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SENTIMENT ANALYSIS IN RESTAURANTS ON SOCIAL MEDIA REVIEWS: The Case of Giethoorn Restaurants

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September, 2020

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Acknowledgements

I would like to express my sincere gratitude to my supervisors, Professor Paulo Rita and Professor Sérgio Moro, who guided me to finish this dissertation especially in this pandemic period. Their guidance, insights and encouragement through all the research was extremely helpful.

Besides that, I would also like to express my great thanks to my friends - Ruben Ropman, who has helped me to gather all the necessary information from Giethoorn and Julia Ruth Schnetzer and Yanjun Li who have always accompanied me and gave me all the valuable discussions on the thesis.

Last but not least, I would like to thank my families to give me all the supports spiritually during this journey, especially when I am living far away from them in this special period.

Abstract

Social media has become a main platform for users to express their opinions and feelings and a vast number of available and valuable data in form of text has been created for researchers and operators to hear the users' voice in different industries. As a consequence, text mining and sentiment analysis have gained big attention and the supporting business intelligence tools to analyze the unstructured data and interpret it into useful and readable information also have been developed rapidly.

The Lexalytics, a text mining artificial intelligence tool, is applied to support to present a research method using data mining in order to suggest how to improve the performance of Zwaantje, a restaurant in a touristic Dutch village, through analyzing the reviews of all the restaurants in the village from the most frequently used social media platforms under the four restaurant quality factors namely food and beverage, service, atmosphere and value.

Finding of the research is presented by the key themes extracted by Lexalytics with comparison of the customers' review sentiment between Zwaantje and the benchmark restaurants set by a specific approach under the abovementioned quality dimensions, in which the F&B and service are most commented by the customers. The outcomes demonstrate that text mining can generate insights from different aspects in the restaurant industry and the proposed approach are valuable to the restaurant management.

Keywords: Social Media Reviews, Text Mining, Sentiment Analysis, Lexalytics, Restaurant Management, Giethoorn.

Resumo

A internet e as redes sociais tornaram-se a principal plataforma para os utilizadores expressarem as suas opiniões e "sentimentos". Um elevado número de dados encontra-se disponível para pesquisadores e operadores conhecerem as ideais dos usuários sobre diferentes sectores.

Como consequência, o data mining e a análise de "sentimentos" atingiram um elevado protagonismo, assim como as ferramentas de suporte para analisar os dados não estruturados e interpretá-los em informações úteis e legíveis.

O Lexalytics, uma ferramenta de inteligência artificial de data mining, é aplicado como suporte para apresentar um método de pesquisa para sugerir como melhorar o desempenho do "Zwaantje", um restaurante situado numa vila turística holandesa, por meio da análise das avaliações de todos os restaurantes da vila presentes na internet, tendo como base os quatro factores de qualidade do restaurante, ou seja, comida e bebida, serviço, ambiente e valor.

O resultado da pesquisa é apresentado pelos principais temas extraídos pelo Lexalytics, tendo como base a avaliação dos clientes apresentada para o "Zwaantje" face aos restaurantes de referência, consubstanciada numa abordagem específica sob as dimensões de qualidade acima mencionadas, em que a comida, bebida e serviço, são as variáveis mais comentadas pelos clientes.

Os resultados demonstram que o data mining pode gerar percepções sobre diferentes aspectos do sector da restauração e a abordagem proposta é valiosa para a gestão dos restaurantes.

Palavras-chave: Análises na Internet e Redes Sociais, Data Mining, Análise de "sentimentos", Lexalytics, Gestão de Restaurantes, Giethoorn.

Table of contents and figures

Glossary of acronyms

ABTA	Association of British Travel Agents
EWOM	Electronic Word of Mouth
F&B	Food & Beverage
SA	Sentiment Analysis
SD	Service Dimensions
SPP	Sentiment Phrases Percentage
STC	Sentiment Themes Clouds
STE	Sentiment Themes Extraction
SW	Sentiment Words
SWC	Sentiment Word Clouds
SWE	Sentiment Words Extraction
TM	Text Mining
NLP	Natural Language Processing
UGC	User-Generated Content
WC	Word Clouds

General Index

1   Introduction

Social media collects 7.6 billion people in the world and 53 percent of them are active social media users (Shaw, 2018), who have been cultivated and encouraged to share their purchase experiences through on-line reviews, which also have been taken as references for users to buy products and services in the era of Web 2.0. Researchers and analytics get new possibilities from the data sources generated by the massive growth of the User-Generated Content (UGC) (Lu & Stepchenkova, 2015), which makes it more and more important to explore how to apply the UGC to serve for the business and society development.

To better understand the UGC and transfer the available vast on-line text reviews into valuable information, text mining and sentiment analysis through business intelligence tools have been developed rapidly these years (Xu, Wang, Li and Haghighi, 2017). The Lexalytics, a natural language processing tool, is applied in this research to analyze the customers' reviews from the primary social media platforms: Google, Facebook and TripAdvisor, with a focus on a sample of restaurants in Giethoorn, a Dutch touristic village.

Restaurant Zwaantje was chosen as an example to compare with the benchmark restaurants in the same area, to explore a family running restaurant could take advantage to apply the available social media reviews and text mining tool to support its managerial decisions.

1.1   Statement of the Problem

Tourism industry directly contributed 3.3 percent of the total global GDP, together with the indirect contribution, accounted for 10.4 percent in 2019 (Statista, 2020), which has raised a great interest for researchers in restaurant industry, one of the sub-sectors of the tourism, with different subjects like marketing, management science and business intelligence applications. Restaurant managers should understand and meet consumers' needs, wants, and demands to succeed in this competitive industry (Gregoire, Shanklin, & Greathouse, 1995). With the rapid development of social media and business intelligence tools, tourists' and customers' voices become easier to collect, giving new chances and challenges to researchers and practitioners to analyse to support managers' decisions to solve challenging problems, apply data mining to find the useful hidden information, explore new opportunities and forecast demands. Text mining and sentiment analysis are one of the most frequently approaches applied to identify the meaningful information behind the loads of content in social media (Salloum, Al-Emran, Monem and Shaalan, 2017). Pekar and Ou (2008) conducted a research in sentiment analysis on

the pre-defined dimensions such as food, room, service, facilities and price by extracting 268 reviews from social media epinions.com, proposed and investigated a method to recognize the relationships between subjective expressions and references to features of hotel products. This study applied the text mining and sentiment analysis approach by Lexalytics to provide the relevant themes from the UGC under the dimensions of F&B, service, atmosphere and value in a specific tourism area with 28 restaurants to strengthen the previous studies in the restaurant industry.

Besides that, the previous studies recently show that the most frequently mentioned word in both positive and negative reviews was "food" (Bilgihan, Seo and Choi, 2017), which is also demonstrated by the results of a study by Namkung and Jang (2007), indicating that food quality has been seen as a vital component in the customers' satisfaction when dining out. Meanwhile, Baker and Crompton (2000) found that the food quality plays a fundamental role in reinforcing patrons' behavioural intention on restaurants. According to the Bilgihan, Seo and Choi (2017), if taking out of the dimension of food, the service quality or value of money that may taint the customer's experience and generate negative comments. Shatnawi, Hakam (2019) found out that around 20% of the difference for the tipping intentions is based on the service quality, food quality, restaurant environment, in which food quality has a bigger influence in explaining the variation in tipping intentions as compared to the rest of the investigated factors. Based on the previous researches, this study collected 11,140 reviews to continue to dig the scale of importance of service dimensions in restaurant industry in a specific tourist area.

Most of the 28 restaurants in Giethoorn are family businesses, which are lack of professional management team to apply and maintain their social media platforms, leaving space to analyse the reviews through a scientific method to understand what customers' experiences and expectations. This study also aims at filling this void and helping the manager of Zwaantje, one of the bad-performed restaurants, to improve its performances in different service dimensions by providing recommendations through the relevant themes that may unveil how consumers' satisfaction to be perceived.

TripAdvisor, Google and Facebook are the most used social media platforms by the tourists in Giethoorn, where the UGC are categorized into four service dimensions, namely F&B, Service, Atmosphere and Value to be analyzed in this study, attempting to answer the following research questions:

RQ1: Among the F&B, Service, Atmosphere and Value dimensions, which are more commented by Giethoorn restaurants' consumers?

RQ2: Compared with the benchmark restaurants in Giethoorn under the abovementioned service dimensions, what are the key themes from the UGC that the manager of restaurant Zwaantje should pay attention to?

1.2   Research Purpose

This study offered a text mining analysis of UGC from the most used social media, analysed 4,832 reviews from 28 restaurants including Zwaantje and the other restaurants in Giethoorn, during the period before August 2018, regarding the sentiments expressed by customers under the restaurant service factors. Lexalytics, an information processing tool, was used to discover the sentiment of the customers reviews, setting up the benchmark restaurants and allocating the key themes that may affect customers' satisfaction. What's more, by comparing the targeted restaurant Zwaantje and the benchmark restaurants in terms of the phrases and themes of the sentiment, several suggestions are concluded to the management of Zwaantje. Furthermore, this research also adds deepness for the discussion on the restaurant quality factors perceived by clients that may then lead to their behavioural intentions.

Last but not least, the findings of this study could help the potential customers and the restaurant operators to extract the valuable information from UGC and then converted to competitive intelligence and actionable decisions. It would also provide a useful framework for future researches on the analysis of UGC in the restaurant sector. This contribution is very important because of the limited empirical studies on text mining analysis of social media reviews in Giethoorn.

2 Literature Review

2.1 Website 2.0 and the User-generated Content (UGC)

While previous researches highlighted the high difficulties aligned with adding content in the era of the Web 1.0 (Flew 2003; Blank and Reisdorf 2012), the generation of web content was limited to a few people which were capable of overcoming technical and financial issues regarding the creation of web content (Baginski, Sui and Malecki, 2014). In line with technological improvements which has resulted in the creation of Web 2.0, previous obstacles and barriers could have been overcome, which resulted in generating a large quantity of data available for the general public which has been accelerated by an enhancing popularity of social media and the prevalence of UGC (Baginski, Sui and Malecki, 2014). UGC refers to content created by consumers regarding a brand or experience with the aim of supporting other consumers in the process of consumption (Smith, Fischer and Yongjian, 2012). According to the vast acceleration in terms of smart device technologies, the trend of online reviewing and commenting has been further strengthened, providing the consumers in the 21st century with the ability of sharing experience in a real time setting. As a consequence of increasing social media usage as marketing communication channel, consumers' voices have become essential. As emphasized by Kabadayi, S. and Price, K. (2014), the interactivity, engagement and interactions as source of providing information to other customers through feedbacks, comments and reviews have shaped the consumers' perceptions and expectations.

2.2 eWOM

The electronic word-of-mouth, shortly referred to eWOM makes an essential element of the tourism sector as it is reflected the consumers' attitudes, intentions and experiences (Doosti et al., 2016). As emphasized by researches, the impact of eWOM on consumers is exceeding the other marketing channels such as print ads, personal selling and radio advertising (Engel, Kegerreis & Blackwell, 1969). Specifically, among consumers characterised by little expertise in a product category (Gilly, Graham, Wolfinbarger, & Yale, 1998), who perceive decision making as high risk (Bansal & Voyer, 2000), or who are deeply involved in the purchasing decision (Beatty & Smith, 1987) and much more intended to listen to the others' opinions for product or service advice. Therefore, eWOM displays an important tool for marketers and consumers for delivering product and service information (Levy and Gvili, 2015). EWOM is commonly used by marketers as well as consumers who either spread the word of mouth on various

platforms or share their experiences when using products or services which further supports others when making decisions on purchases. Due to the ABTA report, millennials prefer to booking their travels based on travel professionals than arranging by themselves (Calder, 2018). According to a Murphy, R. (2018), 85% of consumers trust online reviews as much as recommendations from their families or friends (Local Consumer Review Survey, 2018). Almost 70% of consumers tend to choose local service or products with positive reviews, while 40% of consumers will not choose local service or products with negative reviews (Shaw, 2018).

2.3   Social Media Reviews Influence on Purchasing Decision in Restaurant Industry

Over the years, reviewing via social media has become one of the most important reference sources before customers make their purchasing decisions (Cheung and Thadani, 2012). In line with a survey conducted by Channel Advisor, 90 percent of online consumers take reviews into consideration, and 83 percent of them sense the influence of online reviews on the actual decisions when purchase (Nittala, 2015). The online review is real-time, persuasive and trustworthy. It provides important references and help tourists to search for information, and ultimately affects tourists' decision-making.

As highlighted by Ryu, Lee and Gon Kim (2012), consumer behaviour is influenced by internal and external attributes such as environment, food, services and value, etc. The overall image of a restaurant affects the perceived value that a customer shares about it, what in return determines the satisfaction of customers, which again, illustrates a predictor of the consumer behaviour (Ryu, Lee and Gon Kim, 2012). Further studies by Kivela, Inbakaran and Reece (1999) pointed out the complexity in selecting an adequate restaurant by identifying specific variables that consumers apply and further provides a framework for the decision making process. In dependency, it is due to the high complexity as well as the increasing competitivity which has served as main motivation of investigating the customer behavioral patterns and decision-making process when selecting restaurants.

Ye et al.(2011) surveyed a hotel user evaluation website and found that for every 10 percent increase in the rating of online travel reviews, the online booking growth of the hotel exceeded 5 percent; Lu et al. (2013) concluded that the online reviews and bookings in the restaurant were similar to those of Ye. The hotel's star rating did not affect its sales, while the improvement in customer ratings did increase the sales and also the price of the hotel room (Öğüt & Onur Taş, 2012).

2.4 Restaurant Service Quality Factors

With recognising the importance of customers' perceptions, the amount of instruments and tools for accessing customers' perceptions in terms of service quality factors within the restaurant industry has increased. Accordingly, studies have identified meal experience, food and beverages, service, atmosphere and price as well as value as decisive for consumers when selecting a restaurant (Hansen, Jensen, & Gustafsson, 2005).

One of the first instruments introduced refers to SEVQUAL, which has been modified and refined by reducing it to 22 items across five service dimensions: tangibles, reliability, responsiveness, assurance and empathy (Parasuraman et al. 1988), includes the appearance of physical facilities, equipment, personnel, and communication materials, while the reliability attached ability to perform the promised service dependably and accurately; the responsiveness dimension contains the willingness to help customers and provide prompt service; the assurance dimension embodies the knowledge and courtesy of employees and their ability to convey trust and confidence; and the empathy dimension consists of factor of caring and individualized attention the employees provide to the customers (Parasuraman et al. 1988). Based on the SERVQUAL, the DINESERV instrument which measures the service quality had been developed, which shares the same dimension structure across 29 items (Stevens et al. 1995). Kim, McCahon and Miller (2003) added three sub-dimensions: physical facilities, equipment, and appearance of personnel under dimension tangibles to the previous instrument. Raajpoot (2002) developed another instrument TANGSERV on the basis of the previous instruments to cover ambience/social factors, layout/design factors and product/service factors. Kinkaid, Baloglu, Mao, and Busser (2010) adapted the TANGSERV tool to examine the service quality tangible factors on the customers' intentions and behaviors. The results found that food, service, staff and accessibility were the most important attributes to the customers' satisfaction, thereby influence their intention to recommend and re-visit. Later, Antun et al. (2010) proposed the DinEX instrument to measure the specific quality dimensions, which was generated from 20 items and composed of five attributes: food, service, atmosphere, food healthfulness and social. Diego Bufquin, Robin DiPietro & Charles Partlow (2015) applied the instrument for the research and found that food, service, atmosphere and value factors are the most important, while the social and healthfulness were less important. This study applies food and beverage (F&B), service, atmosphere and value, which are same as the parameters of TripAdvisor, aligned with some factors from the DinEX instrument.

2.4.1 Food and Beverage Quality

6

According to the study by Ryu and Han (2011), among quality factors of food, service and physical environment and price/value, food quality is a significant determinant of customer satisfaction in quick-casual restaurants. The recent research conducted by Diego Bufquin, Robin DiPietro & Charles Partlow (2017) about the service qualities dimensions in restaurant industry, also showed that food quality was the most influential attribute on costumers' satisfaction among the DinEX instrument.

2.4.2 Service Quality

Service quality is first defined as the gap of the service that customers expect and actually received (Parasuraman et al., 1988). Based on the same study from Diego Bufquin, Robin DiPietro & Charles Partlow (2017) about the service qualities dimensions in restaurant industry, the quality of service is an important attribute on customers' satisfaction. Another study earlier by Wu (2013) in the restaurant industry, also proved that service quality is related with the customers' satisfaction.

2.4.3 Atmosphere Quality

Nowadays, costumers go to restaurants expect more than good food, they also want to get great service and nice ambience (Antun et al., 2010). Light, scent, music and color environmental attributes can create atmospherics, which influence the restaurant entry decision (Tantanatewin and Inkarojrit, 2018). Jang and Namkung (2009) did a further research by combining restaurant particular motivators and concrete measures of emotion and found that atmospherics and service function are facilitators to generate positive emotions, thereby, obtain the satisfaction from costumers.

2.4.4 Value

Clemes, Gan, & Ren (2010) gave a definition to the dimension value that it is a ratio between quality (benefit) and cost (price). It is composed of the main attributes like price, product and service quality, brand image and it also is an important factor of the consumer's satisfaction (Trach and Kincl, 2015). Similarity, Jensen and Hensen (2007) put forwards that one of the crucial impacts on costumers' restaurant experience is consumer value.

2.5 Text Mining

Social media platforms have vast of the UGC, which are generally presented in digital attributes and open unstructured text features that are freely expressed by users. The digital attributes include rating valence (positive and negative emotions), emotional polarity, number of on-line user reviews and score variance, while the unstructured text contains a wealth of information such as the users' interests, preferences, intentions, perceptions, emotions and attitudes to product or service. Digital attribute characteristics are generally considered to be based on standard scale coding evaluations, which can summarize different levels of positive, neutral and negative. However, the digital attribute feature is only a general description, and it cannot describe in detail what the customer has evaluated and why. Ghose and Ipeirotis (2011) found that numerical scoring may not fully represent the polarity information in the comments. Chevalier and Mayzlin (2006) found that the customer would read the review text instead of simply looking at scores through their study on the length of the on-line reviews (the total number of words appearing in the online reviews). The perception, experience and emotion of the product or service that expressed by consumers in review texts are more accurate, normally the reasons for the feelings are also explained.

Ghose, Ipeirotis and Sundararajan (2009) studied the effect of text reviews provided by costumers on the variance of the selling price in the online second-hand market. Archak et al. (2011) used text mining methods to mine reviews on two electronic products, extracting attributes and feelings about camera quality, and then estimating their impact on sales. Netzer et al. (2012) used a combination of text mining and semantic web analytics to analyze brand-related networks and implied market structures. Decker and Trusov (2010) used text mining to estimate the relative effects of product attributes and brand names on online product evaluations. Krulwich and Burkey (1997) applied a heuristic method instead of the traditional mathematical induction algorithm to keyword extraction which can establish heuristic search rules and extract representative words and phrases from the text. In this way, the users expectations are better fulfilled with a relatively small computational cost. In this article, text mining is applied to analyze the Giethoorn restaurants' reviews on social media platforms.

2.6 Sentiment Analysis

Sentiment analysis is the automated mining of attitudes towards a subject from textual content (Patodkar and I.R, 2016), which contains paragraphs, speeches, and database sources. SA is the determining process if the text is positive, neutral or negative (Lexalytics, 2019), which

is widely used on UGC (Colace et al., 2015) in recent researches, including reviews and social discussions (Oneto et al., 2016), and can be divided into document level (Tripathy, Anand and Rath, 2017), sentence level (Appel et al., 2016) and aspect level (Shams and Baraani-Dastjerdi, 2017). In this dissertation, the author is only focus on the SA at sentence level, because social media reviews often contain several sentences. Furthermore, SA has been used to a wide range of sectors, including tracking product or service reviews, sentiment trends and predicting stock market trends. It is also widely used in the tourism and restaurant industry.

Based on the study of Gan, Ferns, Yu and Jin (2016), the SA process usually includes information source selection, quality rating, emotional orientation recognition and visualization methods. First, the information source selection means that the extraction of UGC from the major online media platforms, e-commerce platforms or third party comment platforms under a certain period, which is based on the authentic and reliable user comments in the source website or the potential value of sentiment analysis. Second, the quality rating refers to the filter of the quality of the reviews which may be filled with low-quality contents such as spam comments and advertisements. Third, the most important and complex component of the SA is the emotional orientation recognition, which directly determines the effect of the analysis. In the first place, the feature words should be extracted from the hierarchical reviews from the second session. And then the key technologies shall make emotional judgements on the extracted information, which can be divided into two parts: dictionary-based sentiment orientation recognition methods and machine learning-based emotional orientation recognition methods. Fourth, after the results from the emotional analysis from previous session obtained, different visualization methods can be applied to align with the time and regional distribution information to present the results of the analysis. Relying on the outcomes of SA visualization and association or causality analysis, the important decision support information can be further reached.

The SA approach must guarantee a fast and relevant accurate analysis of the social network contents, which are fulfilled with vast of topics, therefore, a general purpose application should be designed. For this reason, there are two major drawbacks of the machine learning techniques, which are (1) often are not able to generate the sentiment well and (2) request a manual note of a training set and phrase which is very time costing for each domain of interest (Diamantini et al., 2019). As a consequence, the author chose SA by means of a lexicon-based approach, that offers higher flexibility and speed in exchange for lower accuracy in sentiment detection. The chosen lexical resource is Lexalytics, where words are annotated with respect to their sentiment score. Lexalytics an on-premises and multi-lingual text analysis engine to provide sentiment

analysis from unstructured text and come up with the readable information via NLP and text analytics. The supporting software illustrates a NLP tool, or in other words, a SA of reviews performed by a computer through bridging the gap among the different possible ways of humans to express themselves. Lexalytics breaks down the full review into individual grammatical elements and simultaneously recognises the context of the grammatical element.

Semantria for Excel, one of the Lexalytics tools, is a text analytics and NLP add-in for Microsoft Excel, which enables Excel to extract, analyze, and visualize information in free-text fields: surveys, comments, reviews, chat logs and so on. It combines all the NLP features to perform data analytics, reporting and visualization. The NLP features contain sentiment analysis, theme extraction, named entity extraction, intention analysis, categorization and summarization. The SA and theme extraction are applied in this article. What's more, it also has several industry packs to pre-build tuning configurations, which increases in accuracy and precision for sentiment, topics and entities.

The basic SA process of Lexalytics includes: (1) Break each text document down into its component parts (sentences, phrases, tokens and parts of speech); (2) Identify each sentiment-bearing phrase and component; (3) Assign a sentiment score to each phrase and component (-1 to +1); (4) Combine scores for multi-layered sentiment analysis if necessary. The whole process of Lexalytics text analytics technology and the NLP feature stack shows the layers of processing each text document goes through to be transformed into structured data, as depicted in Figure 2 (Lexalytics, 2019). The first steps are NLP tasks, namely tokenization, POS tagging, chunk, syntax and lexical chaining. Then it will extract features extraction.

Figure 2 – Lexalytics text analytics technology and NLP feature stack

In this dissertation, phrase extraction and theme extraction, also called broadly NLP context analysis, from the Semantria for Excel are applied to analyse the reviews and to come up with the conclusions, which identify the subjects and ideas that link many different text documents together and helps data analysts understand why people feel the way they do (Lexalytics, 2019). The foundation of NLP context analysis is the noun, which based on more general nouns. Phrases extraction usually uses n-grams analysis, which picks one, two or maximum three words up as the target to analyse (Lexalytics, 2019). Themes are the subjects and ideas that link many different text documents together. Themes are themselves noun phrases, which identified and extracted based on part of speech patterns and then scored the relevance of these potential themes through a process called lexical chaining. Lexical chaining is a low-level text analytics process that connects sentences via related nouns. Context analysis in NLP involves breaking down sentences into n-grams and noun phrases to extract the themes and facets within a collection of unstructured text documents. Through this context, data analysts and others can make better-informed decisions and recommendations along with their goals (Lexalytics, 2019).

2.7   Giethoorn Restaurant Industry

Giethoorn is a Dutch touristic village with 2,624 habitants and 2,032 hectares, of which 152 hectors is lake (Oozo.nl, 2018). Fairy-tale houses have been built alongside the lake and all transportation is done by boat. It gained, therefore, the reputation of the "North Venice" for its specific scenery. Chinese tourists treated it as one of the most beautiful small towns in Europe (Eutravelpartnerships.org, 2018).

Over the past decades, the tourism industry in Giethoorn has flourished, it is estimated that there are 1.5 million visitors per year (Valkeman, 2018). Restaurants, boat rentals, hotels and souvenir shops have made big contribution to the local economic. There are 28 restaurants in the village providing customers with many choices of international food, lovely environment, value of money in various quality levels.

The analyzed restaurant Zwaantje has run by the family since 1992, which contains restaurant and boat rental business. Due to the large amount of the tourists, it has kept bringing considerable profits to the family. The restaurant, located in the entrance of Giethoorn alongside the river, provides Dutch cuisine with an average pricing strategy in the area.

3 Methodology

The purpose of this research is that in the first step to analyse the reviews from the most frequently applied social media platforms, namely TripAdvisor, Google and Facebook, across the region of Giethoorn in the Netherlands through the categories F&B, Service, Atmosphere and Value. The second part aims towards assessing the extent of improvement in performance necessary for the restaurant "Zwaantje" comparing the performances of the benchmarks set by the best performing restaurants across the four categories based on the analysis from the reviews collected from the social media.

3.1 Research Method

For this empirical research relevant information about restaurants located in Giethoorn, has been collected by materialising comments and reviews written by customers on social media platforms namely Google, Facebook and TripAdvisor. The main purpose of this research is to examine the performances of all the restaurants in terms of four categories: F&B, Service, Atmosphere and Value. In order to realize it, the first part applies a social media research approach by identifying the most commonly used social media platforms for reviewing restaurant experiences in that area, followed by the second part devoted to assessing restaurants located in this region through analysing the social media platforms selected in the first part of the research across the four identified categories. The third step aims to compare the three best restaurants with restaurant "Zwaantje" in the above four dimensions respectively.

Selecting a social media approach offers some advantages such as making an informed choice about a topic without spending month of investigation time on the topic by enabling faster, better-informed decisions through analysing, monitoring and engaging. In this research, the social media platforms selected allow analysing the performance of restaurants across four chosen categories in order to establish benchmarks which are further applied as comparison to a specifically selected restaurant to deviate recommendations for a performance boost. Due to the complexity aligned with analysing consumer reviews, a NPL tool Lexalytics is used to enhance the accuracy of the outcome and enable benchmarks in line with performance recommendations.

3.2 Data Collection

In order to assess the performance of selected restaurants across the small Dutch village of Giethoorn, a social media research methodology has been applied by analysing the three most

frequently used social media platforms for rating and reviewing restaurants´ performances. Hence, 28 restaurants of Giethoorn have been investigated among the three social media experience platforms TripAdvisor, Google and Facebook under the four categories namely F&B, Service, Atmosphere and Value. A total of 6,245 reviews were collected from Google, 2,745 reviews from Facebook and 2,150 reviews from TripAdvisor by the end of August 2018, as showed in the Table 1. However, for a more accurate research outcome, the number of analysed reviews has been randomly selected and ranged from 20 to 100, which means that restaurants with a review number below 20 have been eliminated. In terms of restaurants with more than 100 reviews, the most recent reviews have been selected. In total, out of 11,140 available reviews, 4,832 have been chosen for this research. For assuring the meaningfulness of the gathered reviews, Lexalytics has been applied as research supporting tool. The selected reviews have been directly exported from each social media platform.

Table 1 Source for the Reviews

SN	Name	No. of Reviews	No. of Analyzed Reviews	%
1	TripAdvisor	2,150	2,108	44%
2	Google	6,245	1,870	39%
3	Facebook	2,745	854	18%
Total		**11,140**	**4,832**	**100%**

3.2.1 TripAdvisor

As the social media platform which has the most customers' text reviews, TripAdvisor provides precious survey information and plays an important role to understand what the distance between the restaurants' performances and the customers' expectations is. It is the world's largest travel website which has more than 660 million reviews and comments and over 450 million monthly unique visitors (IN Press Center | About TripAdvisor, 2021). On the platform, customers not only can make a reservation for all the restaurants in Giethoorn, but also can check all the restaurants in a ranking list, the scores they get and the text reviews that other costumers created. The ranking performs in four categories: Food, Service, Atmosphere and Value. It offers scores from one star which responds to "horrible" feeling to five stars which responds to "excellent" feeling under the above four categories and an overall rating based on its system formula. However, not all the customers rated all the four categories, some of them

only gave an overall score, which makes it necessary to do the text reviews mining to know better what the real experience that the consumers obtained. In this study, hence, all the rankings from the TripAdvisor are not considered, for the main research objective is to make a conclusion on the sentiment classification through each text review under the four categories namely F&B, service, atmosphere and value.

3.2.2 Google Maps

Google Maps, the most visible review rating system (Pitman, 2018), has experienced the fastest increase in the quantity of reviews compared to the other review platforms since 2015 and its sheer scale added with its native integration into Android devices provide them with both the largest audience and the best way to market to promote users to write reviews for recently visited businesses (Murphy, 2018). It permits its users to create their content, share their experience by writing reviews and insights with answers, posting photographs, updating information with place edits or verify information by checking facts. Based on the above characteristics, Google has gained the biggest quantity of reviews and the second largest number of text reviews from the mainly used social media in Giethoorn. The other reason can be that to write a text review is not mandatory for users. Similar as TripAdvisor, Google also allows users rate from one star to five stars aligned with the overall experience but does not provide rating sub-indicators. Another finding is quite interesting that the text reviews in the Google are shorter than which in the TripAdvisor. In this study, the text reviews are extracted and categorized them under the same four dimensions: F&B, service, atmosphere and value.

3.2.3 Facebook

Facebook is the biggest social media platform in the world, which gains 2.2 billion active users every month (Shaw, 2018). Costumers frequently visit the platform to check business information and product and service reviews and share their experiences by giving rating reviews. Also similar as the two above social media, it provides consumers with a ranking scale from one star to five stars to share their feeling after the purchases, text review space on the platform is not mandatory to fill. The large quantity of users and the easy accessibility make Facebook a very important platform to gather the text reviews for this study. There are 854 text reviews being extracted from the total 2,745 reviews of the 28 restaurants in Giethoorn from the social media. The extracted reviews are also divided by four quality factors: F&B, service,

atmosphere and value, in order to further analyze the customers' sentiments on these different four dimensions.

3.3   Proposed Approach

Figure 1 illustrates the way proposed for extracting useful knowledge from the unstructured reviews from the social media platforms namely TripAdvisor, Google and Facebook, under the four quality factors: F&B, Service, Atmosphere and Value. Macroscopically, there are three parts in the approach: Input, Procedure and Output.

In the Input part, also can be understood as collection part, the reviews from the selected social media are collected. Different languages are translated into English by Google Translator.

Figure 1 - **Proposed Approach**
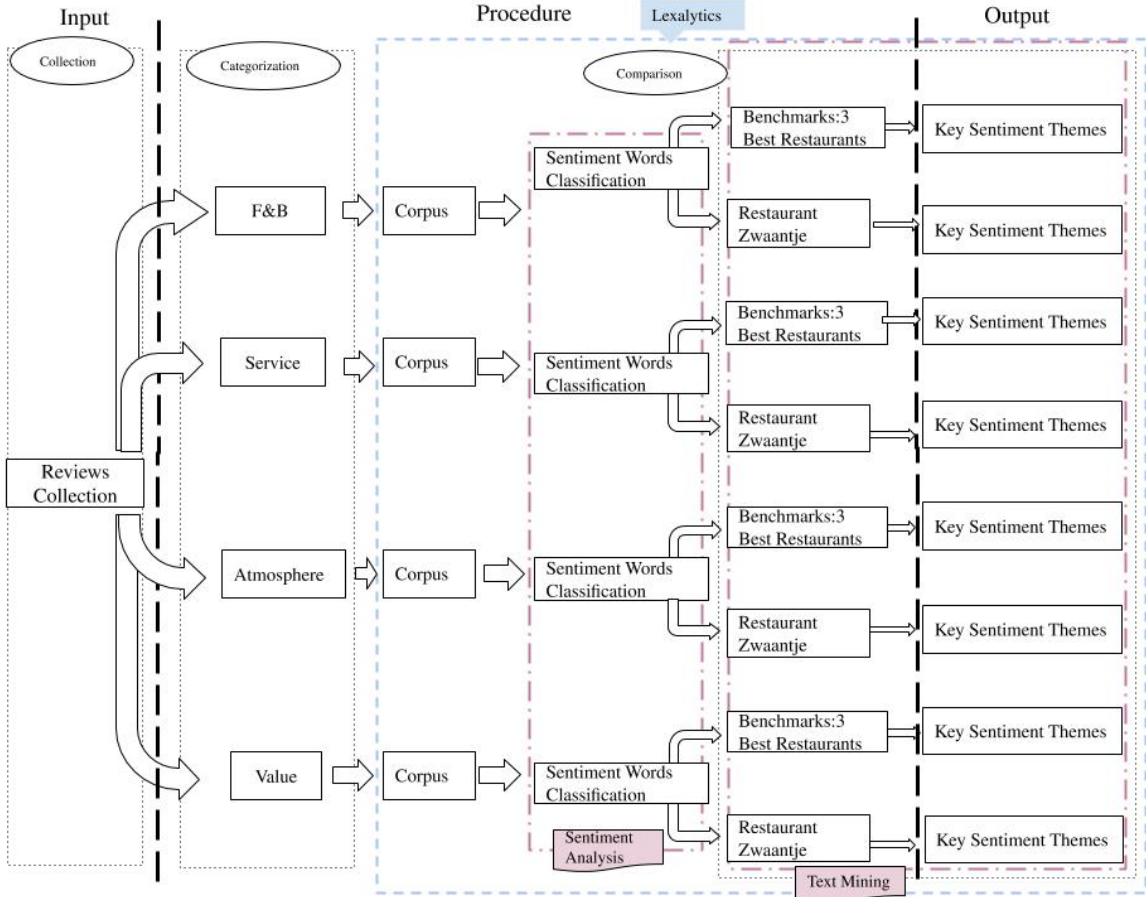
The Procedure is executed manually and by Lexalytics, in which the categorization of the original reviews into the four quality factors, is done manually. And then Lexalytics is used to break the categorized unstructured reviews into corpus and comes up with sentiment phrases

and its clouds and sentiment themes and its clouds in the end. To be stressed that the benchmark restaurants setting up is realized by the classification of sentiment phrases.

The Output part is based on the comparison between the benchmarks and restaurant "Zwaantje" in terms of relevant sentiment words and themes and sentiment words and themes clouds.

3.4 Text Mining for Sentiment Classification

First, to ensure that all the reviews are analysed in a more accurate way, each review text is divided into the above four categories namely F&B, Service, Atmosphere and Value and deleted the unrelated content by reading as the table 2 shows. In this way, the divided texts are more targeted to the categories and more accurate sentiment analysis is guaranteed. At the same time, through counting the total number of reviews under the four categories (Table 3), the author reached the conclusion on extent of importance to the four categories that customers pay.

Table 2 Categorization of Reviews

Items	Description
Text Review (Zwaantje)	Goede locatie maar bediening kan beter Het terras ligt aan de gracht en daardoor mooi en leuk uitzicht. Bediening is te krap voor drukke dagen waardoor het rommelig overkomt. Drankjes zijn vlot geserveerd maar etenswaren kwamen in etappes. Kwaliteit van gerechten redelijk maar niet meer dan dat.Op terras afrekenen lukt niet dus dan maar binnen - dit duurde echter lang. Ruimte voor verbetering zeker gezien locatie.
Translation	"Good location but control is better" May 21, 2018 Jeroen S The terrace is located on the canal and thus beautiful and nice views. Operation is too tight for busy days making it happen messy. Drinks are served quickly but food came in ages. Quality of food reasonable but no more than that. On desk Checkout not so successful but then inside - however, this was long. Room for improvement especially considering location.
Social Media	TripAdvisor
F&B	Quality of food reasonable but no more than that.
Service	Operation is too tight for busy days making it happen messy. Drinks are served quickly but food came in ages. On desk Checkout not so successful but then inside - however, this was long.
Atmosphere	The terrace is located on the canal and thus beautiful and nice views. Room for improvement especially considering location.
Value	N/A

Table 3 Number of Reviews from the Social Media under Four SD

SD	TripAdvisor	Google	Facebook	Total
F&B	1,205	1,134	710	**3,049**
Service	1,041	956	618	**2,615**
Atmosphere	717	675	282	**1,674**
Value	314	230	52	**596**
Total				**11,140**

Semantria for Excel is chosen, a specific text and sentiment analysis tool from Lexalytics for surveys and social media reviews, to analyse the categorized restaurant reviews in the selected social media. The approaches such as text mining, NLP, machine learning, sentiment analysis and themes are applied.

The text analytics technology works by breaking apart sentences and phrases into their components, which then are evaluated in terms of each part's role and meaning through sophisticated software rules and machine learning algorithms. The purpose of the technology is to transfer unstructured text documents into usable and structured data. However, considering the research goal, the reviews are filtered into different categorizations first, which means the sentences or phrases are already the useful information, to guarantee the more relevant results to be obtained. As a consequence, instead of text analytics, the method of this dissertation tends to apply the TM, for the difference between the two theories is that the TM refers to collecting useful information from text documents, text analytics is how a computer transforms those raw words into information.

NLP is a computer technology to understand the underlying meaning of the text documents, to answer the questions: (1) who's talking, (2) what they're talking about, and (3) how they feel about those topics. Through this approach, the features as entities, themes, categories and sentiment and so on can be extracted. In this dissertation, the themes and sentiment features are selected to analyse the reviews.

Machine learning is a set of statistical or mathematical tools and algorithms for training a computer to perform a specific task (Lexalytics, 2019). Lexalytics combines machine learning, lists, pattern files, dictionaries, and natural language algorithms to deal with the specific complications of text. To process a document, Lexalytics has machine learning models like Part of Speech tagging, Chunking, Sentence Polarity, Concept Matrix (Semantic Model) and Syntax Matrix (Syntax Parsing); while to extract the meaningful information, it gets models of Named

Entity Extraction, Anaphora Resolution, Document Sentiment, Intention Extraction and Categorization.

Its system for text analysis combines NLP and machine learning techniques to assign weighted sentiment scores from -1 to 1 to the entities, topics, themes and categories within a sentence or phrase. As table 4 illustrates that the Lexalytics first highlights the text, then picks the phrase out, makes scores for it and came up with the sentiment valuation.

Table 4 Sample of the SW Analysis Report from Restaurant "Zwaantje"

ID	Highlighted Text	Word	Word Sentiment	Word Sentiment +/-	Word Intensifier	WordNegator
24	...rful meals over there, the cook is very **fantastic**.	fantastic	1.068000078	positive	very	
24	we had a **wonderful** meals over there, the cook is very fant...	wonderful	0.800000012	positive		
25	**Good** food and extensive menu.	good	0.5	neutral		
28	it was pretty **reasonable** just Dutch style fast food, burgers, me...	reasonable	0.587635636	positive	pretty	
28	it was **pretty** reasonable just Dutch style fast food, ...	pretty	0.400000006	neutral		

	... was pretty reasonable just Dutch style **fast** food, burgers,				
28	meatballs	fast	0.300000012	neutral	
29	**terrible** food	terrible	-0.75	negative	
30	food and drinks really **good**.	good	0.860000014	positive	really

In this dissertation, the sentiment words extractions of the 28 restaurants in the three social media under the four categories are obtained through the Lexalytics, which are used for setting the benchmark restaurants up under the same dimensions.

3.5 Benchmark Restaurants

Benchmark restaurants are set by ranking the sentiment (+) percentage of all the sentiment phrases of all 28 restaurants from TripAdvisor, Google and Facebook under the categories of F&B, Service, Atmosphere and Value.

3.5.1 Sentiment Words Classification

The Lexalytics works by its machine learning models and recognizes the words from the targeted documents (phrases or sentences) first, and comes up with the sentiment classification in terms of negative sentiment, neutral sentiment, positive sentiment and grand total sentiment from the whole targeted reviews defined by the four categories and specific restaurant from the three selected social media as the Table 5 shows.

Table 5 The SWC from the Restaurant Achterhuus in TripAdvisor under F&B

Word	Negative	Neutral	Positive	Grand Total
good		17	6	23
delicious		10	3	13
great	2		6	8
very good		7		7
excellent			6	6

tasteful	2	1	3
the best		3	3
very tasty		3	3
pleasant	2	1	3
nice	1	2	3
Grand Total 2	39	31	72

Note: the numbers represent the times that the phrases appear in the reviews

3.5.2 Method for Setting the Benchmark Restaurants

Benchmark restaurants are set by the percentage of the sum of the neutral and positive sentiment out of the Grand Total. To make the research result more completed and to get maximum useful information, only the restaurants equal to and more than ten Grand Total and the first three restaurants with most Grand Total are selected as the benchmarks. Table 6 illustrates how the benchmark restaurants are set under the F&B SD in TripAdvisor, by ranking the restaurants based on the largest percentage {(Neutral + Positive)/Grand Total } to the smallest. First, the first ten restaurants with the largest percentage are considered, and then among these restaurants, the first three with the largest Grand Total are chosen to be the benchmark restaurants. Hence, Lindenhof with 100 Grand Total, Grachthof with 75 Grand Total and Achterhuus with 72 Grand Total are the benchmarks under the F&B SD in TripAdvisor.

Table 6 The Benchmark Restaurants under F&B in TripAdvisor

Name	Ranking	F&B Negative	F&B Neutral + Positive	F&B Grand Total	F&B (Positive+Neutral)/Total
Eetkamer	1	0	45	45	100.00%
Otterskooi	2	0	45	45	100.00%
Geythorn	3	0	28	28	10000%
Piccola	4	0	55	55	100.00%
Het Wapen	5	0	16	16	100.00%
Smidse	6	0	17	17	100.00%
Lindenhof	7	1	99	100	99.02%
Grachthof	8	1	74	75	98.67%
Sloothaak	9	1	36	37	97.30%
Achterhuus	10	2	70	72	97.22%

The restaurants in red are the benchmark restaurants

4   Results

According to the same method above, 35 restaurants are set as the benchmark restaurants, among which 9 restaurants are chosen under the categories F&B, Service and Atmosphere respectively, while 8 restaurants which meet the requirement are selected as Table 7 shows.

Table 7 The Benchmark Restaurants

Service Dimensions	F&B	Service	Atmosphere	Value
Tripadvisor	Lindenhof Grachthof Achterhuus	Fanfare Fratelli Eetkamer	Fanfare Grachthof Fratelli	Smit Eetkamer Rietstulp
Google	Hollands Venetie Achterhuus Vishandel Gerrits	Otterskooi Fanfare Jonge Hotel	Achterhuus Fanfare Smit's Paviljoen	Achternhuus Rietstulp Geythorn
Facebook	Lindenhof Grachthof Otterskooi	Jonge Hotel Lindenhof Fratelli	Lindenhof Fanfare Grachthof	Fanfare Fratelli

After the benchmark restaurants are set, all the reviews are combined from the benchmarks in each SD without considering the differences of social media platforms. By analyzing the sentiment of the reviews from the best performing restaurants through Lexalytics, the factors that customers pay attention to are presented through the readable information. Then the SA of restaurant Zwaantje that already made is used to compare with the benchmark restaurants in the four dimensions namely F&B, Service, Atmosphere and Value. In this way, the differences between Zwaantje and benchmarks are found, which is presented by the following part.

Lexalytics provides themes clouds function by the word frequencies, the bigger words the more frequencies and different colours by the variances of positive and negative sentiment, green means positive sentiment and red means negative sentiment, the colours between red and green means there are positive, neutral or negative sentiment of the word, and the tendency to red or green indicates the tone of the sentiment of the extracted words. The sentiment analysis of themes and their clouds is applied to know what the positive key words that Zwaantje is lack of and what negative key words that Zwaantje has compared with the benchmark restaurants, and through the themes extraction, the ideas and subjects that connect the set of text documents are obtained.

The themes extracted from Zwaantje and benchmarks are shown by the words cloud. The themes are divided by key terms with similar terms and sentiment identifiers which are identified by Lexalytics. The frequencies of the theme, the average sentiment scores and the sentiment classification, which includes negative with sentiment scores from -1 to -0.5, neutral with sentiment scores from -0.5 to 0.5 and positive with sentiment sores from 0.5 to 1 are also presented.

4.1   Zwaantje & Benchmarks Comparison by STE and STC under F&B

In regards with F&B, Zwaantje ranks 18 out of 26 restaurants that meet the analysing standard in TripAdvisor, 15 out of 27 restaurants in Google and 15 out of 20 restaurants in Facebook. Hence, according to the ranking, Zwaantje performed below the average in all three social media. There are 88 reviews regarding the F&B from Zwaantje being analysed.

Regarding Zwaantje, the lexalytics came up with the key terms as showed in Table 8: food (meal, course, eaten lunch, dishes, cuisine, taste), restaurant (coffee shop), pancakes, chocolate milk, cup (mug, bottle), cafe (cafe latte) and menu (choices), ranked by frequencies, in which pancakes lead to the positive sentiment, while the others get the neutral sentiment.

The sentiment identifiers on the food are wonderful, main, average, really, bad, lovely, decent, soul, good tasting, local, mediocre, nice, fast, standard, terrible, well-filled lunch package, good hearty, etc. There are also specific themes such as hot chocolate milk, apple pie and pancakes, etc. Themes like authentic restaurant, local food and Dutch style are also pointed out. Bad food, terrible food and lukewarm beer are also extracted as negative themes which should be paid attention to, as showed in Figure 3.

Table 8 Key Themes of Restaurant Zwaantje under F&B

Key Terms (similar terms)	Sentiment Identifiers	Frequencies	Average Sentiment Scores (-1,1)	Sentiment Classification
food (meal, course, eaten, lunch, dishes, cuisine, taste)	good, delicious, wonderful, main, average, really, bad, lovely, decent, soul, good tasting, local,	33	0.44	neutral

	mediocre, nice, fast, standard, terrible, well-filled lunch package, good hearty				
restaurant (coffee shop)	authentic, average, nice,european	5	0.43	neutral	
pancakes	delicious, Dutch, fine food, yummy	4	0.52	positive	
chocolate milk	hot	3	0.48	neutral	
cup (mug, bottle)	small, big, small	3	0.25	neutral	
cafe (cafe latte)	delicious, good	3	0.46	neutral	
menu (choices)	extensive, enough, various	3	0.40	neutral	

*Figure 3 – **STC of Restaurant Zwaantje (Left) and Benchmarks (Right) under F&B***

Table 9 Key Themes of Benchmarks under F&B

Key Terms (similar terms)	Sentiment Identifiers	Frequencies	Average Sentiment Scores (-1,1)	Sentiment Classification
food (dinner, lunch, restaurant, taste, dish)	good, great, delicious,	105	0.65	positive

	mediocre, perfect			
wines	matching, fine	7	0.71	positive
fish	delicious	6	0.75	positive
pork	ribs	4	0.50	positive
quality	good	4	0.58	positive
suite	beautiful	3	0.82	positive
appetizers	delicious	3	0.80	positive
delicious	really	3	0.91	positive

According to table 9 and figure 3, the sentiment themes from benchmark restaurants are quite concentrated regarding the food and beverage, which means more general themes such as good food, great food, delicious dinner and good wines and so on are extracted. While the specific themes such as beautiful suite, delicious fish, delicious appetizers and good quality are generated. The key terms are food (dinner, lunch, restaurant, taste, dish), wines, fish, pork, quality, suite, appetizers which all lead to positive sentiment.

4.2 Zwaantje & Benchmarks Comparison by STE and STC under Service

Under the category service, Zwaantje gets 18 out of 22 restaurants in TripAdvisor, 19 out of 25 in Google and 12 out of 18 in Facebook. Similar with the performance in F&B, Zwaantje performed under the average in the service factor too. 82 reviews under service category are analysed to generalize the relevant words cloud and themes.

Table 10 shows the key terms from Restaurant Zwaantje under category service, in which staff (people, crew, waiter, employee), service (customer service), operation, attention, embarrassing, manners and experience are extracted. The most used three terms are staff, service and operation, which obtained average sentiment scores -0.52 (negative), 0.18 (neutral) and -0.17 (neutral).

Table 10 shows the key terms picked up from 420 service related reviews from the 9 benchmark restaurants. Figure 4 shows the sentiment word cloud for themes from the benchmark restaurants under category service, which is very concentrated including staff (people), service and time, and first two get very good sentiment scores which lead to positive sentiment.

To better understand what the reasons are that made the customers leave such comments, themes clouds are applied. Figure 4 shows the dispersive themes extracted from Zwaantje reviews, it still can conclude that the restaurant staff behaviour is the key factor to influence the customer experience, which is commented by friendly, good, nice, bad and rude and so on. While the benchmark restaurants themes are quite concentrated as table 11 and figure 4, all the positive sentiment themes go to the staff behaviour and the service itself in general.

Table 10 STE from Restaurant Zwaantje under Service

Key Terms (similar terms)	Sentiment Identifiers	Frequencies	Average Sentiment Scores (-1,1)	Sentiment Classification
staff (people, crew, waiter, employee)	friendly, rude, courteous, lovely, restaurant, enough, female, nice, pleasant, spontaneous, unfriendly, helpful, arrogant, dear	23	-0.52	negative
service (customer service)	bad, friendly, good, whatsoever, nice, ordinary, yet, super, bad attitude	14	0.18	neutral
operation	brutal, good, wait, took ages, slow	6	-0.17	neutral
attention	little, great accompany	2	0.45	neutral

embarrassing	little	1	-0.35	neutral
manners	unfriendly	1	-0.32	neutral
experience	bad	1	-0.68	negative

Figure 4 – **STC of Restaurant Zwaantje (Left) and Benchmarks (Right) under Service**

Table 11 STE from the Benchmark Restaurants under Service

Key Terms (similar terms)	Sentiment Identifiers	Frequencies	Average Sentiment Scores (-1,1)	Sentiment Classification
staff (people)	friendly, nice	40	0.72	positve
service	good, friendly, fast, excellent, great, bad	80	0.62	positve
time	waiting	3	0.23	neutral

4.3   Zwaantje & Benchmarks Comparison by STE and STC under Atmosphere

There are 64 and 359 reviews related Atmosphere from Zwaantje and benchmarks being analysed respectively. The rankings of Zwaantje are 21 out of 21 restaurants in TripAdvisor, 9 out of 22 restaurants in Google and 10 out of 10 restaurants in Facebook. In this regards, Zwaantje performed worst in TripAdvisor and Facebook, but quite well in Google.

Table 12 shows the key terms extracted from Restaurant Zwaantje under category atmosphere, giving place, restaurant (company, tavern, cafeteria), décor (design, style), ambience (environment, surroundings, atmosphere), location and toilets, ranked by frequencies, in which the most used sentiment identifiers are cosy and followed by nice with positive sentiment, while the negative sentiment is dirty for the toilets as showed by both table 12 and figure 5.

Table 12 STE from the Restaurant Zwaantje under Atmosphere

Key Terms (similar terms)	Sentiment Identifiers	Frequencies	Average Sentiment Scores (-1,1)	Sentiment Classification
place	cozy, nice, amazing, beautiful, great, charming, execellent, fantastic, pleasant,	18	0.62	positive
restaurant (company, tavern, cafeteria)	international, Dutch, authentic, cozy, great	7	0.63	positive
décor (design, style)	great, nostalgic, home, wooden furniture, wooden house, historic	6	0.65	positive
ambience (environment, surroundings, atmosphere)	dirty, cozy, beautiful, good, friendly	5	0.24	neutral
location	good, cozy	3	0.70	positive
toilets	dirty	2	-0.87	negative

*Figure 5 – **STC of Restaurant Zwaantje (Left) and Benchmarks (Right) under Atmosphere***

Regarding the themes in this category, it is found that cosy is the main positive sentiment that Zwaantje gives to the customers. What's more, location is also considered. Then the design of the restaurant is paid attention as the themes great décor, nostalgic design, somewhat historic, wooden house and wooden furniture show.

In terms of the benchmark restaurants in the category atmosphere, there is no negative reviews as shows by table 13 and figure 5. The themes are very centralized and about the location, terrace, view and atmosphere.

Table 13 STE from the Benchmark Restaurants under Atmosphere

Key Terms (similar terms)	Sentiment Identifiers	Frequencies	Average Sentiment Scores (-1,1)	Sentiment Classification
place	nice, beautiful	19	0.64	positive
location	nice, beautiful	18	0.71	positive
terrace	nice, beautiful	14	0.65	positive
atmosphere	cozy, nice	10	0.51	positive
view	nice	7	0.54	positive
restaurant	nice	5	0.89	positive

4.4 Zwaantje & Benchmarks Comparison by STE and STC under Value

The ranking of Zwaantje in the category value is 15 out of 15 restaurants in TripAdvisor and 9 out of 12 restaurants in Google, while regarding Facebook, Zwaantje got 6 grand total below the standard 10, so it is not counted. In this regards, Zwaantje performed worst in TripAdvisor and worse than the medium in Google. Zwaantje has 20 related reviews and the benchmarks get 133 reviews in total to be analysed.

Table 14 and figure 6 show the sentiment themes extracted from Restaurant Zwaantje under category value, which are expensive, cost (charge) and stodgy, in which the most used word is expensive, while the negative sentiment words are too expensive, extra charge and stodgy.

According to what the Table 15 and figure 6 illustrate, the price (value, money) are with the highest frequencies, price quality ratio (price ratio, quality ratio, performance ratio, performance, quantity ratio) follows, with average sentiment scores in the range of neutral.

Table 14 STE from the Restaurant Zwaantje under Value

Key Terms (similar terms)	Sentiment Identifiers	Frequencies	Average Sentiment Scores (-1,1)	Sentiment Classification
expensive	quite	2	0.34	neutral
cost (charge)	overall, extra	1	0.27	neutral
stodgy	fairly	1	-0.90	negative

*Figure 6 – **STC of Restaurant Zwaantje (Left) and Benchmarks (Right) under Value***

Table 15 STE from the Benchmark Restaurants under Value

Key Terms (similar terms)	Sentiment Identifiers	Frequencies	Average Sentiment Scores (-1,1)	Sentiment Classification
price (value, money)	reasonable, good, fair, nice, correct, okay, decent, definitely, upscale, excellent, cheap, moderate,great, accessible, average, honest	37	0.49	neutral
price quality ratio (price ratio, quality ratio, performace ratio,	average, okay	7	0.35	neutral

performace, quantity ratio)				
quantity (portion, piece)	big, small, honest, large	4	0.42	neutral
expensive	dishes, quite, end, really	3	0.24	neutral
cheap(cost-effective)	really, quite	2	0.87	positive
quality	perfect	1	0.90	positive

95 grand total of the themes are extracted from the benchmarks, among which the relevant themes can be categorized by price, value, performance, quality and quantity. The adjectives to modify the price are reasonable, good, fair, nice, correct, decent, upscale, excellent, super reasonable, moderate, accessible and honest. There are also similar expressions extracted: really cheap, money okay, fairly affordable and cost-effective. The value-related themes are good value, great value and definitely value. The performance is mentioned twice and quality is mentioned three times. Themes related quantity are quantity ratio, large portion and small portion.
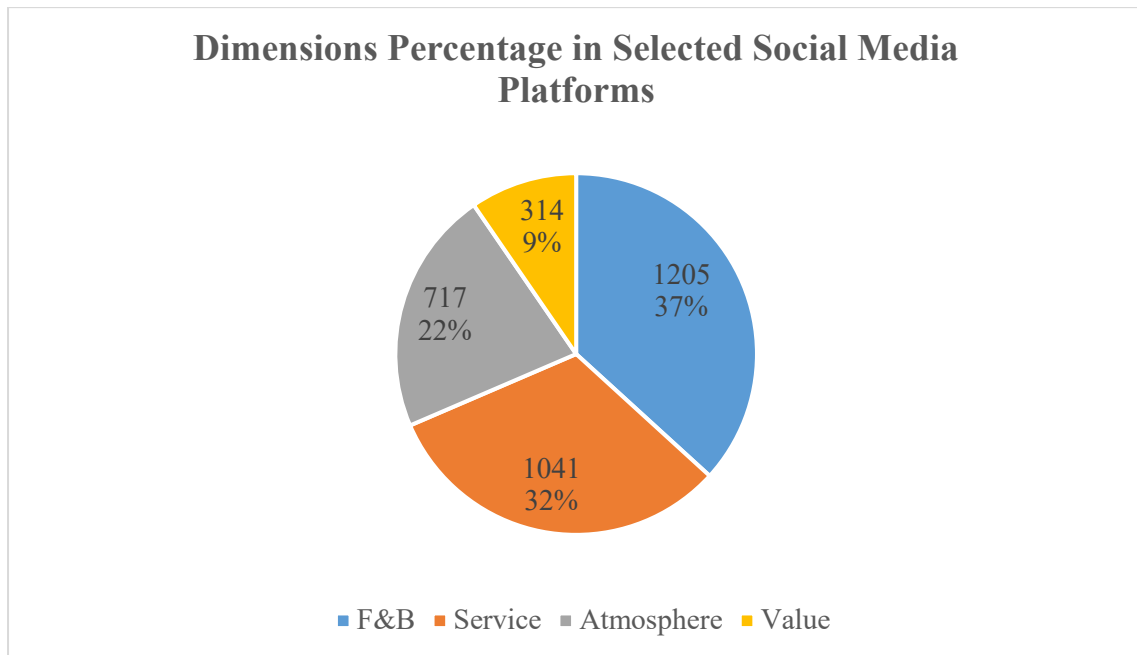
5   Discussion

RQ1: Among the F&B, Service, Atmosphere and Value dimensions, which are more commented by Giethoorn restaurants' consumers?

Researchers and practitioners have developed many instruments such as SERVQUAL and DinEX to measure consumers' perceptions on service quality attributes in the restaurant industry. Bougoure & Neu (2010) found that tangibles such as physical facilities, equipment and appearance of personnel, were perceived to be important restaurant attributes in fast food restaurants. Qin and Prybutok (2008) found that a sympathetic and reassuring service with quick operation is preferred for students. While Bufquin, Partlow, and DiPietro (2015) has found that food, service and atmosphere are the most important attributes in American casual-dining restaurant. Fornell et al. (1996) found that customer satisfaction has a positive relationship with their perceived value which is defined as the perceived level of quality over the price. According to the previous researches, this study explored further in a specific tourism area, what are the most important attributes for the customers or tourists and the rank of the importance of those attributes in terms of different type restaurants, reinforcing the existing literature which found food and service are the most important factors(Rhee et al., 2016, Gupta et al., 2007,etc.)

In this research, according to the percentages of the F&B, Service, Atmosphere and Value out of all the reviews collected from TripAdvisor, Google and Facebook in figure 17, the F&B (37%) and Service (32%) are the categories that the customers commented most on, while Atmosphere (22%) is mentioned less and the Value (9%) is the least that the customers talked about. This result supports the previous studies on the factors that commented by customers through reviews.

*Figure 7 – **The Restaurant Quality Dimensions Percentage in Selected Social Media***

Dimensions Percentage in Selected Social Media Platforms

1205
37%

1041
32%

717
22%

314
9%

■ F&B ■ Service ■ Atmosphere ■ Value

RQ2: Compared with the benchmark restaurants in Giethoorn under the above mentioned service dimensions, what are the key themes that the manager of restaurant Zwaantje should pay attention to?

To compare the percentages of the sentiment phrases under F&B in both Zwaantje and benchmark restaurants, it comes to conclusion that neutral sentiment phrases percentage in Zwaantje is 74%, while which in benchmark restaurants is 57%, 17% differences are mainly from the positive sentiment phrases as figure 8 illustrates. From the sentiment themes analyse from benchmark restaurants, food taste (good, delicious, great, perfect, ect.), matching wine, good quality and beautiful suite are extracted. Accordingly, the manager of Zwaantje shall improve the food taste and quality, the matching drinks and food alignment. What's more, from the themes extraction from Zwaantje, authentic and Dutch style are mentioned, pancake and coffee are extracted more than once, which can provide the customers' perceptions that Zwaantje is a Dutch authentic restaurant with tasty pancake and should be strengthened.

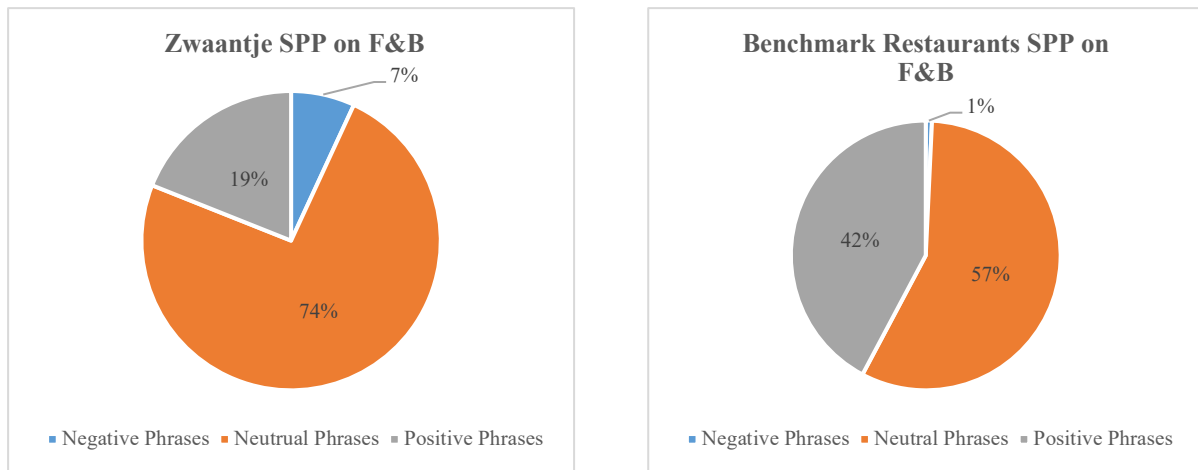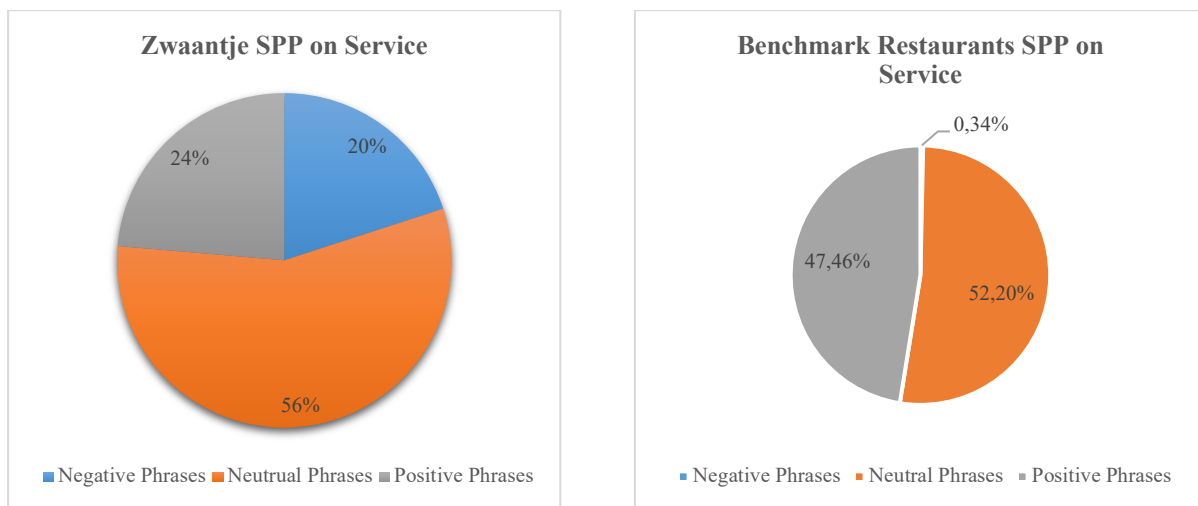*Figure 8 – **Zwaantje & Benchmarks SPP on F&B***

Zwaantje SPP on F&B

7%
19%
74%

■ Negative Phrases ■ Neutrual Phrases ■ Positive Phrases

Benchmark Restaurants SPP on F&B

1%
42%
57%

■ Negative Phrases ■ Neutral Phrases ■ Positive Phrases

*Figure 9 – **Zwaantje & Benchmarks SPP on F&B on Service***

Zwaantje SPP on Service

20%
24%
56%

■ Negative Phrases ■ Neutrual Phrases ■ Positive Phrases

Benchmark Restaurants SPP on Service

0,34%
47,46%
52,20%

■ Negative Phrases ■ Neutral Phrases ■ Positive Phrases

As figure 9 shows, the negative sentiment phrases percentage of Zwaantje is 20%, however, there is nearly no negative phrases in benchmark restaurants, which should arise the attention from the Zwaantje manager. To allocate the reasons, the themes extraction from Zwaantje can be categorized to service (with modifiers: good, bad, friendly, nice, ordinary and super), staff (with modifiers: unfriendly, arrogant, helpful, pleasant, dear, disrespectful, nice, rude, discriminating, lovely, courteous, spontaneous and enough), operation (with modifiers: brutal, smooth, good and slow) and little attention. The themes extraction from benchmark restaurants are service (with modifiers: good, friendly, fast, excellent, great and bad), staff (with modifiers: friendly and nice) and waiting time. In terms of service, Zwaantje is lack of the positive sentiment modifiers such as excellent and great but negative sentiment modifier bad is mentioned by customers. When it comes to the staff, Zwaantje got negative sentiment modifiers such as unfriendly, arrogant, disrespectful, rude and discriminating and the benchmark restaurants only had friendly and nice. The operation speed and smoothness are also the factors to influence the

service experience of customers. The manager of the Zwaantje can improve the service by training the staff with proper and professional attitude and facilitate the operation with a scientific management.

*Figure 10 – **Zwaantje & Benchmarks SPP on Atmosphere***
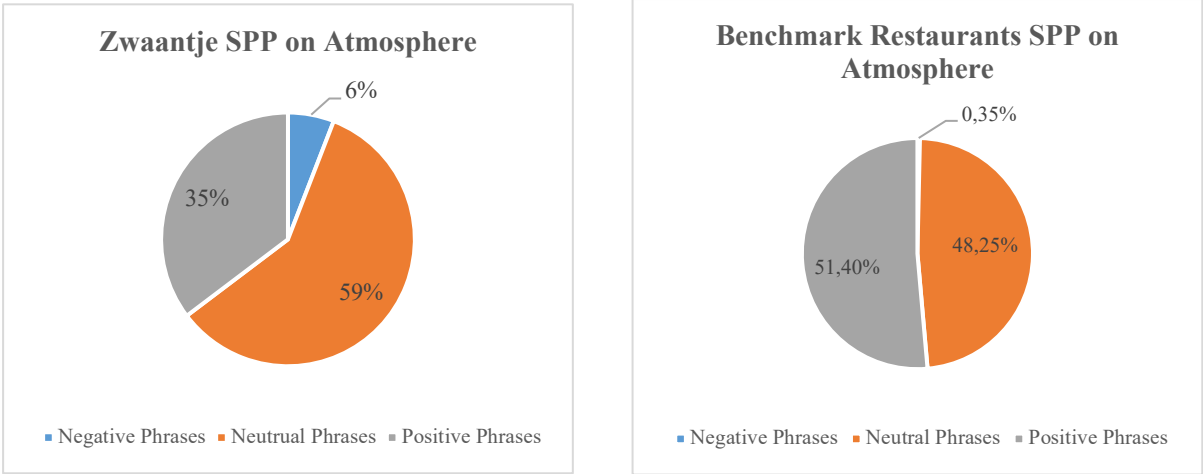
According to figure 10, the atmosphere negative sentiment phrases percentage of Zwaantje is 6% compared with 0.35% of benchmark restaurants. The negative sentiment themes from Zwaantje are caused by dirty toilets and rainy day. The other themes can be concluded into cosy restaurant, authentic restaurant, good location, good environment, great décor, nostalgic design, somehow historic, home style, wooden house and wooden furniture, which show the perceptions of the customers in regards of the restaurant atmosphere, which can be generalized to cosy, location and restaurant design. Generally, the customers are satisfied with the atmosphere of Zwaantje, and the cleanness shall be stressed by the restaurant manager. The benchmark restaurants' atmosphere themes can be summarized into four aspects: location, terrace, view and atmosphere.

*Figure 11 – **Zwaantje & Benchmarks SPP on Value***

Zwaantje SPP on Value	Benchmark Restaurants SPP on Value
10% 19% 71%	6,98% 19,77% 73,26%
■ Negative Phrases ■ Neutrual Phrases ■ Positive Phrases	■ Negative Phrases ■ Neutral Phrases ■ Positive Phrases
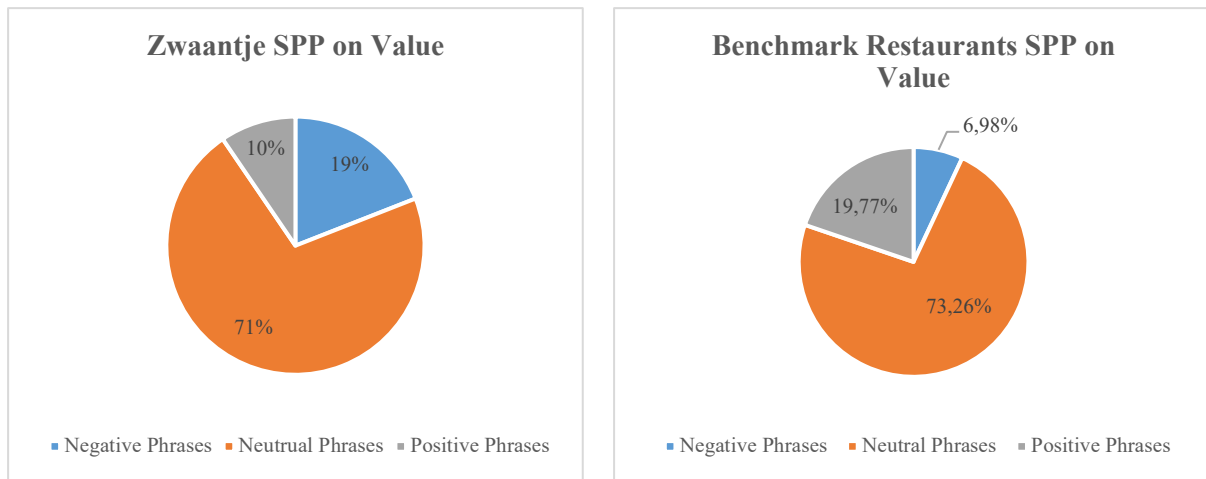
According to the figure 11, the negative sentiment phrases of Zwaantje is 19%, which is much higher than that of benchmark restaurants 6.98%. The manager can improve the customer experience on the value by strengthening the quality of the food and beverage, adjusting the portion reasonably and proceed reasonable pricing aligning with the founding of the key themes namely price, value, performance, quality and quantity.

This study identifies the most important service quality dimensions that customers emphasize in the reviews from social media and measures the sentiments in the above fours service attributes by text mining and sentiment analysis approach. This study applies the outcomes from previous studies (Andaleeb & Conway, 2006; Gupta et al., 2007; Wall & Berry, 2007): the essential elements that affect customers' dining experiences are food, service, atmosphere and value. What's more, this study presented another valuable finding that customers' sentiments regarding these four service dimensions varying different importance by analyzing more than 11,140 reviews for the attributes the customers mentioned, which is food and service are the two most important attributes, followed by atmosphere and value.

Jia (2018) established the rating–review relation by text mining on 49,080 restaurant rating-plus-reviews UGC from Dianping.com, an online review site. The study identified frequent words, topics, and subtopics and explored empirical multilinear regressions model to find out the major reasons that customers assign lower/higher ratings to taste, environment, and service. Hu, Li, Liu and Teichert (2020) introduced a model for mining the UGC on hotel chain to integrate performance and importance in an asymmetric method impact-sentiment-performance analysis to explore the hotel service attributes, their importance to customer satisfaction and how to improve these service attributes in business operations. Instead of using a multilinear regression model, this study applied a text mining tool Lexalytics, which has developed an algorithm to analyse the sentiment by NLP and machine learning techniques to assign weighted sentiment sores to the themes within a sentence or phrase, to analyse 11,140 reviews from

36

Tripadvisor, Facebook and Google to extract the relevant themes from certain service dimensions from 28 different types of restaurants in the touristic Dutch village, under which the gap between the selected restaurant and benchmark restaurants is identified. The dissertation provides a model for the comparison with benchmarks to find out the attributes or key terms that customers pay attention to when dine out when travelling.

6   Conclusions

6.1   Contributions

In this dissertation, sentiment analysis by text mining on more than 10,000 customer reviews, as well as benchmark comparison, through Lexalytics, in the restaurant industry, under service attributes of F&B, Service, Atmosphere and Value, sentiment classification and key themes from 28 restaurants in a very tourist village. The summary of research methods and findings is showed in Figure 12.

*Figure 12 - **Graphical Summary of Research Methods and Findings***
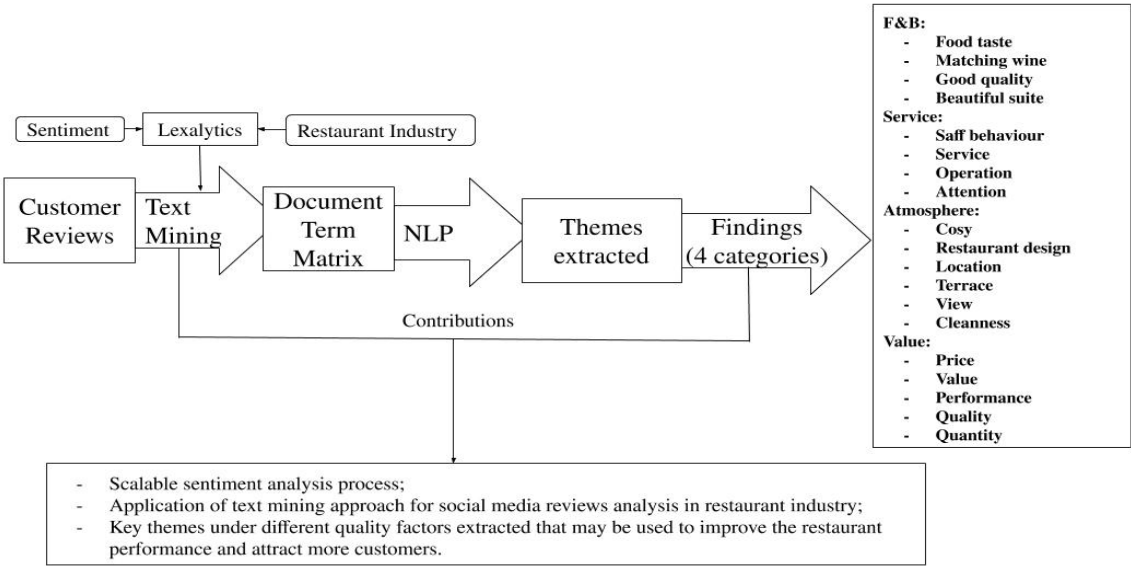
The special contributions of this research include collecting and categorizing unstructured data from several social media to understand the customers perceptions and feelings better by text mining approach to find out the hidden information and also fill the void in Giethoorn restaurant industry to apply scientific approach to provide the managers suggestions on restaurant management. In other words, the dissertation provides a scalable sentiment analysis process in a very specific unit in restaurant industry. What's more, it also uses text mining approach for social media reviews analysis in restaurant industry. Last but not least, it provides the findings that the key themes under different quality factors extracted that may be used to improve the restaurant performance and attract more customers.

6.2 Theoretical Implications

This study contributes to the existing body of knowledge about text mining technology applied on social media reviews in the restaurant industry in several aspects.

Firstly, the research makes contributions to the current limited empirical studies available on applying business intelligence in restaurant industry, especially in the context of a small and intensive touristic area in Netherlands. This study offers a more comprehensive understanding of the key themes that clients' emphasis to dine at a restaurant in Giethoorn by empirically identifying the factors by analysing the social media reviews.

Secondly, this study applied the framework to compare the peers' performances in terms of the sentiment of the social media reviews that the customers left after dinning by text mining business intelligence Lexalytics in Giethoorn restaurants.

Thirdly, the research model used in the article offers a framework for future research. Future researchers can refer the model for an empirical research on the similar theme in the restaurant industry, especially in the touristic restaurant segment.

Finally, this research has analysed the social media reviews under four dimensions namely F&B, Service, Atmosphere and Value, and found that the qualities of F&B and Service are mentioned more than the other factors by the customers in the reviews, which reflected the customer satisfaction, on the social media platforms TripAdvisor, Facebook and Google in the Dutch village Giethoorn. Most of the customers are visitors from all around the world. The most important factors that customers pay attention to, in another word, the quality service dimensions are various by geography, culture and dining intention, etc. The study by Tripathi and Tripathi and Dave (2014) explored the underlying key dimensions of service quality based on the previous service quality models namely DINESERV and SERVQUAL in Indian restaurant industry, among which culture orientation is extracted along with ambient settings, empathy, privacy and entertainment, reliability and responsiveness by their high significances related to the service quality dimensions. There are different religions in India, therefore, culture has played important role for consumers to choose restaurant (Tripathi and Dave, 2014). The research on the success factors on the customer perception on the fast food restaurant industry in Greece, conducted by Mamalis (2009), has presented the factors such as adaption to locality, food quality, service, facilities, place to be and sales incentive programme, which are ranked by their significances related to the service quality dimensions. Polyorat and Sophonsiri (2010) conducted the research of the chain restaurants in Thailand and found that the tangibles (the

appearance of physical facilities, equipment, personnel and communication materials) and empathy (caring and individualized attention the employees provide to the customers) under the five dimensions of SERVQUAL are most relevant to the locals, which is influenced by culture of the individualism-collectivism and masculinity-femininity, the social status identification to dine out in the chain restaurants and the caring and respect from others. In the research of Tzeng and Chang (2011) on Taiwan food service industry, the responsiveness is proved to be the most important factor among the five dimensions of SERVEQUAL through 500 customers in the top ten restaurants.

6.3   Managerial Implications

Sentiment analysis can provide the insights from the customers on the restaurants' products and services from different social media channels. The media monitoring tools and the analysis artificial intelligences allow the restaurant managers keep track on the opinions and sentiments from the customers and improve the related management.

From the managerial point of view, customer satisfaction or positive sentiment is associated with several key themes under the four quality factors namely F&B, Service, Atmosphere and Value. According to the previous research discussion, Zwaantje performed below the average generally under the four service dimension. The restaurant manager can improve the management on the extracted themes to make customers get satisfied experiences and leave positive reviews in social media in order to generate more sales. In regards with F&B, the key themes are food taste and matched beverage and food layout. Zwaantje has positioned itself as a Dutch home-made cuisine restaurant, of which can be made good use to develop a successful brand image. It is recommended to take fresh and Dutch branded ingredients with qualified flavor combination, feature local and seasonal foods and beverage, work on the quality control preparation and serving, focus on Good-for-You ingredients and apply properly marketing approaches to catch customers' attention. This study has also presented that the staff behavior, operation and attention are the key themes under the factor Service. The Zwaantje manager is advised to make or improve the restaurant service standard to train employees to provide better service by letting them be aware of customers' expectation and behave aiming at making customers happy, focusing on the factors such as empathy, clarity to respond promptly, the timing for interacting with customers and the proper attitude. Meanwhile, the manager should maintain a consistent and effective communication with the employees to guide and encourage them to implement the restaurant service standard. What's more, it is also need to be improved the waiting time management for the customers by informing them the wait time and keeping them

40

busy during the wait time, etc. Regarding the Atmosphere dimension, the key themes are cozy, restaurant design, location, terrace, cleanness and view. Zwaantje performs quite well under this dimension, however, the manager could consider put more Dutch features to strengthen the national culture image and maintain the hygiene and cleanliness in the restaurant. Finally, the key themes of Value category are the price, value, performance, quality and quantity. The value of money is an overall experience that customers have and also depends on the other dimensions. The manager is recommended to compare the peer restaurants in Giethoorn and conduct survey by questionnaire with specific questions such as price, quality and quantity to know customers' perception and expectations in order to improve the relevant factors to improve customers experience in a whole.

In addition, the restaurant manager shall emphasize the value of their online reputation channels. To answer both positive and negative reviews also can assist to improve restaurants' service and ultimately obtain new customers. According to the survey of TripAdvisor Insights (2019), more than 94% of respondents in some certain markets said that they have read a Management Response to a TripAdvisor review, most of which are found it helpful and encouraging them to experience the restaurant, despite a bad review.

To better apply the vast available online reviews of their restaurants to dig what the customers' feeling about their consuming experiences and maintain a good online reputation, the managers are recommended to use the text mining business intelligence to extract valuable information in a more accurate and faster approach.

6.4   Limitations

This research provides many contributions to the marketing literature and restaurant Zwaantje manager, there are still several limitations.

As this study selected all the restaurants meeting the set research standard in Giethoorn without distinguishing the restaurant formality spectrum, price, food type and so on, the results of this research may not be applied conclusively to compare the performances of the peers. Restaurant managers may take different factors into account when considering to improve the management.

The samples of the research were extracted from the main social media which the family run restaurants' managers do not attach very importance on, and with the limited choices for dining in such a small touristic village, the on-line reviews are not up to date for some analyzed restaurants.

The text mining teleology is still a work in progress and there are some important limitations too. First, the word dictionary in the text mining programs shall be adapted to the researchers' context. Due to the limitation of the set dictionary, the signification word carrying the sentiment cannot be caught accurately. Second, there are intensifier and negators in the text document making it difficult to analyze the real sentiment. For example, "The chair wasn't bad, either." The system is likely to think that bad describes chair. It missed the key word wasn't, which negates the negative implication.

In addition, the variance of language of the online reviews suggest that more researches in this area are in need as English is not the main language. Future studies might search for the cohesion and coherence shift in translation from other languages to English to provide an integrated and accurate understanding on the social media reviews.

6.5 Future Research

Future research might extend the focus on the similar types of restaurants, other than including all the restaurants in the area, future research might concentrate on particular cuisine(s), price and atmosphere, etc.

The data could be collected from different social media and places. What's more, future researchers can conduct a comparative study among different cuisines or among different consumers from different regions such as Western versus Eastern versus Middle-east.

Future researchers might deepen the study to involve other restaurant service dimensions excluded in this research such as experience, perceptions and attitudes, etc.

Moreover, in regards with the restaurant industry is dynamic and the business intelligence tool has kept being developed, more quality factors will be considered by customers and the more intelligent tools will be applied to extend the relevant researches.

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The Data Collection Sample: Zwanntje Text Reviews from TripAdvisor

SN	Review	Text Reviews(Google translate is used to translate it into English)
1	Average	Hot Dutch style food served quickly on a cool day We dropped in here when it was threatening to rain and it was pretty reasonable just Dutch style fast food, burgers, meatballs and the like but heh it was what was needed, miles better than a Maccies.Service was quick, with polite friendly staff and the overall cost was reasonable.
2	Excellent	"How beautiful it is there!" Aug 5, 2018 Юлия К, Moscow, Russia In a sense, these channels are even better than the Venetian ones. They are so cozy, around the greens and amazing Dutch houses. What is funny, you look at the houses and flower beds, and residents sit on the banks and look at you)
3	Terrible	Terrible and expensive food plus very bad service Bad!!! Don't go! Terrible, small portion and expensive. One of the older female staff was very rude. No customer service whatsoever.
4	Terrible	"No second time!" Jun 24, 2018 Puri R, Heerhugowaard, The Netherlands Booked over the internet for around dishes and then called on t ... no parking problem was on site. Once there, we first drink in cafe, I ordered a cafe latte with a slice of cake and given a small cup of coffee with milk and the latte is always a big mug or cup and the cake was frozen! Then we ordered for lunch two croquettes with bread (7.50), which we got a plain slice of bread with no mustard or whatever. Operation was quick. After a day in Giethoorn to 19:45 back to the car and found the restaurant and car park to be closed and that while there is a big sign saying you can drive out to 20.00 !!! I got lucky a small car and was after I had pulled happy spreading a few canoes though I had a lawn and square drive to get on the road again. Next day called to do complain, was told that the gates

		are closed but not locked (even if they have red tape and all), and that I should try first !! I got it right the sign that is not true, but no more. They do so as if it is locked so that no people driving into, so if it ever happened so that you ... JUST THE OPEN SLIDE IS NOT ACCORDING TO THEIR FINAL !!
5	Terrible	"Terrible" May 29, 2018 A TripAdvisor China Member We ordered a starter, two main courses plus two drinks later, the store said hot water for an extra charge. Also very dirty toilets, lack of hand-washing liquid, is not recommended!
6	Average	"Good location but control is better" May 21, 2018 Jeroen S The terrace is located on the canal and thus beautiful and nice views. Operation is too tight for busy days making it happen messy. Drinks are served quickly but food came in ages. Quality of food reasonable but no more than that. On desk Checkout not so successful but then inside - however, this was long. Room for improvement especially considering location.
7	Excellent	"Sweet Restaurant" May 7, 2018 hiuwaiwai, Hong Kong, China Just arrived claw village, due to the nearby rented a boat tour, so look for a lunch at this restaurant is a wooden house, This restaurant is a wooden house, the wooden furniture matches with the fabrics. Ordered pancake and salad, the taste is very well, it is recommended.
8	Very good	"Well located for a getaway Giethoorn" Apr 24, 2018 Reis-idee, Hilversum Zwaantje has a large free car park and also rents boats. The tour boat departs at Cygnet. We noticed that the control, despite the crowds, took a lot of time to make people friendly ropes.

9	Terrible	Very bad experience!!! Very rude employees!!! We've been there yesterday and we've had the worst experience ever in an restaurant! We've been there with our two years old son. We ordered something and we were waiting for more than 45 minutes. When when asked questions the employees were very rude and unpolite. We decided to leave after waiting for more than an hour! We wanted to speak or call the manager but there was no point in doing this because they are a family business. They are also very expensive for renting boats. If you walk a few meters further you can eat and rent a boat at a more reasonable price! Locals are familiar with their unfriendly manners and they said it's not the first time they treat customers like this!
10	Very good	Day out in Giethoorn We started with the Pea soup that is a winter special and is not on the menu, it was really tasted as a first course but is definitely not enough as a main course (claimed by the lady that served us), the main course we ordered was Roast pork and was nice. For dessert we ordered just a hot chocolate with cream. The service was slow as the place is family run and the food is mostly served by one lovely lady. It is worth the wait. The restaurant is decorated in a home style that we really loved. The prices are ok.
11	Excellent	"double fun" Nov 6, 2017 Miera73, Houten, The Netherlands Have eaten at this restaurant and made a boat trip. You could also in the boat additional books a coffee with apple pie. Super cozy and yummy pancakes. The boat ride was very nice. Those who escorted did it nice and brought the story Giethoorn beautiful! Highly recommended!!
12	Very good	"cozy tavern" Sep 3, 2017 432AdrianOH, Bruxelles Waiting for a little boat ride in Giethoorn we had the occassion to take a snack. It was honest and good, recommendable. The interior is warm.

13	Poor	"Too expensive" Aug 6, 2017 bbbbbbbb00, Amsterdam, The Netherlands French fries without mayonnaise, croquette without mustard, no garnish. Little economical. You had to ask for everything. Mega touristy too.
14	Very good	"Simple lunch" Jul 17, 2017 kwfung6154, Hong Kong, China The restaurant next to the location road is easy to find. Come here for lunch, then take a boat trip to the taxi boat next door. I ordered a Dutch pancake and a salad, which tasted good. The indoor seating is very classic, the outdoor is very comfortable, very pleasant next to the river! There is a free parking area at the door.
15	Average	While waiting for a boat Stopped for a hot chocolate on a cold day, while waiting for a boat tour of the canals. Not many clients around, and yet service was slow. The drink was fine but nothing special. Prime position, lost by ordinary service.
16	Average	"Cup of coffee in a restaurant full of old stuff" Jun 22, 2017 843Ink, Zutphen, The Netherlands A nice cup of coffee is served here. The service is friendly, smooth and customer-oriented. Good place to start a day in Giethoorn.
17	Terrible	Mismanagement Our visit was very disappointing and I recommend you finding a better place in Giethoorn if you want to eat something. We ordered a hamburger from the menu and what they served us was an unidentified deep fried meat product which somehow tasted like a frikadel. The 'cook' here seriously dares to serve a burger deep fried and then presents it without a bun (!) And no tomato or onion and no sauces? We just had to laugh a out it, it is a slapstick! Furthermore the waiters have not received any training. This same burger was served without cutlery so we asked for a fork. The waiter went back and brought a fork. Then we asked for a knife. Waiter came back with a

18		knife. Then we asked for napkins. Waiter went back and came with just ne napkin. Then we asked for mayonaise and you get it, same story.... The tosti (which tasted fine) was served with a bit of salad. Again tosti was served without silverware. Are we supposed to eat the salad with our hands? Waiter later served us coffee however he spilled the cup of coffee on the menu, the table and my pants. No apologies or whatsoever, just cleaned the menu and they did bring me a new coffee. You get the picture I hope! Stay away from this tourist trap as long as management refuses to serve food they can be proud of and continues to treat customers as tourist who they think will never return anyway
18	Average	"Fortunately" Apr 13, 2017 Tong H There isn't much surprise for the taste, but the environment is left with an interesting memory, with the focus on who it is – overall, the average European restaurant, the standard taste in the bar. The proprietress and the waiter, the attitude is a bit cold, a little embarrassing when talking, and big difference between the people in the hotel we live in. . . .
19	Terrible	"Very bad physical experience, actually can still rank second" Oct 16, 2016 A TripAdvisor China Member The worst experience in Giethoorn is this restaurant. Very rude waiter, the baby can't eat the food in the store, don't let the food he brought, when you pay the bill, ask us how, I said this rule is a bit strict, the baby should be flexible, the waiter said, the baby is still Breathing, still alive. I am very surprised why this store can be ranked last second in the Yangjiao Village. Is there really a shop that is worse than this?
20	Very good	"Fun" Sep 4, 2016 Elaine Cristina S Perfect weekend 😊😊😊 with my husband enjoying life 😍😍😍 all good 😛😛😛 going back with friends

21	Average	Hot chocomel! this restaurant was so full of souvenirs! Personally I dont like the decoration, but we were there for the food and drinks. The food was ok, nothing special about it. and the drinks aswell. there are many kinds of dishes to orther it is not only pancakes, or sweets, you can also get a full warm meal.
22	Terrible	"1 time never again." Jul 27, 2016 Didier R Very mediocre. Pepper sauce does not attract anything. Steak was really tough. Saté was not baked either. Some pizza baguette was pretty good. Service ok but for food you go somewhere else.
23	Poor	"Mediocre!" Jul 18, 2016 Marcel-Esther We came here for a lunch prior to an afternoon sailing. We ordered a sandwich meatball and a sandwich with two croquettes. The bread was unfortunately a bit old. The croquettes tough (fat not hot enough?). The meatball is served in the gravy and tasted great.
24	Very good	Good Dutch food Just arrived in Giethoorn in lunch time I was visited this restaurant for lunch and order Dutch croquette and Grandfather pancake (pancake with ham, mushroom and onion) and hot chocolate. The taste is good and tasty and I will visit again.
25	Terrible	"Kitchen closed despite reservation." May 21, 2016 Sepp J Called in the afternoon and if we arrived at 7 o'clock the kitchen would be open. Upon arrival we were told that they had already closed the kitchen. Worthless.
26	Poor	"Only good for a quick snack" Apr 13, 2016 MiaVenken, Brussels, Belgium Friendly service, but the food was mediocre. Spaghetti is a very small

		portion and not really tasty. This is good if you are waiting to take a boat, but more than a quick snack you should not expect from this restaurant.
27	Very good	"Nostalgia and hospitality" Mar 1, 2016 louis p, Weert, The Netherlands Het Zwaantje combines a nostalgic design (some will find it 'busy' the enormous numbers of odds and ends) with a fine hospitality. Excited and spontaneous staff and a tasty cup of soup. And you can immediately register for a boat trip or renting a whistler. And the car is in a spacious parking lot.
28	Very good	Homey restaurant next to the canal Upon entering, you get the same feeling as if you were visiting your grandmother's old house. There are a lot of old items including a jukebox and all furniture is wooden and cosy, with the windows overlooking the canal. Perfect for the common rainy day. We tried it for both coffee and lunch. Coffees and teas rate at around 2€ while tap water will be charged at 0.50€ per glass (yes, a charge for "served tap water" was included in the bill). Any kind of main course is large. We tried the spare ribs, the sate chicken (kipsate) and one of the speciality pancakes of the house, the Farmer's pancake. Prices for these meals ranged between 12-20€ and the food was well done and tasty. We were exceptionally hungry so we had ordered croquet with fries (6.50€) and bread with herb butter (3.60€). Sharing everything among three people, it was way more than enough. Coffee and extensive lunch for all three reached a bill of around 65€. So you can basically dine on budget, targeting the served snacks, or have a well made meal, in particular the speciality pancakes. Don't expect an immediate response from the waiters, but our waiter was helpful in our order. Expect a relaxed lunch, no rushing environment. The same business offers boat rentals as well.

29	Very good	Good restaurant This restaurant is next to canal, and they served a delicious food, also they have many activities like: (small boats, big tourist boat and bike) also all the staff of Zawaantje are friendly, lovely and simple people, from the father (Boat captain) and the son's until the mother (Chef) and the shy girl (The waiter). I wish to them all the best
30	Excellent	"Excellent restaurant with smooth service" Jul 15, 2015 Willem L Four times we visited the Zwaantje with a bus elderly as a starting point for a cruise through Giethoorn and lunch. Not only our volunteers, but also our guests have experienced this visit as very enjoyable. The lunch menu was more than sufficient, with a good price-quality ratio. Definitely recommended, and if we put Giethoorn back on the program, we will definitely start from the Zwaantje.
31	Poor	"Pancake Tuna Taco what ??" May 28, 2015 PaJa59, Haarlem, The Netherlands The ambiance may be appealing locally and for tourists, but the kitchen disappointed our 1st weekend. The desired Tuna pancake turned out to contain no tuna. That is strange. The alternative was a Taco pancake. If the reader sees a taco as faint slices of meatball, a few corn kernels and here and there some herbs scattered in a dough slice, then you have an image of this pancake. Scandalous! Het Zwaantje receives reasonably good reviews, but we were very disappointed.
32	Very good	"A nice place" May 16, 2015 1DiNiF, Moscow, Russia Restaurant Zwaantje is located at the entrance to the tourist part of the town of Giethorn. On the territory of a large parking. Decorated very original with the use of old things and equipment. The cuisine is traditional Dutch and European.

33	Very good	"A dive in the past ... grandmother cosiness" Mar 18, 2015 Motorman55, Belgium After a whole day of cycling in the surroundings of Giethoorn we landed in the Restaurant 't Zwaantje ... what an interior ... a museum where you can enjoy delicious local dishes ... pancakes ... mmmmmmmm certainly do ... we were in a very international company .... Chinese ... Russians ... Americans ... Japanese ...
34	Very good	Great for view and boat rental The restaurant is located conveniently at the main intersection in Giethoorn. There is parking and access to boat rentals which run 35 Euros for an hour. We had a nice lunch of Dutch Pancakes before taking our 2 year old on a beautiful boat tour. The pancakes come in all different varieties and are a combination between an American pancake and a French crepe. The service was ok and prices were comparable with the area. Nice view of the canal also.
35	Excellent	Wonderful food , and extremely friendly people My fiancee and I were visited Giethoorn 2 weeks ago , even though it's winter , the beautiful view still impressed us. And we went to 't Zwaantje (The little swan restaurant) , we had a wonderful meals over there, the cook is very fantastic , and the chief , (one of the owner) Jan is very very nice to us , he chat with us , and gave us lots of information and help , and when the sky is dark , it getting colder , we supposed to be stand in the cold weather and wait for the bus (only one will take us to our hotel) but Jan is so kind , he told his son which is also a kindness gentleman to drive us to our hotel , this made us feel warm . Have to say" thank you" to them . I extremely recommend them , and I will definitely visit there again in the future.
36	Very good	"cozy" Jul 25, 2014 claude f, Nieuwpoort, Belgium So boat and restaurant staff very friendly. Sufficient explanation during the cruise. Good food and extensive menu. Parking in front of the door

37	Poor	Nice location but unfortunately no enough staff and service The restaurant had only one staff when we visited..We waited almost 20 minutes...no one came to our table so finally we left. I recommend this place if you just want to sit next to the canal..but this is not good choice if you want to eat or drink something. The chance that someone will come to you is very little !
38	Very good	"Affordable and good" Oct 14, 2013 Chris H, Loosdrecht, The Netherlands Have been there several times and it is always nice and good. Enough choice in the various menus.
39	Excellent	Very good location and friendly staff!! Very good restaurant and a lot of variety. I recommend to take these boats... personnel is very friendly and young!

Appendix B:

Categorization of the Review Texts Sample: Zwanntje F&B Related Texts or Words from TripAdvisor

SN	Categorization	Texts
1	F&B	Once there, we first drink in cafe, I ordered a cafe latte with a slice of cake and given a small cup of coffee with milk and the latte is always a big mug or cup and the cake was frozen!
2	F&B	Then we ordered for lunch two croquettes with bread (7.50), which we got a plain slice of bread with no mustard or whatever.
3	F&B	Quality of food reasonable but no more than that.
4	F&B	Ordered pancake and salad, the taste is very good, it is recommended.
5	F&B	The main course we ordered was Roast pork and was nice.
6	F&B	Yummy pancakes.
7	F&B	It was honest and good, recommendable.
8	F&B	I ordered a Dutch pancake and a salad, which tasted good.
9	F&B	We ordered a hamburger from the menu and what they served us was an unidentified deep fried meat product which somehow tasted like a frikadel. The 'cook' here seriously dares to serve a burger deep fried and then presents it without a bun (!) And no tomato or onion and no sauces? We just had to laugh a out it, it is a slapstick!
10	F&B	There isn't much surprise for the taste,overall, the average European restaurant, the standard taste in the bar.
11	F&B	The food was ok, nothing special about it.
12	F&B	Pepper sauce does not attract anything. Steak was really tough. Saté was not baked either.
13	F&B	Some pizza baguette was pretty good.
14	F&B	The bread was unfortunately a bit old. The croquettes tough (fat not hot enough?).
15	F&B	The meatball is served in the gravy and tasted great.

16	F&B	The taste is good and tasty and I will visit again.
17	F&B	The food was mediocre.
18	F&B	The food was well done and tasty.
19	F&B	They served a delicious food.
20	F&B	The kitchen disappointed our 1st weekend. The desired Tuna pancake turned out to contain no tuna.
21	F&B	The cuisine is traditional Dutch and European.
22	F&B	a museum where you can enjoy delicious local dishes.
23	F&B	We had a nice lunch of Dutch Pancakes.
24	F&B	we had a wonderful meals over there, the cook is very fantastic.
25	F&B	Good food and extensive menu.
26	F&B	Enough choice in the various menus.
27	F&B	A lot of variety.
28	F&B	It was pretty reasonable just Dutch style fast food, burgers, meatballs.
29	F&B	Terrible food.