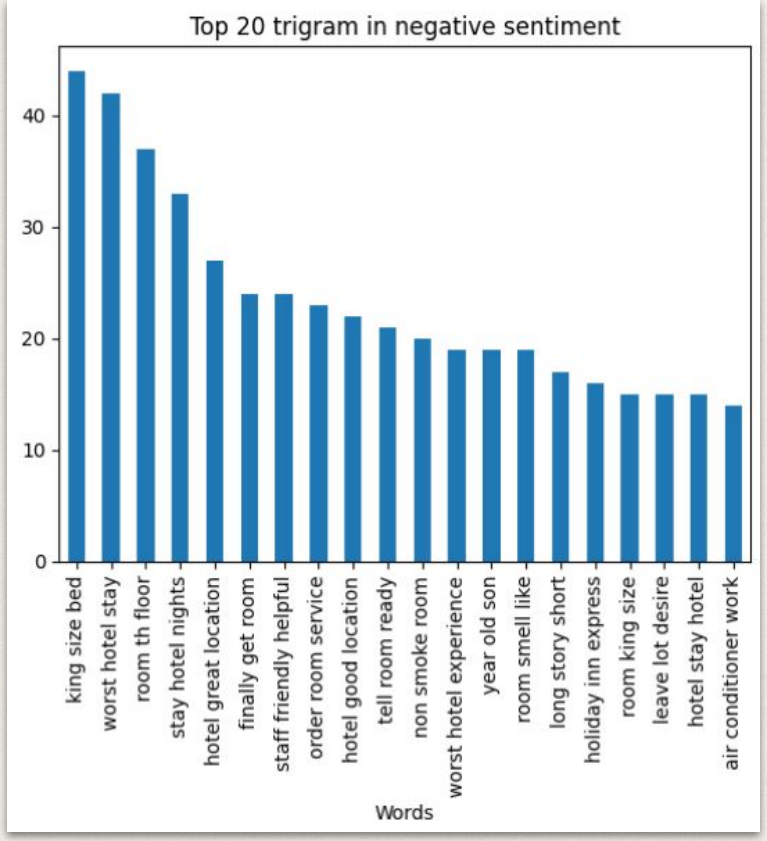
- Membuat function dengan nama **`get_top_n_gram`** yang digunakan untuk menghitung frekuensi dari setiap kata
- Menggunakan **`corpus`** sebagai package yang akan mengakses kumpulan kata

- Memanggil function **`get_top_n_gram`** dengan parameternya yaitu **negative sentiment** dengan menampilkan 20 kata teratas dengan menggunakan **trigram**

```
common_words = get_top_n_gram(negative_sentiment['cleansed_review'], 20,3)
ngram = pd.DataFrame(common_words, columns = ['Words','count'])
plt.rcParams['font.size'] = '10'
ngram.groupby('Words').sum()['count'].sort_values(ascending=False).plot(
    kind='bar', x='count', y='Words', title='Top 20 trigram in negative sentiment')
plt.show()
```

Negative Sentiment

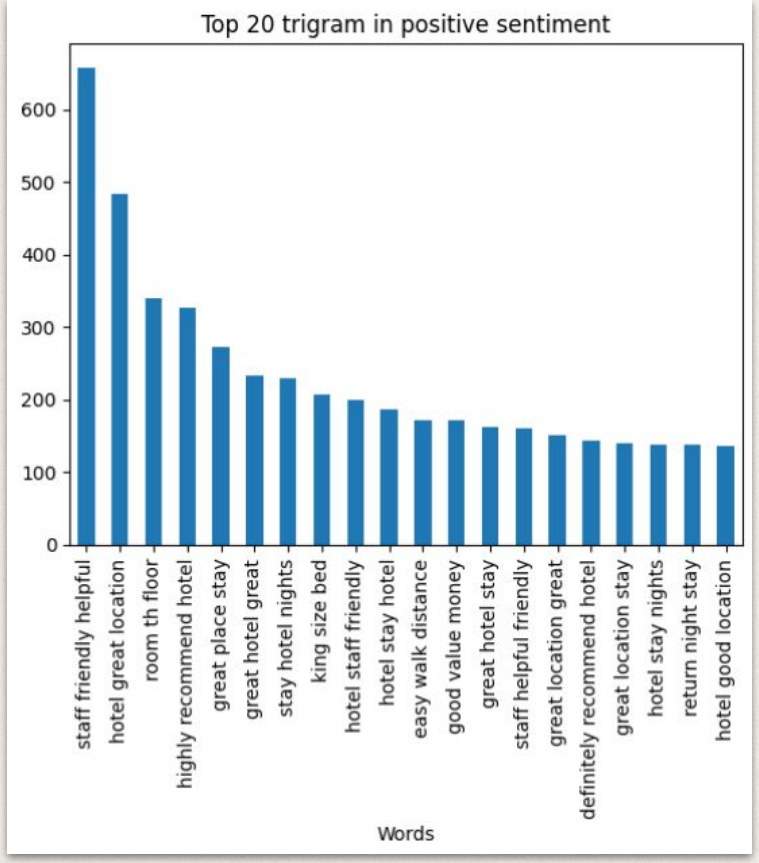
N-Gram



Pada Top 20 Trigram *negative sentiment*, diagram pertama memiliki jumlah *review* ±45 ulangan kata "*king size bed*". Selanjutnya, diagram kedua dengan perbandingan tidak jauh berbeda menampilkan ketidaknyamanan hotel dengan kalimat "*worst hotel stay*" serta di diagram ketiga, yaitu pada *stay "room the floor".* Hal ini menunjukkan bahwa kalimat tersebut merupakan kalimat yang paling sering digunakan oleh *reviewer* untuk memberikan *review* negatif terhadap Hotel.

Positive Sentiment

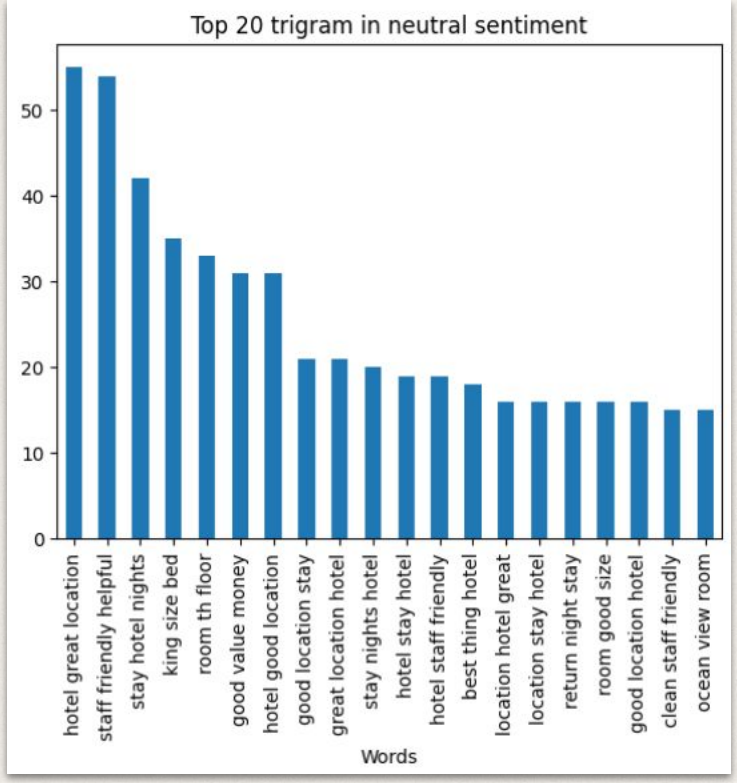
N-Gram



Pada Top 20 Trigram *positive sentiment*, diagram pertama dengan jumlah review kurang lebih 600 ulasan menampilkan keramahan staf dalam membantu (*staff friendly helpful*). Selanjutnya pada urutan diagram kedua dengan jumlah review kurang lebih 500 menampilkan pemilihan lokasi hotel yang baik (*hotel great location*). Hal ini menunjukkan bahwa kalimat tersebut merupakan kalimat yang paling sering digunakan *reviewer* dalam memberikan *review positive* terhadap Hotel.

Neutral Sentiment

N-Gram



Pada top 20 Trigram untuk neutral setimen, diagram pertama dengan jumlah kurang lebih 60 mengatakan terkait pemilihan lokasi hotel yang baik (hotel *great location*), selanjutnya dengan jumlah yang hampir sama mengatakan terkait keramahan staff hotel dalam membantu (*staff friendly helpful*), dan yang ketiga yaitu pada kalimat *stay hotel nights*. Pada diagram di urutan pertama dan kedua ada kaitannya pada positive sentiment yang memberikan review terkait Hotel tentang lokasi hotel tersebut dan staff yang bekerja pada hotel tersebut.

2022

HOTEL MANAGEMENT

BUSINESS

Business Recommendation

Negative Sentiment Berdasarkan kata-kata yang sering muncul

King Size Bed

king size bed 1 dari 33

rated 5.5 1-10 scale start pros 1. street waikiki beach 2. lulu good breakfast right upstairs 3. honolulu zoo right, cons 1. reserved 2 double beds arrival 1 king high season did ancient rollaway charge inn 9 foot 11 extremely small room 2. dollars day park onsite 3.view 4th floor wall hotel, 4. mildew tub 5.the door heavy wo n't stay open, 6. staff not friendly, 7. bugs room, hotel old not updated smaller motel 6 room good budget minded n't care room long bed, king size bed somewhat confortable,	2	90	503	negative	11/03/2020
pretty slummy booked suite people thought based description, actuality moderately large room king size bed dinky sofabed small adult-sized people, bait-and-switch slumminess place, litany things went wrong tv loud static minutes hairdryer did n't work bar closet fell guess good thing no hangers, saw little critters sharing room toilet temperamental began drilling 8:00 morning right room hot water sporadic keys stopped working occasions, not desk staff surly unhelpful time, condado area nice convenient favor avoid place cheap rates frustration n't worth,	1	81	561	negative	26/12/2021
upgrade outdated arrived given junior suite marriott silver status, upgraded room joke, switches broken linens old bed sagged lcd tv sitting radiator not bed, addition nearly impossible king size bed no walking room, room away highway road noise bad, wife didnot sleep wink night, morning canceled 2 days reservation moved towneplace suites near airport, half price better renaissance, worst marriott stayed, stay away,	1	63	421	negative	10/01/2022
n't let whitewash fool lobby looks spectacular marble lights, floors decore old falling apart cheap, interior room old used furniture king size bed simply double beds pushed, water presure awful shower height built short persons, parking non-existent unless want pay 18 day valet, pool tiny spa area joke, prepared pay parking overpriced breakfast ihop block coffee room, cable tv 7 channels small tv set.no view ocean.go money,	2	67	430	negative	08/05/2020
worst nightmare life stayed bavaro princess dec 29th jan 6. check expecting king size bed booked wait enjoy unfortunatley got room saw 4 single beds tv broken outside room big lake sewage broken pipe, called complain told no did morning ache single beds shared girlfriend sinking went room waited 3 hours staff room, second room bigger mediocre best, food bring, need reservations restaraunts, guess book 25percent capacity restaurant, curious seating 150 people everytime ate dinner 20-25 people dining, asked waiters told hotel qouto food, make 50 steaks gaucho wonton wonton soup sakura no 2 shrimps seafood pasta dish bella pasta shame rationed food 5 star hotel staff nice strict orders not extra food away oh best eat restaurants wake 9 bus trolley way lobby reserevations guess restaurants taken everyday not stuck eating buffet yuk, come resort,	1	136	855	negative	12/04/2020

Berdasarkan hasil review untuk negative sentiment yang diberikan oleh para wisatawan terhadap pihak hotel tentang "*king size bed*", dapat disimpulkan bahwa hotel memiliki fasilitas yang **Kurang baik** terhadap ukuran **dari tempat tidur**. Para wisatawan mengeluhkan ukuran tempat tidur yang tidak sesuai dengan pesanan, tempat tidur yang sudah usang, ukuran tempat tidur yang terlalu kecil, dan lain sebagainya.

Rekomendasi Negative Sentiment Berdasarkan Kata yang Sering Muncul

King Size Bed

Berdasarkan permasalahan terkait "**king size bed**", beberapa rekomendasi dari tim analisis adalah sebagai berikut.

01

Penyusunan dan implementasi *quality control* pada tempat tidur di setiap kamar yang tersedia

02

Penggantian tempat tidur yang sudah tidak layak pakai.

03

Lebih teliti dalam mempersiapkan kamar sesuai pesanan.

Negative Sentiment Berdasarkan kata-kata yang sering muncul

Worst Hotel Stay

vorst hotel stay 1 dari 36

not waste amsterdam visit unfortunatley stayed hotel, worst hotel stayed, rooms small smelly uncomfortable distubing beds old stained sheets, teribble stay.this hotel totally ruined amsterdam visit,	1	26	200	negative
appalling worst hotel stayed, not recommend dog.the major problem staff reception breakfast room, good course customer service not astray rude unhelpful, amsterdam 3 times year come away impression like,	1	29	205	negative
hated auto hogar stayed auto hogar night august 2007 absolutely horrible experience, dirty rooms paper walls calling desk noise walk indoor parking garage room, worst hotel stayed overseas, location good stay here- plan spend time outside room, hotel damper quick stay barcelona, usually laid hotels absolutely hated auto hogar,	1	49	330	negative
not stay hotel brought group february worst hotel experienced, potential beautiful hotel maintenance housekeeping turned disaster, market luxury hotel not act togeter not book hotel disapointed, casino spa not open lots construction rooms dirty suites not closet doors hotel lobby bathrooms dirty order,	1	43	305	negative
tthe worst hotel experienced read bad reviews desperate room busiest weekend amsterdam, knew construction entire hotel torn apart, signs hotel promised 9-6 p.m. construction jolted bed 7 a.m. sound jackhammering sawing, entire room filled dust, room untreated drywall walls mold bathroom walls no telephone room 150 euros night, yes location ideal hotel closed construction really not professional guests especiall not price, checked able better half price,	1	66	459	negative
worst hotel experience memory checking room 610 smelled strongly cigarette smoke fiancee allergic reaction did not sleep night, spoke john manager duty not fix problem according hotel completely sold able moved room day, bathroom tiny room far expectations hotel price point, bathroom poorly maintained caulking tile loose moldy shower head intense not shower extreme discomfort pressure water, furthermore ipod dock not functioning.the following morning requested received larger room 1225, room larger standards, smelled stale cigarette smoke not horribly previous room, cigarette burns carpet room non smoking, felt no rooms did not smell like smoke settled room.after 1225 night received notice checking day door check day, return desk resolve problem.during stay wait staff restaurant extremely inattentive aloof, service received worst restaurant service received, overall staff pleasant not friendly did not remember not welcoming, fiancee not stay clift advise,	1	137	971	negative

Berdasarkan hasil *review negative sentiment* "*worst hotel stay*" oleh para wisatawan terhadap pihak hotel, pihak hotel memiliki kesan yang **Kurang baik** terkait **beberapa ruangan** hotel. Mereka mengeluh terkait kebersihan kamar, seperti kamar yang berdebu, bau tidak sedap, bau asap rokok, dan lain sebagainya.

Rekomendasi: Negative Sentiment Berdasarkan kata-kata yang sering muncul

Worst Hotel Stay

Berdasarkan keluhan "***Worst Hotel Stay***", kami merekomendasikan pihak Hotel untuk melakukan beberapa hal sebagai berikut.

01 Meningkatkan kinerja cleaning service, seperti pengecekkan kebersihan hotel di seluruh ruangan hotel dari segi ruangan kamar tidur, lobby, meeting room, restaurant, mushola, dll

02 Memperhatikan lagi pemberian pengharum ruangan dalam mencegah aroma tidak sedap di setiap sudut hotel.

Negative Sentiment Berdasarkan kata-kata yang sering muncul

Air Conditioner

air conditioner 1 dari 59

noise airconditioner-a standard, arranged stay travel agency unfortunately warwick seattle hotel dissapointment trip, 3 night stay warwick changed 3 rooms, starting minute stay hotel personnel didn`t make feel like guest like intruder, reluctant help solve complaints, hotel right downtown 5 minutes really good restaurants like good thing, availability room offered 2nd floor window directly opening car parking level, changed room, 3 rooms loud sound coming air conditioner/ heating unbelievable hotel, hotel personnel told standard noise rooms, tried avoid using night order sleep possible watching tv loudly,	1	86	614	negative
disappointed just returned weekend getaway new orleans, chose dauphine orleans hotel, stayed hurricane katrina beautiful newly decorated new room.after told no refunds arrived lobby ceiling tiles falling extension cords box fans wired air conditioner vents dirty room blotched ceilings poorly patched dirty floor bathroom ice bucket not emptied coffee not supplied poor air conditioning.upon speaking guests couple changed rooms twice stay faulty air conditioning.i understand new orleans went hurricane hotel not prepared open completely renovated not open, gives poor idea progress new orleans not fair establishments successful.we return beloved new orleans not dauphine orleans,	1	94	684	negative
dreadful, stay, phone did not work, air conditioner did not work, tv remote did not work, smoking room, bartender exceptionally rude, waited hour room service, food nasty, drunk woman passed hallway not making, nicole desk unconcerned completely indifferent, bright spot john concierge desk, timely assistance great sense humor maid stay tolerable,	1	51	350	negative
worst hotel stayed hotel did not live pictures web site, checked july 4 2007 checked 2 hours later, lobby old run room no air conditioner carpet ammenities room 1960 management rude charged day checked thing got, teenagers drinking hotel, hotel dirty not kept, not recommend hotel,	1	46	283	negative

Berdasarkan hasil *review negative sentiment Air Conditioner* yang diberikan oleh para wisatawan terhadap pihak hotel, **kualitas *Air Conditioner*** pihak hotel memiliki kesan yang **kurang baik**. Para wisatawan mengeluhkan AC yang tidak berfungsi dan beberapa ruangan (seperti *lobby*) yang tidak didukung oleh fasilitas AC.

Rekomendasi: Negative Sentiment Berdasarkan kata-kata yang sering muncul

Air Conditioner

Berdasarkan keluhan "***Air Conditioner***", kami merekomendasikan pihak Hotel untuk melakukan beberapa hal sebagai berikut.

01 Rutin melakukan **pengecekan AC** yang ada di seluruh hotel, baik itu kamar tidur, *lobby*, *meeting room*, *restaurant*, musholla, dan tempat lainnya.

02 Menambahkan beberapa **unit AC baru** dan menempatkannya di setiap ruangan tertutup untuk menjaga stabilitas suhu dan kenyamanan pengunjung.

03 Menambah beberapa **unit penunjang** yang dapat membantu pergerakan **sirkulasi udara** di ruangan semi terbuka, seperti penambahan beberapa unit kipas angin.

THANKS!

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DO YOU HAVE ANY QUESTIONS?