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MASTER'S THESIS

**THE IMPORTANCE OF USER-GENERATED PRODUCT REVIEWS
FOR COMPANIES**

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INTRODUCTION

In today's competitive business environment, global competition forces companies to look for different ways to constantly improve their performance. They attempt to attract consumers and convince them that their product or service is more relevant than their competitors' (Pelau, 2011). Managers need to systematically research consumers' needs, collect information about mechanisms of market decisions and consumers' buying behavior to make their products be selected from the pool instead of the competitors. (Hunt & Arnett, 2004). Therefore, marketers need to search for new ways to obtain information about consumers, their opinions, and their behaviors.

Online reviews are based on subjective opinion, that summarizes experiences, attitudes, and opinions, expressed by the consumers (Lu, Chang & Chang, 2014). The popularity of online reviews is increasing dramatically among consumers. One of the reasons can be the desire of consumers for the trusted information they can get through it. Many consumers became skeptical about the big brand's ability to keep their promises. Therefore they prefer to turn to independent information sources, that are related to subjective opinions expressed by the consumers (Constantinides, 2016). On the other hand, understanding consumers' changes in behavior are critical for a company's superior performance. Hence, the platform of online reviews is attractive not only for consumers but also for marketers, since companies can obtain substantial information and quick feedback about their consumers' purchase behavior, satisfaction, marketing expenditures, trends, and information about their competition (Payne & Frow, 2005).

Despite all before mentioned benefits, the presence of online reviews creates a real risk for business, as they have less control over the information circulated by the users for the decisionmaking process (Deloitte,2015). Analyzing the content of information generated by online reviews can be challenging and time-consuming for companies. Consequently, studying both numerical data (stars) and textual data provided in reviews have an important role in raising the competitiveness of a company (He, Tian, Chen & Chong, 2016). In a fast-changing environment, businesses need to quickly identify relevant and actionable information, using automated techniques and tools, which would allow companies to compete effectively in the global market (Ruhi, 2014).

Understanding, tracking and managing online reviews have an essential impact on the company's performance and profitability. It is important for managers to understand online review outcomes because consumers can help promote the product or can also ruin the reputation of the company, brand, or significantly damage product sales. Despite the significant impact of reviews of corporate performance, many companies have not realized the importance of online reviews and how it impacts on the purchase decision-making process.

Therefore, the goal of this master thesis is to contribute to the understanding of how online consumer reviews influence the buying decision processes and consequently, what a company

profitability is. It will help companies to manage online reviews productively, and provide them with a useful text mining tool, which helps managers to translate raw data into useful business intelligence. The research method of this master thesis consists of two parts, first, in order for managers to understand consumer behavior (the survey was conducted) and later this master thesis suggests managers the machine learning process which relies on the computer ability to automatically learn the language based on a particular example and the kind of information they can obtain through this process.

The thesis answers the following research questions:

1. What is the importance of online reviews for companies and what can they learn about consumer behaviour through online reviews? What is the importance of online reviews for consumers and which online reviews (in terms of their characteristics) are more attractive to consumers? Which online reviews (in terms of their characteristics) influence purchase decision or intent more? Does involvement in online reviews differ from online and offline shopping?
2. Why should companies consider user-generated reviews and how can they strengthen their performance based on them? To investigate these questions, I will
 - a. Examine what companies can learn from text reviews that are available for their product, and how they can use these findings to improve their performance.
 - b. Examine how consumers behave and how they decide on purchasing or reviewing in order for companies to be able to understand today's consumers and their decision-making process, and in order for companies to be able to align their communications with all these findings.

The survey has been conducted to measure the importance of consumer purchase decisions. The survey was created with the help of Ika.si, an online survey builder, and the outcome was analyzed in software Statistical Product Service Solutions and excel. Social media such as Facebook, LinkedIn, and email was used to execute the survey. This approach was chosen to understand the reasons, opinions, motivations, and purchase behavior of the consumers.

The main findings from the survey research are that managers need to implement online reviews in their marketing strategies since one of the reasons why consumers write online reviews are to send information about the product and service, their satisfaction and compliance. This kind of information can be easily transformed into knowledge for managerial decision making. Also, online reviews need to be used as an information sharing and communication tool during all purchase stages, including the post-purchase stage, meaning that firms need to keep relationships with consumers even after the products are purchased. However, the level of influence of online reviews defers by its characteristics. Online reviews which contain a picture and which is written by verified consumers are more prominent.

Besides the fact, that the survey is a scientifically proven method, in this master thesis three main limitations were identified: the first is a language barrier. The survey was organized in English and the respondents were mainly from the countries where English is not their first

language. The second limitation is several respondents and last the time factor. It is less likely to stay fully concentrated to answer the online questionnaire to the end.

The second part of the research was based on text mining. The Rapid Miner was used to analyze online reviews from the website heureka.cz. They used a combination of sentiment analysis, keyword analysis, and topic modeling to derive key findings.

Further, this master thesis suggests the ways how managers can use online reviews to strengthen their performance, by identifying sentiment scores, analyzing their polarity to perceive consumers' overall opinion on the product or the brand. Using keyword analysis helps managers to identify the most frequently used words in the document, that summarizes the most prevailing topics in the text. The topic analysis helps managers to identify the terms that are associated with each other and classifies them into different certain topics. These methods were combined with aspect-based analysis, which identifies and categorizes aspects of being either positive or negative and helps managers to recognize the need for improving and highlighting the positive aspects.

In this master thesis there were recognized three limitations in this text mining, such as language-related barriers, recognizing sarcasm, jokes and irony, and incorrectly targeted sentiments.

This master thesis consists of four parts mainly. The first part is focuses on the theoretical framework about the role of online review in the organization, which expresses the changes in the consumer purchase process and how companies can follow these changes. Also, further focuses on showing the online review influence on companies' performance. In the second part, methodology is presented, started with survey analysis, and followed by text mining. The fourth part analysis focuses on the result and last, the fifth part refers to the conclusion of the results.

1 ONLINE REVIEW ROLE IN ORGANIZATION AND IMPACT ON COMPANIES

Social media has made the extraordinary changes in the business-customer relationship. In fact, in today's market buyers possess more power over the seller. Customers are more interested in other people's opinions than market provided information (Ridings, Gefen & Arinze, 2002). Consumers eventually became co-creators of value as direct stockholders (Burton & Khammash, 2010). Rapid expansions of the Internet and user-daily contributions in an online context pushed businesses to predominately accept social media applicability (Hettiarachchi, Wickramasinghe & Ranathunga, 2017).

Without knowing the customer individually, businesses can become no more relevant to them. Subsequently, businesses will struggle to survive in this rapidly changing economy. Online reviews generate a huge amount of valuable information about the consumers, their opinions,

purchase behaviors and experience, which allow managers to effectively target consumers segment and provide them with their desired product (Stankevich, 2017).

Online reviews have become the new growth strategy for any company that strives to realize growth and occupy an honorable place in this new and uptight market. In this new world, only traditional advertisement and business based communication is no more effective way to get consumer's attention, therefore businesses need to adjust their marketing activities and business strategies to new information-sharing methods (Thomas, Peters, Howell & Robbins, 2012). According to Whittler (1989) markets that effectively utilize online reviews as a marketing strategy tool to help to increase brand awareness, and influence purchase decision making and later on, realize repeat purchases that bring about customer loyalty.

On the other hand, businesses can interact with customers to gain competitive advantages by monitoring their consumers' opinions towards the product (Fisher, Till & Stanley, 2010). For business, it is essentially important to detect the critical situation quickly and move to their competitors at an early stage, to react on time and implement marketing measures correctly (Franke & Shah, 2001).

However, sometimes marketers tend to forget the benefits and importance of online reviews in their business strategies, therefore this chapter will be dedicated to evaluating online review involvement in the decision-making process, purchasing and its role in process evolution. In the second part of this sector, it will focus on discussing the patterns of utilization online reviews in corporate performance.

1.1 Evolution of purchase decision making

Consumers make purchase decision on daily bases, either online or in-store. understanding the factors that influence each buyer's purchase decision is becoming essentially important for the organizations. New technologies, internet and social networking system break boundaries between offline and online shopping (Grewal, Roggeveen, & Nordfält, 2017). Nowadays brick-and-mortar stores and face-to-face recommendations are no longer needed for purchasing products and services that satisfy customers' requirements. Due to advance technologies, mobile commerce and the development of new sales channels and touchpoints, naturally affect consumers' buying behavior. Consumers play the main role in the continuous adaptation of business because they must be able to detect a potential opportunity and overall business performance in any situation (Wang & Yu, 2015). In fact, there are two types of businesses, those that can respond promptly to the market and consumer behavior changes, and those that just despair (Oke, Kamolshotiros, Popoola, Ajagbe & Olujobi, 2016). For businesses, staying in the market, requires to handle new methods and adjust their strategies of changes in consumer purchase behavior over time (Wang & Yu, 2017).

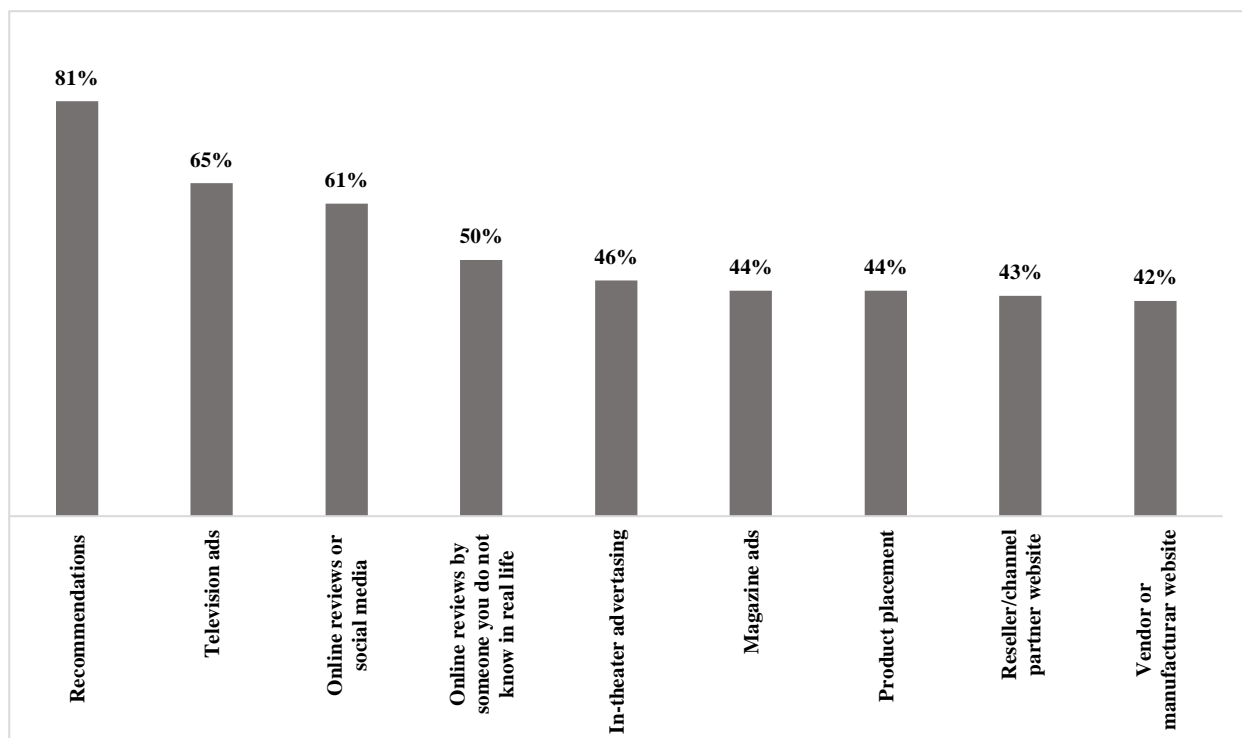
This chapter discusses the factors that affect consumer purchase decisions and how the purchase process has changed over time. Through this information, companies can detect and indicate the importance of online reviews in the purchase decision-making process.

1.1.1 Factors that impact the decision making process

The Internet is accessible to consumers almost everywhere at any time. The Internet allowed people to be more connected and interactive, their expectations became to be based on other's experiences. Understanding consumer purchase behaviors and its evolution through time are essentially important for the enterprise in terms of achieving their main goals (Makarewicz, 2013). Therefore, this chapter will help managers to clearly understand factors that contribute to the transformation of linear purchase decision into a more complex purchase decision journey, which is explained continuously. In this master thesis, three main factors are highlighted, such as word-of-mouth, which in this master thesis is referred to as online reviews, omnichannel journey, and webroomin/showrooming processes.

Word-of-mouth is an informal oral communication, both positive or negative, between receiver and communicator, without connecting to marketing ambitions concerning a brand, a product, or a service (Taylor, Strutton & Thompson, 2012). The nature of mankind has not changed much; people have been telling others about their stories for thousands of years. Traditional word-of-mouth has been an attractive information provider for consumers. It was an early tool that enabled people to exchange and spread the news across the world (Owen, 2016). It has been an important way of communication of all time and even nowadays, in a rural area, people use word-of-mouth to obtain and share local news (Owen, 2016). But, today, word-of-mouth is no longer oral conducted face to face communication. People are more attracted by the ability to exchange information electronically (Fakharyan, Jalilv, Elyasi & Mohammadi, 2012) that can be generated in effective communities such as online reviews, blogs, forums, and social network, that is known as e-word-of-mouth. According to Shi (2003), e-word-of-mouth has a greater impact on society than traditional word-of-mouth, since e-word-of-mouth reviews disseminate over the word and information can reach far beyond the local community, besides the popularity of word-of-mouth, has increased significantly since it has been generated on the Internet. When the consumers are not familiar with a product or service they prefer to rely on interpersonal communication. (Chatterjee, 2001). Buyers know if the product or service were not good enough they would have known about it since satisfied customers inform society about their positive experience, while dissatisfied consumers will try to tell the whole world about their negative experience (Chatterjee, 2001). Traditional word-of-mouth influences pre-purchase decisions, while e-word-of-mouth in particular, online reviews play a role during the whole purchase process (Arndt, 1967) (that is explained in continuing parts). Social media and word-of-mouth including recommendation, online reviews (61%), and websites (42%) are considered as an important influencer on a consumer buying decision (Figure 1).

Figure 1: Key factors influencing consumers' buying decisions



Source: Deloitte (2015).

Due to new the technologies, such as smartphones, social network services, as well as in-store devices, break the boundaries between offline and online shopping. Therefore, **Omnichannel** retailing was introduced (Grewal, Roggeveen, & Nordfält, 2017). The Omnichannel concept refers to the market transformation, where communication between the consumers and company, as well as purchase process, happens through multiple channels. These channels are jointly managed and provide the same brand experience wherever and whenever they interact with the company. On the other hand, multichannel refers to having several channels however they are working independently of each other to reach a specific segment of the consumers (Zhang et al., 2010).

Nowadays, consumers are willing to interact with companies with multiple possibilities through their purchasing process. They want to use all these channels, such as online stores, mobile, and traditional physical channels simultaneously to combine all information and compare alternatives based on their lifestyle demands (Blázquez, 2014). Channels preference is dynamic therefore consumers can easily navigate each channel and select the favorable choice that suits the best on any particular shopping occasion.

Another factor that impacts consumer purchase behavior, is a new concept of showrooming and webrooming. **Showrooming** refers to the purchasing decision, that is made online, however, the product was viewed physically and examined in the store, but the purchase was made online

after comparing online information and the price difference between the local store and different e-commerce websites (Mehra, Kumar & Raju, 2018). It occurs, during product evaluation when the products' physical attributes are important. Showrooming allows people to reduce purchase risk, and make sure before purchases that the product is the right color, size, and shape. Showrooming directly damages the profitability of physical retailers (Mehra, Kumar & Raju, 2018).

In contrast, **Webrooming** happens when consumers search the product online and purchase it in-store (Wojciechowski & Hadaś, 2018). It takes place after the selection of the product is identified. In this case, the Internet plays to be an online showroom, that helps to narrow down the consideration list and make a purchase decision with a higher degree of confidence and mitigate the perceived purchase risks. This channel consists of two stages, at the first stage, the consumer finds an alternative product, which matches her or his shopping preference the best, however because of the lack of trust they prevent online shopping. In the second stage, the consumer buys a product on in store base on collected information from the Internet that benefits offline retailers (Peterson, Balasubramanian & Bronnenberg, 1997). Webrooming and Showrooming are common practices among omnichannel consumers, for instance, a consumer searches information on the Internet visits stores for purchasing and during the shopping he/she uses smartphones to access the information even to compare the products from potential purchases via any number of channels (Yurova, Rippe, Weisfeld-Spolter & Arndt, 2017).

1.1.2 Linear (traditional) purchase decision process

With time and all the above-mentioned trends in the environment, the purchase decision process has been changing. One of the widely known consumer purchase process model is a five-stage consumer decision process, that consists of need recognition, information search, alternative evaluation, purchase decision, and post-purchase behavior (Figure 2) (Hettiarachchi, Wickramasinghe & Ranathunga, 2017).

Figure 2: Purchase decision process stages



Source: Cox & Park (2014).

The customer purchase decision process starts in the **need recognition** that refers to the customer, who has consumption need and recognizes the gap between current and desired state. Based on an empirical study conducted by Cox and Park (2014) pictures of products and content of public recommendation in social media can attract customers, hold their attention and help

to perceive and determine their needs (Schwichtenberg, 2015). After customers recognize their needs, they are looking for ways to fulfill it.

Due to reducing uncertainty, they move to the **information search** stage that utilizes product information, brand awareness, and user experience (Cox & Park, 2014). Some consumers internal information search that is connected to remember and refresh information from memory. And other people continue with external information search, asking friends' families, looking at information on the Internet, through online reviews or blogs, or gain knowledge about the product or service from the marketing activities done by the company (Stankevich, 2017).

That leads to the next stage **evaluation alternatives**, where consumers can easily compare alternative options based on attributes and forms and choose the most preferred option. Factors, the evaluation and searching stages alert the consideration set of the alternatives, that might change with accessing more and more information (Kang & Johnson, 2013).

After alternatives are evaluated, the customer makes the final **purchase decision** that refers to the choice between completing a transaction or not purchasing any of the alternatives. The last action in the purchase decision cycle is the **post-purchase stage** when a customer leaves recommendations and shares their purchase experiences with other people. The outcome depends on social value and customer satisfaction or dissatisfaction, depending on their purchase experience. Every customer goes through several stages of the decision-making process, but it is not necessary to present all five stages in every purchase. Furthermore, some states such as information search and evaluation alternatives can be repeated several times. Also every evaluation stage doesn't need to end with purchasing products (Gu, Park & Konana, 2012). The intensity of the stages can be depending on product type, interest, product involvement, and its price.

Besides, social media constructs spread information not only about the certain product but about the entire brand, hence loyalty and customer retention is part of the last purchase decision stage. Wang and Yu (2017) empirically applied that positive or negative social communication and observation of other customer purchases impact customer purchase intention. Zhang and Benyoucef (2016) conducted a meta-analysis. They analyzed 63 studies that examine the factors of each decision-making stage. They found that nowadays researchers are focused mostly on the post-purchase stage, which clearly shows a growing interest of the businesses in understanding the ways to influence customers after their purchases.

All these business-related transformation, push to establish a more sophisticated approach, that will help marketers to save their spot in this existing environment. McKinsey research conducted in 2009 found that communication between the company and the consumer has been changed from one-way towards two-way communication. A company needs to communicate to consumers and later consumers to the company as an ongoing cycle (Court, Elzinga, Mulder & Vetvik, 2009).

1.1.3 Customer purchase decision journey

Nowadays people expect to have full information about the product and service even without involving sales associates, they desire from the company to offer them new purchase experiences and new touchpoints in their sales channel. Technology and its development completely change consumer behavior, the process that consumers want to experience, decide when, where, and how to buy the product or service and the factors that influence their final decision (Stankevich, 2017).

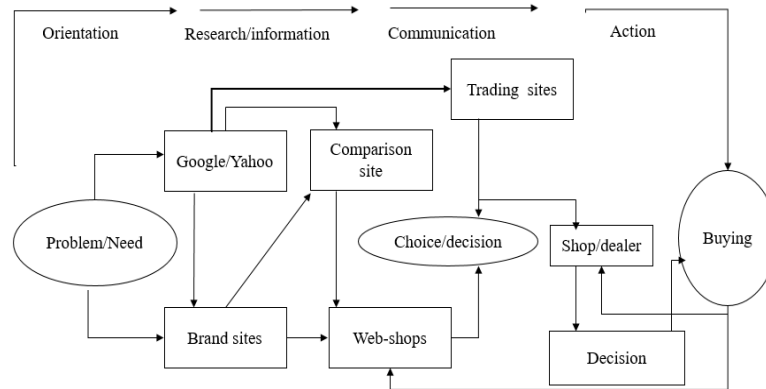
According to Clark's (2010) study, the decision-making model is replaced by a customer's journeys, which is a more dynamic model. Due to involving every touchpoint and multiple channels within the purchase decision process, the classification of interaction often does not follow linear structure. As it was mentioned before, social media acceleration, channel fragmentation, and omnichannel management is resulting in more complex decision-making journey (Verhoef, Kannan & Inman, 2015). Therefore, social media and online reviews are identified as a main and recently developed touchpoint within the purchase journey, which recognizes the important roles of others in the consumer experience (De Han, Wiesel & Pauwels, 2016). Moreover, using this touchpoint enhances consumer engagement in the process that goes beyond the marketing function. Thus, organizations need to manage and consider online reviews as a communication source with consumers. Moreover, consumer-to-consumer interaction and information sharing challenge managers significantly and offer them the opportunity to positively influence consumer purchase experience. Consumers using different touchpoints during purchase, decision alerts the entire buying process (Stankevich, 2017).

Today some consumers are getting comfortable with purchasing products online. Trading around the shop is no longer needed. However, the changes in the purchase decision for the people who prefer to shop in the store also happens, due to information sourcing and providing various purchase options. Transparency of information is dramatically improving, they start taking information online, asking a very pertinent question to people who have already experienced the product. They are more confident in asking such questions as it reaches a huge audience. Also, finding a person equipped with relevant information is highly possible, while it is not an easy task for the sales assistant in a shop, as their knowledge on a specific product is not from usage perspective or in some cases they are also searching for information online in front of the consumers (Moleer, 2010, p. 15). Therefore, people's searching methods of information and purchasing product process have dramatically changed.

A new consumer behavior model has been introduced named the **Orientation, Research, Communication, and Action (ORCA) model**. That is a combination of multiple touchpoint and channels during decision making (Figure 3). Consumers are using various channels in searching for information and shopping processes. In this model touchpoints are not interconnected chronologically. After the need for product and service is recognized, consumers use search engines, websites, and comparison sites for collecting information. And finally, a

decision can be made through different distribution channels, either trading sites or physical stores (Wolny, 2014).

Figure 3: The Orientation, Research, Communication and Action (ORCA) model



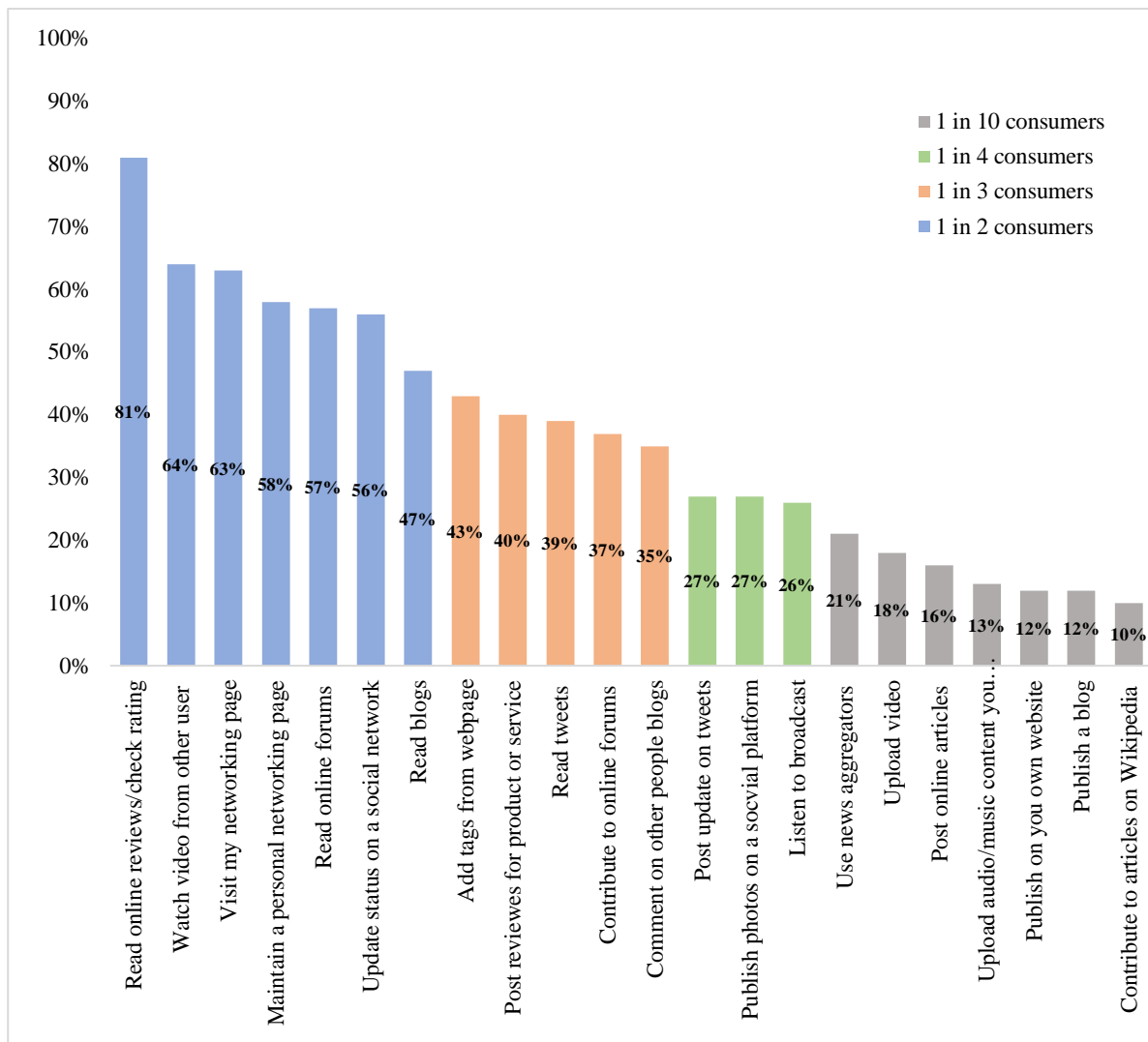
Source: Wolny (2014).

In recent years, the online environment and the business is viewed from a new perspective by the consumers. Social media changed a way of communication between consumers and marketers (Henning-Thurau, Gwinner, Walsh & Gremler, 2004). Moreover, social media influences consumer decisions from pre-purchase, as a way of information acquisition to the post-purchase process such as dissatisfaction and satisfaction statement about the product, brand and the company (Mangold & Fauld, 2009). Nowadays consumers are well equipped by social media and digital devices, which entitles them a power to possess more transparent information, as well as share their opinion freely, that challenges businesses to keep up with consumers anticipations. To meet their needs businesses need to engage and interact with their existing and potential consumers (Davis-Mersey, Malthouse & Calder, 2010). Social Media provides a great opportunity for companies to foster an important relationship with their consumers.

Online reviews role in the purchase decision-making process

Online reviews are examined to be a communication platform, that may occur even among strangers. People who contribute to online reviews either they are readers or writers, it is not necessarily that they have a previous story or expectancy of future interaction (Buda & Zhang, 2000). According to Murphy (2019) review, 86% of consumer read online reviews. One of the major reasons why people read online reviews is that authors of the reviews are not connected to the company, therefore they do not strive to satisfy the company's interests (Chen & Xie, 2008). According to Duana, Gu and Whinston (2008) consumers are precisely observing, reading, and subsequently judging online consumer reviews. Therefore, the importance of online reviews is appreciably high. Deloitte (2014) results show that 81% of people read online reviews and check ratings. On average every second consumer is influenced by online reviews, while more than one in four consumers listen to broadcasts (Figure 4).

Figure 4: People attitudes to digital content



Source: Deloitte (2014).

Businesses always strive to acquire and retain happy consumers, providing them with the relevant product through their preferred sales channel and developing a strong relationship with them, focus on information sources that they are mostly using, to spend their hard-earned money (Subramanian, 2018). For this reason, management needs to clearly understand what consumers want and need, where they seek information about their product (Love, Mackert & Silk, 2013), to define online reviews importance among the product industry and understanding the motives of consumers in creating user-generated content. All of these will help marketers to correctly reach consumers and utilize the information to be positively influenced by their overall reputation, obtaining all this information is a prerequisite for the businesses to prevent mistakes and create strategically business advantage environment (Makarewicz, 2013).

1.1.3.1 Customers' motives for writing online reviews

Motivation is an action that triggers individuals to conduct particular actions, due to perceived unfulfilled needs that move the individual "way from psychological equilibrium" (Burton & Khammash, 2010). Consumer motives are listed below, such as helping and harming companies, venting negative or positive feelings, concerning for others and social belonging, that engages in online reviews.

Helping the company- this motive refers to the altruism that aims to help others than oneself. Consumers are motivated to leave testimonials and give the company something in return because they are pleased and satisfied with the service or product. They want to express their gratitude and appreciation towards the company (De Matos & Rossi, 2008). Consumers believe that companies with good performance deserve to be rewarded with positive online reviews (Sundaram, Mitra & Webster, 1998). On the other hand, consumers attempt to send a signal and help them to improve their products (Jeong & Jang, 2011).

Harm company- this motivation refers to the ability to harm perception of a company's image by writing negative reviews. Therefore, consumer shows possess over the company that shifts the power from the company to the people (Henning-Thurau, Gwinner, Walsh & Gremler, 2004), however, Bronner and De Hoog (2011) indicated that the intention of harming the particular company is rarely used in practice, therefore demaging the company is the insignificant factor of writing them.

Venting negative or positive feelings- To retell negative or positive purchase experience, online reviews are a way to restore the balance and get back to their equilibrium state after they expose to unsatisfactory experience (Henning-Thurau, Gwinner, Walsh & Gremler, 2004). Jeong and Jang (2011) found that unsatisfied consumers are less likely to spread negative feelings online, while satisfied consumers trigger to express feelings.

Concern for others- this factor is the most obvious one when consumers enjoy sharing their satisfaction and dissatisfaction with future consumers, without expecting anything in return, in fact, writing their real-life opinion about the product allows consumers to anticipate pleasure when there is a possibility to influence positively on consumer decisions (Corriero & Tong, 2016).

Social belonging- bonding with the virtual community and becoming part of this community is of interest and importance to certain customers (Bickart & Schindler, 2001). During searching the information within review platform people with the same interest can connect and build communication. For instance, a personal blog can be a great example of bonding within a community and unite people with similar interests, especially when blog refers to a specific product category, using a review platform attracts users with the similar product interest to review, comment and follow the blogs (Hennig-Thurau, Walsh & Walsh, 2003). Based on Cheung and Lee (2012) study result, they recommended to this online platform to allow customers create a personal profile, similar to a social networking platform, that allows adding

people as a friend and directly communicating with each other that might empower a sense of belongings. A part of that, they suggest to apply reputation tracking mechanism such as making publicly visible their membership status, length of membership etc, online opinion-platform should identify and inform others how certain contributor was helpful for readers.

1.1.3.2 Online reviews as a trustworthy information source

Trust is a combination of beliefs about others and the willingness to use the information as the base of their final actions (McKnight, Choudhury & Kacmar, 2002). Trust in information plays an important role in business activities. Companies trigger to reach the target audience through their trusted and often used communication channels. Trust and risk are all the time closely connected, it enables people to take the risk, on the other hand, when trust level increases, perceived risk reduces (Pavlou & Gefen, 2004). Uncertainty and the risk is one of the inseparable factors in any decision-making process, therefore due to the reduction of the uncertainty individuals attempt to find a credible source of information (Kusumasondjaja, Shanka & Marchegiani, 2012). Uncertainty is higher during online purchase decisions because consumers mostly rely on limited or incorrect information that is given by the companies (Park & Lee, 2009). However, the existence of an online reviews platform plays a significant role in reducing uncertainty, it helps to set realistic expectations and in some cases, it facilitates and builds trust in sellers (Pavlou & Dimoka, 2006).

Consumers gain credible information by observing and following the online reviews, time-by-time consumers developed trust-related behavior, they started disclosing personal information (McKnight, Choudhury & Kacmar, 2002). Although some consumers perceive online reviews are written by reputable reviewers to be more trustworthy, the information to be more reliable, they are also recognized as people with enough knowledge about the product quality (Hu, Liu & Zhang, 2008).

According to Shan (2014) research, there are three major influencing factors of consumer trust, such as source credibility, argument quality, and product involvement:

Source credibility- It is hard to understand the specific sense of source credibility due to inconsistency in measuring the meaning of the same sentence in different literature, (Willemsen, Neijens & Broneer, 2012). Uncertainty and the risk are one of the inseparable factors in any decision-making process, therefore due to the reduction of the uncertainty individuals attempt to find a credible source of information (Kusumasondjaja, Shanka & Marchegiani, 2012).

Argument quality- The content quality is one of the most important factors in consumer information processing. A good representation of the online reviews and strong arguments listed in it, inhere consumers to generate purchase intention. Since, online reviews are considered to be anonymous information receivers prefer to have more content, specific and factual information about the product or service, which increases willingness to trust in online reviews (Awad & Ragowsky, 2008). According to Xu and Yao research that was conducted in 2015,

information and source quality is positively associated with argument quality, and it has a positive impact on perceived values.

Product involvement- Product involvement varies among individuals. However, in general, product characteristics play a significant role to define rather a product is low or high involvement (Gu, Park & Konana, 2012). High involvement goods refer to the type of product for which customer is willing to invest their time in getting themselves familiarized with the product. Mostly such products highly-priced and have a high purchase risk. While low involvement goods are the products that have a simple evaluation process and fewer motives to spend time researching information about the product (Kim, Ko, Xu & Han, 2012). Some consumers do not display brand loyalty, whenever new product appears they buy it on a trial base, without making research. This kind of consumers can easily switch from one to another brand, or when consumers find the similar alternative within the same product class, they just pick one from these alternatives and keep their choice. For this product the chance to make a wrong purchase decision is low, therefore consumers are less likely to conduct an extensive information search before visiting a retail shop (Levy & Nebenzahl 2008), for that reason the trust in information source during buying high-involvement products is essentially important (Gu, Park & Konana, 2012).

Besides the helpfulness of online reviews and its importance in the decision-making process, user-generated information might lead consumers to wrong decisions and provide with forged information. Sometimes, online reviews are not reliable due to three factors. First is the error, since online reviews cannot be perfectly delivered, secondly, consumers and authors of the product might have different preferences, consequently, the information is not completely informative for a particular person. Finally, companies are paying people to write a review that is instructed to be in their favor (Valant, 2015).

1.1.3.3 Online reviews for a different type of product

Online reviews are expressed on various kinds of products, helpfulness, importance, and trustworthiness level of online reviews vary across the product type (Mudambi & Schuff, 2010). According to Shan (2014), research product type is one of the major influencing factors of consumer trust in online reviews. Several decades ago Nelson (1970) published an article where he classified product evaluation into two categories: Experience and search goods. Experience goods refer to the category that can be only evaluated the quality of the product after it has been purchased. Usually experienced goods are purchased for entertainment and enjoyment purpose, for instance, booking holidays online because only after being on holidays a consumer can evaluate rather money worth it or not. In contrast, Search goods are goods where consumers can conclude about the quality of the product before purchasing. The information and performance of the product are available for each user and they can compare the product quality and its value. One of these examples can be mobile phones since all the information needed is on the Internet (Huang, Lurie & Mitra, 2009).

However, Klein (1998) claimed that Internet and consumer adaptation to the changes that Internet offers, transforms experience goods into search goods, in three ways. First, the Internet decreases search cost of certain products, the second, the Internet can change the way of evaluation of the product and the third way is to experience goods and services via the virtual network before making a purchase. The Internet provides a tremendous option to search for information, it gives consumers a great opportunity to read online reviews and feedbacks, check evaluating videos, and 360 views demonstrations of the product that makes a feeling than the product has been already experienced.

Digging more into the product category, online reviews and consumer feedback has a greater impact on the purchasing of digital goods, goods that are stored and distributed via digital format. For instance, software, lectures, books, photos, music, videos are part of this category. In this instance, goods are characterized to be more information intensity, thus the Internet provides decent information to create the samples of before mentioned products and facilitates to shift experience goods into the search goods (Nakayama, Sutcliffe & Wan, 2010).

As it seems, the Internet and online reviews shaped and formed experience goods in a completely different way than it was in the past. According to Feefo (2019) research, 45% of interviews absorb information about the holidays, flights, and rail trips and 25% of respondents look at multiple reviews on the restaurant. Both sectors are considered to experience good. In fact, travelers are motivated to share their travel experience and stories with other people and serve them as a true guide. Besides, out of 23 000 respondents, 81% actively use online reviews for finding accommodation, and 52% claimed that they would never book a place without having online reviews. In addition, Spiegel research center found out when the product or service including holidays and travel sector, with 5 reviews have 270% greater chance to be purchased than a product with no reviews (Murphy, 2019).

From the search goods, the technics such as laptops, computers, TV, and phones have a greater share of 57% of interviewed people who reads multiple reviews about them before making a purchase decision (Feefo research, 2019). Despite search goods, technics are also high priced products that increase the importance of online reviews. On the other hands, consumers less likely will rely on online reviews and search for more information through reviews about household items, only 5% of interviewers claimed that their purchase decision was influenced by reviews and ratings, kitchen appliances (23%), clothes (18%), furniture (16%) and cosmetics(12%) that are falling into the search product category (Riegner, 2007).

Furthermore, in business another important product category - credence product was introduced by Darby and Karni (1973). Credence products are the products that are hard to define and evaluate the quantity and quality even a long time after the purchases and it requires more information that becomes more costly for the consumers. Therefore, in this case, quality of the product depends on the trust of the manufacturer. Siering and Muntermann (2013) conducted an empirical study, where they investigated specific characteristics of online consumer reviews related to credence goods. They found that there is less judgmental statements and evaluation

of a product quality among the online consumer reviews. Consumers were more concerned and expressing their feeling about the needs of products or services.

As an overview, the search attribute set is easy to evaluate, this set contains more goods such as clothing, vehicles, food, while experience attribute set consists of service, such as restaurant meal, entertainment, haircut and it is harder to evaluate than search goods. Looking at an example from credence goods, as complex surgery is almost impossible to evaluate without having medical education.

1.1.3.4 Online reviews' impact on online purchase decision

Search and collect reliable information is significant component of the consumers online shopping behavior . Information provided by the web sites might contain some mistakes (Wang, Zhang, Ye & Hguyen, 2005). To secure information consumers appeal to information based on real-life example, listen to the consumers who eventually experienced the product, as they can not examine the product before purchasing.

Therefore, online reviews platform has a key role in accelerating online sales growth and becoming an essential component of e-commerce (Park, Lee & Han, 2014). According to the study of Valant (2015), 82% of the online consumers perceive online reviews extremely valuable information sources. In the virtual world, consumers do not have the privilege to see, touch and feel the product every time before making a decision; the effective communication plays a major role and helps consumers to set realistic expectations and perception regarding the product (Huang & Benyoucef, 2013). Online consumers rely only on the information that is available on the Internet or from friends and families, so as a part of online communication tool the importance of the online reviews in online shopping platform is appreciably high online reviews help consumers to develop the trust of the product and confidence over the information that the organization offers. Their main focus is to identify product quality and its value for money (Szymanski & Hise, 2000). Online consumers compare their perceptions and the set standards, and when it matches to each other, consumers confirm the purchase and transaction.

According to the Birkett (2019) study, online reviews produce on average 18% uplift on online sales and 50 or more reviews on the product increase conversation rate by 4.6% Many companies hit their sales by implementing user-generated content in their strategies. One of them is British luxury fusion brand Burberry. After the economic downturn in 2009 the company had to implement undergone changes and reorganization to stay competitive in the market.. A disruptive part of the reorganization was the campaign named Art of the Trench, where existing consumers could upload their photo wearing Burberry brand and giving 15 min video about the brand and the quality of the product. They had to create a combination of the clothes and under the video, people were making comments and ratings about their style. The communication between the consumers and the participation of the campaign was even deeper about the product, and the experience and the quality of the product. Engaging consumers in their campaign generated over 50% growth of online sales year-over-year (Tobias, 2013).

Another very successful example is Gaiam, an innovative company that works closely with the consumer and seeks to make yoga, wellness, and fitness accessible. They aimed to create a platform, where consumers would comment and review their products and service. Moreover, they were able to upload their pictures and comments rather they are satisfied or not. This approach brought 2.2 times more likely to purchase the product or their service, that increased online sales by 6.3% (Sears, 2020).

1.1.3.5 Online reviews impact on offline purchase decision

Nowadays almost all type of product is available on the Internet, however certain consumers prefer to go shopping and purchase products in store. Consumers skill, which refers to information search is extending beyond the recommendations from sales association, internet-based online reviews are becoming information search source even during the offline purchase process. In fact, sometimes, offline experience and online information are used simultaneously to drive final decision (Pawels, Leeflang, Teerling & Huizingh, 2011). In many cases, consumers rely on online reviews to make a final offline purchase decision, which specifies that for consumers who prefer to purchase offline, online reviews are one of the important factors in product awareness and their decision does not depend solely on traditional marketing provided information by the companies (Charlton, 2013).

Consumers engage with companies at many points during their purchase journey, for instance 82% of the consumers read online reviews before purchasing in the store (Kaemingk, 2019). In fact, the impact of online reviews on offline purchase intention increasing early bases, in 2016 39% of buyers in-store read online consumer reviews before the purchase (Sterling, 2016) which is 15% more than the results were shown in a survey conducted in 2007 (Ogino, 2016).

Offline retailers have been using digital displays for a long time. They started using online reviews strategies in-store, they can access a product web page via mobile device or online reviews that are exhibited inside the store that all offline consumers can see it. Tesco selected the latest mentioned strategy; they show printed online reviews to the consumers that visit the shop (Charlton, 2013). In the store of Kia, consumers experience online reviews on the printed version as well as displayed on TV that shows overall rating scores (Charlton, 2013). In addition, Amazon displays online reviews and ratings for each book available in the store. Reviews that are written by a user who has purchased this particular book from Amazon.com have granted barcodes that enable a consumer to see online reviews after scanning this barcode.

The consumers who prefer to purchase a product in-store supposed to have a perfect fit and the quality of the product, they need to touch it before purchase. However observing the practices and surveys it seems that such consumers need information about the product usage experience (Warnelfelt, 1984). Sometimes, in-store service cannot provide complete information, which can reduce their purchase uncertainty, since the shop assistance does not own every product; they cannot share information from consumer's perspective as online reviews do (Chen & Xie, 2008).

1.2 Online reviews' impact on company performance

The organizational performance consists of three main firm outcomes, that is financial performance, which refers to return on assets and return on investment, product-market performance combine by sales and market share and shareholder return that is an indicator of economic value added (Richard Devenney, Yip & Johnson, 2009). Online review supply decisions directly affect one of the main performance aspects, sales and market share. The ultimate goal of the companies is to maintain and superior performance (Kluyver & Pearce, 2006). The fact of changing the nature of consumer influence on purchase decision making challenges business as well as gives them opportunities (Hennig-Thurau, Walsh & Walsh, 2003). Ignoring the impact and potential of online reviews challenge companies to survive in this competitive environment. In order to use it as opportunity companies need to develop monitoring capabilities and quick responding systems (Constantinides & Holleschovsky, 2016). The Internet became a new basis for the development of a new business model, communication channel, they also need to adjust their competitive advantage and marketing strategies accordingly (Rayport & Sviokla, 1994), discover ways and tools which lead to the efficient and effective marketing decision-making process. In order to continue growing market share and sales, businesses need to have the predominant choice to invest in developing capabilities that allow tracking millions of individual's journeys and offer them target responses in real-time.

Companies can benefit from involving online reviews in their business strategy in different ways, such as obtaining information about the competitors, and communicate with consumers, through their preferred communication channel and improve their marketing strategies.

1.2.1 Track competitors by consumer online reviews

In order to remain among successful businesses, companies need to constantly collect and analyze information about their competitors. Knowledge has a key role in the organization in order to compete in an uncertain environment (Miller & Shamsie, 1996). Knowledge is one of the most valuable recourse; it represents their intangible assets that are hard to imitate (Grant, 1996). However, most industries, do not possess all requested information within the organization, therefore they need to cross the boundaries and acquire knowledge from individuals outside the organization (Anand, 2006).

Prior to the competition, it is essentially important for an enterprise to early identify competitors in the market place and evaluate potential risk as well as opportunities by gathering relevant information about the competitors (Netzer, Feldman, Goldenberg & Fresko, 2012). Analyzing competitor's trends and performance is of great significance for managers to understand changes in the marketing environment to adjust their strategies and enhance profitability (Mudambi & schuff, 2010). Traditionally, companies are collecting data about competitors from marketing reports, trade journals, articles, and their websites, however, for businesses to make correct actions most relevant is secondary information provided directly by customers, that is typically hidden or limited (Xu & Kaye, 1995). Today, along with environmental changes

companies need to develop methods and frameworks to identify competitors and furthermore facilitate analysis of competitiveness through online reviews (Netzer, Feldman, Goldenberg & Fresko, 2012). Public resources, including online reviews and e-word-of-mouth, is used to research competitors in the international market, collected the data, which can be transformed into information that can support business decisions (Géma & Jiménez-Quintero, 2015). Following the consumers opinion and understanding their perception, is the effective path for managers to identify competitors, since consumers are openly discussing all the possible products presented in the market (Anand, 2006).

Marketing managers, need to understand their customers and their presenting competitor, in order to provide people with competitive and customer-oriented products or services and to create more effective strategies that would allow businesses to cover more markets. Information, collecting from competitors social media is recognized to be an important information-sharing source, that easily can be transformed into knowledge and is used to disrupt the industry (Bouty, 2000). Therefore, today's business environment, demands to monitor not only their social pages but also their competitor's media sites (He, Tian, Chen & Chong, 2016).

In order for managers to identify potential and enterprise risk, it is really important to collect and analyze information about their competitors' products and future plans. Online reviews platform is known and testified as sufficient and reliable information source to learn relative weaknesses and strengths of competitors' products, their overall performance and how consumers perceive their campaigns (Kong, Fu, Zhou, Liu & Cui, 2007). For instance, when consumers highlight that Nokia has a stronger signal than iPhone, this precious information must be obtained by managers of both brands and using it during further designing new products. From this reviews manager of Nokia was informed about their strength, in contrast manager of iPhone was notified about their weaknesses of the existing product and identifying potential risk. On the other hand, this information can be received as an opportunity to develop the product for the future, as well as support strategy decision (Xu, Liao, Li & Song, 2010).

Companies, need to constantly monitor their competitors, but besides gathering information about their products, strategies, and plans, they need to identify critical situations and wrong movements by their competitors (Distanont & Khongmalai, 2018). In addition, companies can learn about the trouble their competitors are facing, this information is useful in anticipating and avoiding the same problem (Fan & Gordon, 2014). It is also important for managers to identify the effectiveness of competitor's campaigns, when competitors use new promotional techniques and people express a negative opinion on social media. Coombs (2007) found that negative opinions and online reviews expressed for competitors, could directly harm the company's image, its reputation, and cause financial threats.

In the global market, where companies have to control their competition, and the consumer demand has still some spared space to expand. Company-consumer communication has a key role in the expansion of consumer demand. In fact today, consumers choice between the competitive proposals is no more based on immediately comparable variable price. Nowadays

consumers choice depends on information sharing, perceived brand image, product quality, design, etc. Therefore, to keep competition in the market, they need to invest not only in traditional advertisement, but also in digital communication with the consumer in order to promote the brand and image of their product, which is discussed in more detail continuously (Corniani, 2006).

1.2.2 Online reviews as a marketing communication channel

Some companies have information about the product that buyers may not share, or on the other side, companies are not enough transparent when it comes into information sharing. Asymmetric information between the seller and buyer may lead to market failure, therefore companies trigger to use different marketing strategies to communicate product information to consumers (Gestner, 1985). Building through good communication with buyers, the company can facilitate business performance and improve its reputation and a brand position on the marker. Duncan and Moriarty (1998) claim that communication with customer leads to higher retention rate and strengthens brand awareness and loyalty, therefore organizations need to have a close relationship with their consumers.

In the past, companies were holding the ultimate power to control the information flow, through marketing communication. The information flow was generally from the company to the targeted audience. This process is perceived to be a one-sided, source-to-receiver relationship, which depicts the one-to-one or one-to-many model. In the traditional model of the communication, marketers perceive consumers as passive recipients of messages. This type of information typically shows the positive aspects of the product, service, or entire brand (Barger, Peltier, & Schultz, 2016). Traditional communication channel refers to a form of activates, which aims to persuade, encourage, and in some cases even to manipulate the audience to complete the deal with action (Camilleri, 2018).

In today's environment companies can communicate with consumers in two ways, they either can offer seller-created information that refers to information via the website, traditional advertisement channels, company-planned campaigns, or offer consumer-created product information, by allowing consumers to share their opinion in the form of online reviews about the purchase experience on website (Bickart & Schindler, 2001). Businesses that communicate with consumers via social media, creates a huge pool of data that is useful information about the consumers, markets, partners, costs, prices and also competitors (Kim, Ko, Xu & Han, 2012). Online reviews platform helps businesses to communicate with current and potential consumers with the main aim to maintain and build with them relationship. Companies can easier define, target and communicate via online reviews to reach consumers in a personalized way that helps them provide with specific information to meet their needs (Erkan, 2016).

Nowadays, one-way communication mainstream (when organizations had exclusive ownership of the information) has been shifted to a two-way endogenous information structure, which implies a form of a dialog between the sender and the receiver. On the other hand, two-way communication shows companies different side of their brand. Online reviews platform is a great communication tool, which allows consumers to have freedom in giving feedbacks, to engage with information flow, not only clicking the message to read, rather they react by commenting and sharing those messages. This method of communication turns strangers into friends (Eid & El-Gohary, 2013).

Powerful internet and new technology-led companies to communicate with their consumers through word-of-mouth that is perceived to be one of the fastest, cost-efficient, and reliable non-marketing communication tools (Tsimonis & Dimitriadis, 2014). In comparison to the traditional communication channel, the model based on online reviews speaks of a dialog with potential consumers to create interest by using a pull strategy, which is considered demand-side thinking (Frey & Rudloff, 2010).

The main difference between company-preferred types of information channels are the degree of credibility, trustworthiness, and relevance to consumers. As was mentioned before, online reviews are one of the most reliable information sources for consumers, in fact, consumers trust online reviews more than traditional market-generated information (Gruen, Osmonbekov & Czaplewski, 2006). One of the reasons that make online reviews as the credible communication tool is that it focuses on people, not on the product (Mangold & Faulds, 2009). According to Murphy (2019), 76% of the consumers trust online reviews as much as they trust in personal recommendations. Effective marketing happens when the company sends the right message, reaches its targeted audience through the communication channel of their choice (Murphy, 2019). The information generated in social media empowers people to grow their confidence and awareness of their rights. People prefer to "pull" information based on their reference, rather than being provided with "pushed" information by the businesses. Therefore, successful consumer-oriented companies need to account online reviews importance for effective communication with consumers (Frey & Rudloff, 2010).

1.2.3 Online reviews' impact on marketing strategies

Companies can benefit from choosing online reviews as a communication channel in different ways. It provides a low budget advertisement that helps to strengthen brand awareness and improve consumer retention rate, as well as improve search engine. Some companies even strategically manipulate with online reviews in order to boost sales (Dellarocas, 2003). In fact, 64% of marketing executives perceive word-of-mouth as the most effective market communication strategy (Saleh, 2020). Using Social media, including online reviews in their marketing strategies is the fastest way to reach global brand awareness (Gulati & Garino, 2000). However, without good representation by word-of-mouth, businesses will not be able to succeed in a global market (Naz, 2014). Using online reviews actively creates content on the

internet that boosts brand awareness globally, increases consumer trust and improves search engine, and all together influence on sales.

Provide low budget advertisement- Social media and online reviews are an excellent vehicle for business to excess markets and to communicate with customers at a low cost with sharing information and competing in the market with a limited budget (Berkley, 2010). And besides that, in some cases, people voluntarily promote the brands by writing about the product and their user experience (Dobele, Toleman & Beverland, 2005). In the study of Chen and Xie (2008) online reviews were referred to marketing communication mix, that works as free sales assistants.

Strengthen brand awareness- Marketing plays a vital role in the company's strategies. This division is mostly working to generate and maintain brand awareness, and how to position their brand as a consumer's best option. Marketing activities, campaigns, and sales promotion strive to increase brand awareness. Social media, including online reviews, allow organizations to share information with high speed beyond the boundaries that strengthen brand awareness globally (Odhiambo, 2012). Seleh (2020) found out that 28% of interviewers perceive word-of-mouth as the most important factor in strengthening the brand, while 82% of marketers use word-of-mouth to increase their brand awareness. It is a fact that expending internet usage, the company can create more ways to spread its brand across the world such as video, games, pictures, reviews and interactive websites (Van der Lans, Van Bruggen, Eliashberg & Wierenga, 2010).

Gain Customer trust and improve retention rate- Some companies take advantage of online reviews to maintain and keep their existing consumers (Dellarocas, 2003). Bain & GO, found out that a 5% increase in retention boosts company profitability by 75% (Lawrence, 2012). Well processed online reviews increase overall company's reputation, which leads to increase retention consumers rate (Zhu & Zhang, 2010), in fact, according to MercDigital (2018) research businesses that implement online reviews in their information-sharing strategy, and offer consumers the option to share their opinion have a 75% higher retention rate than the business which does not, on the other hand when social media and online reputation is poorly managed retention rate decreases by 15%. Moreover, according to Erskine (2017), 70% of consumers will stop having a business with a particular brand following poor consumer experience. Schwichtenberg (2015) studies the impact of online reviews on consumer retention and he found out that 62% of respondents are likely to keep the same brand after reading positive consumer reviews.

Improve search engine optimization (SEO)- Search engine optimization is a process that organizes writing, design, and coding of a website that improves consumer traffic and website position in search engine. In general, the search engine is an automated process that creates an order set of websites based on their content. For the companies it is really important to attain a higher ranking of their website. Websites with higher ranking appear more frequently at the beginning of the search result list. Research conducted in 2020 showed that 75% of people even

do not scroll the first page of a search result (Ahern, 2020). According to the Google Local Ranking Survey (2018), online reviews are one of the important factors for ranking and it accounted for 15% of factor pie, while google valued online reviews at 10% in 2015. Additionally, positive reviews have a great impact on online presence. Online reviews help search engines to learn more about the product and brand than from the only information that is on the company website. Consumer reviews add credibility to increase the volume of unique content at the company's website, which improves website position and frequency of appearing it on a search engine. It is a great tool to provide fresh content for search engines to find a business or product easier (Ahern, 2020).

Influence on sales- Spiegel research center (2017) study that analyzes data from multiple e-commerce websites, agree on the statement that online reviews have the power to impact on product sales. This impact depends on many factors, including the price of the product, a number of the reviews, average star rating, degree of uncertainty and presence of negative reviews. Dellarocas (2003) found that ratings have an insignificant impact on sales, while the volume of postings positively influences sales, suggesting the importance of awareness. Online review available on the website peruse consumers to complete their purchase, Spiegel research center (2017) conducted a study about the financial impact of displaying reviews in high-end gift retailers. The results showed that after retailer allow consumers to participate on online reviews either writing or reading them, the likelihood of purchasing product containing reviews are 4 times higher than without reviews, moreover according to the study conducted by Taylor (2003) 67% of sales are based on word of mouth. Gu, Park and Konana (2012) found evidence that a number of consumer reviews predict sales, while other study claims that valence is the predominant indicator in predicting sales (Chintagunta, Gopinath & Venkataraman, 2010). According to the survey conducted by Fullerton (2017), two-third of customers are willing to pay up to 15% more for the same product if they are convinced that they will have a better purchase experience. Besides online consumer reviews, the rating system is becoming an extremely important evaluation method, since it gives an overall view of product quality (Chen & Singh, 2001). In fact, Zhu and Zhang (2010) found out that one-point increase in star rating leads to sales growth by 4%, later on, Luca (2016) conducted similar studies that showed, a one-star improvement on Yelp.com leads to increase sales in a range of 5% to 9% in short term. Those findings illustrate that reviews have become a predominant part of the purchase decision.

1.2.4 Managing marketing decision-making with text mining

Analyzing the content of social media can be challenging and time-consuming, on the other hand, it helps businesses to learn about people's purchase behavior and shopping experience, this textual data has an important role to gain a competitive edge (He, Chen, Tian & Chong, 2016). For this reason, many researchers try to identify better ways and effective techniques to use material generated in these sources (Géma & Jiménez-Quintero, 2015). In the high-speed changing environment, businesses need to quickly identify relevant and actionable information.

Atomized technics and tools allow companies to compete effectively in the global market (Casado & Bornstein, 2020).

Keeping consumers satisfied is the key factor for the companies to maintain sustainability (Kang & Johnson, 2013). Many companies invest a huge amount of money on marketing research to identify and monitor consumers' needs and demands; however, from this information, it is hard to unravel consumers' opinions and attitudes about the product after they experience it. Due to the lack of relevant information, marketing managers cannot develop appropriate branding and positioning strategies. They need to know how their product/brand was perceived by consumers' relative to other brands in the same product category (Wang, Ko, Zhang & Mattila, 2015).

Accessibility to write online product reviews generates a large amount of data that represents a promising alternative source for identifying consumers' needs (Géma & Jiménez-Quintero, 2015). Many techniques were introduced and developed to conduct online review analysis and social media content analysis collected from sites, such as statistical analysis, content analysis, text mining, and sentiment analysis. All the above-mentioned techniques are used to gain insights into customer's experience, their opinion, attitudes, and sentiments (He, Tian, Chen & Chong, 2016). Analyzing sentiments of the comments expressed by consumers are useful for the companies. Sentiment analysis is important and meaningful aid in the managerial decision-making process, discovering new opportunities, measuring, and improving marketing strategies. In addition, sentiment analysis provides businesses with actionable information, which allows for a better understanding of business environments and competitors (Fan & Gordon, 2014). Through sentiment analysis, managers can discover new business opportunity, measure and improve their marketing activities and conduct competitive analysis:

Discover new business opportunity- Sentiment analysis allows companies to enhance consumer satisfaction through the improvement of a consumer's shopping experience (Yaakub, Lim, Lim, & Todd, 2013). Sentiment analysis is utilized not only to find out the consumer's demand and requirements but also to facilitate the design of new product and improvement of the already existing product on the market that reflects the consumer's characteristics and behavior leading to more profit for business (Pang, Lee & Vaithyanathan, 2002).

Measurement and improvement of marketing activities- Successful campaigns have a key role in business performance, particularly its effects on marketing share and the sales, therefore, managers strive to measure the impact and effectiveness of a campaign, not only in terms of revenue but also the impact on market share, rather consumers are satisfied with the product. Sentiment analysis allows the ability to track and monitor consumers' comments satisfaction before, during and after the campaign (Fan & Gordon, 2014).

Competitive analysis- Gathering information about the competitor's social media creates a great opportunity to understand what their competitors are doing, consumer's opinions towards the brand, and product. Business decisions and actionable recommendations can be derived

from planning, gathering and analyzing external information that has the potential to affect a business's performance (Mayeh, Scheepers, & Valos, 2012). However, giving the equal ability to all competing organizations to access to the same information, challenges business ability to utilize competitive intelligence, since every competitor will create products and service superior to that information (Mayeh, Scheepers, & Valos, 2012).

1.3 Theoretical framework summary

Most companies strive to understand consumers' insights and their purchase behavior in order to increase profits and global brand awareness. Engaging online reviews, consumers leave their digital trail, which gives companies vital insight, where to reach them, to provide data about their interests, habits and the choice, which may correlate their shopping decisions. On the other hand, managers need to understand the kinds of impacts online reviews can bring to the organization in order to adjust their strategies and make business decisions based on consumer needs, which is a prerequisite for success. Digital era challenges, as well as gives organizations opportunities to address the targeted audiences, communicate with storytelling, and reflect the consumers emotions. However, reorganizations in the company need to be quickly identified and strategies adjusted to consumers' preferences. Nowadays successful companies are consumer-centric and thriving to facilitate consumers' positive experience by offering them different touchpoints. For managing each touchpoint successfully, companies can easier control and improve consumers' experience through their journey. However, it still stays an issue for the companies to examine the importance of consumer provided information and also the ways how to gain benefits from consumer engagement and manage user-generated information to optimize the consumers' experience. That would increase consumer satisfaction level and consequently would positively affect company profitability. The theory summary is presented in Table 1.

Therefore, the theory of this master thesis comprises two main parts. The first part is focused on the importance of online reviews in the consumer decision-making process, their motivation of writing online reviews and how companies can benefit by allowing consumers to express their opinions as a form of online reviews and the second part focuses on online review impact on organization performance and the kind of information they can obtain from the user-generated reviews.

Table 1: Theory summary

Online reviews role from:	Main findings
Consumer perspectives,	<ul style="list-style-type: none"> – Online review platform is one of the main factors contributing to the transformation of linear purchase decision into a purchase decision journey. – Online reviews are considered to be one of the most trustworthy and credible information providers about the product, brand, and company. – The involvement of online reviews differs among the product type and the price range. The search goods are easier to evaluate with online reviews than experience and credence goods, on the other hand, expensive products are characterized to be more information- intensive than low/priced products, therefore, information collected via online reviews impact more high involvement products. – Online reviews influence online as well as an in-store purchase decision-making process.
Organization perspective	<ul style="list-style-type: none"> – online reviews provide companies with the most relevant and valuable information about the competitors, that allows companies to define their strength, weaknesses, and anticipate the market development. – Using an online review platform as a communication channel, leads companies to facilitate business performance and brand position on the market. – Active using of online reviews creates contents on the internet that boosts brand awareness globally, increases consumers' trust and improves search engine, and all together influence on sales.

Source: Own work.

2 EMPIRICAL RESEARCH DESIGN

The aim of the empirical part of this thesis is to draw up recommendations for managers based on the information about the influence of online reviews on consumer behavior and their engagement in the purchase process. For this reason, a traditional online survey was conducted and distributed among consumers. Lately, text mining was used to show managers how to extract valuable business intelligence from online reviews, make strategic decisions based on the structured outcome, and better monitor the trends in their business.

2.1 The research goal and research questions

Companies can gain an unparalleled competitive edge by using consumer data capabilities, however, companies grossly underestimate the advantage that consumer-generated online reviews confer in some instances. Therefore, my goal is to help managers identify the influence of consumer reviews on corporate performance and provide guidelines for a productive use of textual data.

The thesis answers the following research questions:

3. What is the importance of online reviews for companies and what can they learn about consumer behaviour through online reviews? What is the importance of online reviews for consumers and which online reviews (in terms of their characteristics) are more attractive to consumers? Which online reviews (in terms of their characteristics) influence purchase

decision or intent more? Does involvement in online reviews differ from online and offline shopping?

4. Why should companies consider user-generated reviews and how can they strengthen their performance based on them? To investigate these questions, I will
 - a. Examine what companies can learn from text reviews that are available for their product, and how they can use these findings to improve their performance.
 - b. Examine how consumers behave and how they decide on purchasing or reviewing in order for companies to be able to understand today's consumers and their decision-making process, and in order for companies to be able to align their communications with all these findings.

2.2 Survey analysis

Survey research involves gathering information from individuals by answering questions (Check & Schutt, 2011). The aim of the research is to study the characteristics of consumers and understand their attitudes and perceptions, and to collect general information about their purchase behavior in relation to online reviews.

The survey focuses on understanding whether consumers rely on online reviews during the purchase process and on determining to what extent consumers use user-generated content. In this part, I mainly answered questions, such as establishing the frequency and duration of reading online reviews before making a purchase decision, identifying the influential factors, defining the impact on the business based on consumers' opinions, and investigating the impact of online reviews in the product industry.

Furthermore, I want to determine the importance of online reviews by each factor separately, and find which factors influence purchase intent the most.

Lastly, I want to determine where consumers look for information about a product and to what extent a review influences purchase intention in comparison to other information sources. Additionally, this part also analyzes the utility of online reviews with regard to pre-purchase and post-purchase consumer behavior. In the end, I collected information on the various motives for writing online reviews. All these findings provided real-world evidence and a basis for drawing up the recommendations for managers.

The questionnaire comprised 19 regular and 4 conditional questions. All survey questions are related to consumer purchase behavior, consumer involvement, the importance of online reviews in the purchase decision-making process, and consumers' awareness of online reviews' impact on the company's performance (the questionnaire is available in Appendix 2). The survey is divided into five main sections aimed at identifying the respondents' profiles, the characteristics of online reviews, information sources, purchase stages, and the impact of online reviews on the corporation.

The aim of the first section is to identify the respondents' profiles by obtaining answers to category questions regarding their age, gender, level of education, and average monthly income. In this section, are used ended questions, which includes list and category questions and a combination of both single- and multiple-choice questions.

This section is followed by the second part, which examines the importance of online reviews for purchase decision-making. Here, respondents were asked to identify their preferred online reviews based on their characteristics and on how important each characteristic is when deciding whether they should read the review or not. Furthermore, this part examines the utility of online reviews compared to online or offline shopping. This section uses the five-point Likert scale ranging from "extremely unlikely" to "extremely likely".

The third section of the survey contains nine regular question and one conditional question about the trustworthiness of online reviews when compared to other information sources. Respondents answered questions regarding the trustworthiness of the information source and its reliability. The level of consumers' trust across the different information sources is measured by six statements using a five-point Likert scale ranging from "extremely unlikely" to "extremely likely". The rest of the single- and multiple-choice questions are used to identify the consumer-preferred number and the time spent on reading online reviews to trust them.

The fourth section of the survey is focused on identifying the involvement in online reviews during the purchase process. Respondents were asked to rate six statements according to their opinion using a five-point Likert scale ranging from "strongly disagree" to "strongly agree". These statements are designed to gain an understanding of online reviews' utility during each purchase stage.

The last, fifth section of the survey focuses on consumers' understanding of the impact of online reviews on corporate performance, namely if they are aware of the impact of online reviews influence on brand awareness, profitability, competitiveness, etc.

The survey consists of different measurement scales, such as nominal and interval scales. Regular category scales and the multiple-choice single-response scale comprise the nominal scale, while the interval scale takes the form of a five-point Likert scale. According to Couper, Traugott, and Lamias (2001), answering matrix questions with the Likert scale takes less time than answering item-by-item questions, therefore, in order to save time with the completion of the questionnaire, in this survey mainly is used matrix questions with the same response options as the five-point Likert scale set on different statements. In this sample, each respondent specified their level of agreement or disagreement on a symmetric scale for a series of statements. The left side of the scale indicates a powerful disagreement of the respondents, while the right of the scale indicates a powerful agreement of the respondents. Therefore, output captures the intensity of their feeling on a given subject.

To make sure that instructions and questions are understandable, the survey was pre-tested before being distributed. On 11 April 2020, it was distributed via social media, such as Facebook and LinkedIn, and email.

Quantitative data was collected from a sample of 122 individual respondents using an online questionnaire. The survey was active from 11 through 19 April 2020. In order to obtain the desired sample for this analysis, the questionnaire was disseminated via the Internet; namely on social mediam such as Facebook and LinkedIn, and via email. In order to prevent population bias in this recent study, the randomized controlled trial method was selected. According to IP locations, respondents came from 19 different countries. The difference in the frequency of nations and country representatives is not considered an issue since the study does not compare nor analyze them separately.

The final version of the survey is delivered to the respondents using the 1KA.si professional web-based survey software, which is a free-to-use online survey builder, and made available to people regardless of their experience levels. To complete the questionnaire, each respondent had to answer all questions, which took a total of 7–10 min on average .For more accurate results, duplicate and non-completed samples are excluded from the analysis. The outcome is analyzed in Excel and the Statistical Product and Service software.

2.3 Sentiment analysis

Sentiment analysis is one of the ways companies can investigate the attitudes, opinions, and emotions of consumers. Sentiment analysis provides managers with valuable information and represents an easy-to-apply tool, since they do not need to analyze each online review individually to understand and evaluate past consumers. The process relies on the computer's ability to automatically learn a language based on practical examples. This method is chosen since it is widely used and capable of quickly extracting the useful data and information from an enormous amount of online reviews, which are hard to read and analyze without machine help.

To extract information useful for the managers in making strategic decisions, sentiment analyses is used to determine the emotional tone behind a series of words obtained from the reviews and content analysis, and to identify the most conversed topics in the online reviews.

Sentiment analysis is used to investigate consumer attitudes, opinions, and emotions. This method enables managers to obtain valuable information about their past consumer satisfaction. With the development of the Internet, sentiment analysis also gained power in business since the text containnng consumers' opinions is publicly available and managers can easily track what people are saying about their product and their competitors. Moreover, it allows them to measure the success of their campaigns in real time.

In general, sentiment analysis is studied at three levels, namely the document, sentence, and aspect levels. The **document level** classifies the whole document as either positive or negative (Pang, Lee & Vaithyanathan, 2002). This classification determines and evaluates the reviews for a single product, meaning that this system is not useful for documents that evaluate or compare multiple products. At the **sentence level**, sentences in the entire document are separated and it is determined whether a sentence is subjective or objective. Furthermore, it distinguishes the orientation of each subjective sentence as either positive, neutral, or negative (Khan, Jeong, Lee & Alam, 2016). In this study, two methods are used to gain an understanding of consumers' opinions, namely general sentiment analysis and aspect-level sentiment analysis. This level of classification looks directly at the opinion itself, focusing on what exactly people liked or did not like. Some reviews are written in such a way that a part of them expresses a positive attitude, while another part shows a negative towards the product or service (Liu, 2012). For instance, some sentences can have a negative tone however, we can consider the entire sentence as positive.

Since the text usually consists of positive or negative sentiments, sentiment analysis is mostly used to identify the polarity of the text (Pang, Lee & Vaithyanathan, 2002). In order to conduct sentiment analysis, predetermined lists of polarized words are used (Yu, Duan & Cao, 2012). In this kind of a list, "great", "amazing", and "wonderful" reflect positive sentiment words; while "bad" and "terrible" are considered negative sentiment words. A list of such words is called a sentiment lexicon, and each word in the lexicon is assigned a value from -1 (the most negative) to +1 (most positive), with 0 implying a neutral sentence. The outcome can be used for planning advertising campaigns based on people's reactions to particular objects (Yu, Duan & Cao, 2012).

In order to capture the frequency of the words and identify its patterns in the text, topic analysis is used. The outcome can provide managers with significant and important information, such as highlighting their certain strengths and weaknesses. A keyword analysis is conducted to find the most frequently used words. Using topic analysis, managers can understand the most important topics that consumers are concerned about.

2.3.1 Data collection

Because the objective of the master's thesis is to analyze the sentiment of consumers towards a certain brand, online reviews about the product by this brand are collected. The particular brand is chosen since the company is going through major changes and a reorganization in order to adopt a consumer-centric approach. The problem of ignoring online reviews as sources of information and the main factors in marketing strategies has been recognized a while ago within the company, however, no tools or processes are implemented to address the issue.

In order to obtain the information needed to give a recommendation to marketing managers, Rapid Miner is selected as the tool for analyzing online consumer reviews published on heureka.cz. Online reviews are extracted from the website using the Octaparse visual web data

extraction software. The software is designed for experienced and inexperienced users alike. No coding is used in the collection of online reviews and the content is automatically extracted from the website, which facilitates and speeds up the collection of data. Once the data is extracted, Google Translate is used to translate statements from Czech into English. Some further cleansing and preparation are done before importing the data into Rapid Miner, such as coding, separating years from the date, etc.

The extracted data set usually contains explicit information, such as the star rating, arrival dates of goods arrival, and quick representations of product indicators of whether consumers recommend the product or not. For the further analysis, useful variables are identified, such as the consumer ID, textual reviews, and the date of posting the review. Any other content that is not deemed relevant to the area of analysis was excluded from the data set.

In total, 1657 online consumer reviews are collected, with each statement comprising 20 words on average. The shortest reviews contained two words, e.g. “affordable prices” and the longest review consists of 498 words (Table 2). Regarding the numerical evaluation, the range of value is between 1 and 5, where 1 reflects consumer dissatisfaction and 5 reflects consumer satisfaction. The average rating is 3.63 with a standard deviation of 1.78.

Table 2: Summary of descriptive statistics

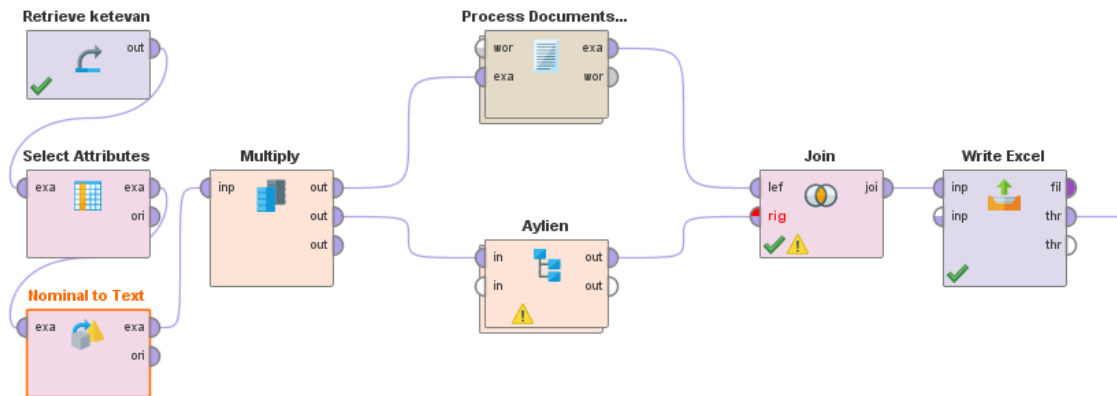
	No. of variable	Minimum value	Maximum value	Sum	Mean	Standard deviation
Numeric evaluation	1657	0	5	6020	3.63	1.78
No. of words in textual evaluation	1657	2	498	32811	19.8	37.7

Source: Own work.

2.3.2 Research process

Text mining is conducted in the Rapid Minor software using the Aylien Application Programming Interface, while the statistical analysis of numeric output of sentiment analysis is visualized in Statistical Product and Service software and Excel. Multiple variables are extracted from the website, however, in order to make the data processing easier, only three attributes are selected, such as the date, ID, and textual review. Figure 5 below illustrates the process of the sentiment analysis.

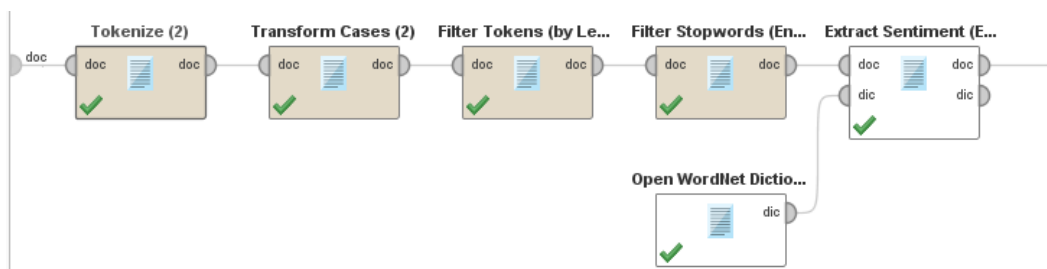
Figure 5: Rapid miner process



Source: Own work.

The first step in the process of conducting sentiment analysis is to create a "process document for data". As Figure 6 illustrates, the process document from the data comprises of several parameters, starting with tokenizing the reviews, where a non-letter separator is used, meaning that a new token exists between each separator. Furthermore, each token, in this case each word, is transformed in a document to lower case, follows by filtering tokens based on their length. All words that containe less than 4 and more than 25 characters are excluded from our dataset. In order to remove the words such as “the”, “a”, “and”, “on”, “it”, etc., the remove stop words operator is used on the dictionary base. The outcome is extracted with the support of the Lexicon Wordnet dictionary.

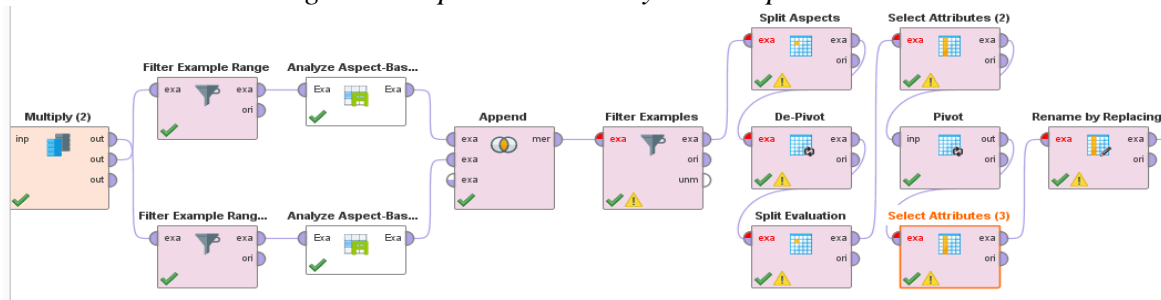
Figure 6: Process document from data



Source: Own work.

Due to Aylien Application Programming Interface’s limitation, the aspect-based analysis is conducted in two stages: the first filtered set contains only 800 examples, and the second set contains the remaining examples. In order to recognize the aspects into the row in this research, De-Pivot operator is used. Furthermore, these aspects are split based on names and values. The Pivot operator summarizes the data in a larger table by organizing it into groups. Figure 7 below illustrates the steps of aspect-based sentiment analysis.

Figure 7: Aspect-based analysis in Rapid Miner



Source: Own work.

2.4 Summary of methods

As was mentioned, two main methods are selected to answer the research questions of this master's thesis. The online survey is dedicated to understanding consumers' purchase behavior and how they use online reviews during their purchase process. Do they engage with online reviews in the pre- or post-purchase stage; and to what extent do they trust online reviews compared to other information sources, such as family or friend recommendations, TV advertisements, the company's social media, recommendations from experts and professors, and sales assistants' recommendations. Table below summarize the purpose of the methods and importance of the outcome from each method.

To understand the kinds of online reviews by their characteristics, they need to be monitored more closely by the company with surveys asking consumers to rate the likelihood of them looking at different kinds of online reviews based on their length, time of publication, image attachments, response by the company, etc. Later, the survey focused on understand their motives to write online reviews. With this question, I aim to establish whether they write online reviews to send a signal to managers to improve their product or service and adjust to consumers' needs. The second method, sentiment analysis, was focused on guiding managers and showing them the way to translate raw data into business intelligence and showing them the importance of mining for consumers' textual feedback. This thesis also lists the tools and processes used for interpreting the outcome. There are many text mining tools and processes but in this report, sentiment analysis of the document and aspect-level analysis are used to detect the overall attitudes of consumers towards a given product or service. To categorize the aspects as positive or negative based on the outcome, managers can detect the aspects perceived positively by consumers that need to be improved or highlighted. Later, topic modeling and keyword analysis are used to find out the most prevailing topics in the text

Table 3: Methodological overview

Method	Purpose of analysis	Importance of result for managers
Survey	<ul style="list-style-type: none"> – Most consumers read online reviews before making online or offline purchase decisions. However, consumers’ attention to online reviews differs based on the characteristics. – Consumers trust online reviews as an information source more than traditional, company-based advertisements and friend or family recommendations. – Consumers engage with online reviews during each purchase process. 	<ul style="list-style-type: none"> – It is important to allow consumers to express their emotions and satisfaction in the public and to determine which kinds of online reviews need to be monitored more carefully by the managers. – Implementing consumer-preferenced communication channels. – Communicating with consumers during the various purchase decision-making stages, sending them the correct signal and identifying their behavior after they complete a purchase.
Sentiment analysis Star and textual score evaluation Polarization Aspect-based sentiment analysis	<ul style="list-style-type: none"> – Star rating and sentiment scores do not always correlate and summarize consumer attitudes adequately. – Selecting the most positive and negative texts to exhibit their strengths and weaknesses. See the overall trends in consumer satisfaction over time. – Aspect-based sentiment analysis. 	<ul style="list-style-type: none"> – From the text analysis, managers can obtain a more detailed estimate of consumer satisfaction than merely with star ratings. – Useful for the strategic behavior of the company and evaluating the success of campaigns. – Identifying satisfaction with specific aspects from the reviews, and its position in the business. It helps managers recognize the need to focus on specific aspects.
Keyword analysis	<ul style="list-style-type: none"> – Identifying the most conversed topics in the text. 	<ul style="list-style-type: none"> – Outputting highlighted aspects that are of core importance. Summarizing the prevailing topics in the text.
Topic	<ul style="list-style-type: none"> – Identifying terms that are associated with one other and create the same topic. 	<ul style="list-style-type: none"> – Determining the predominantly discussed terms in textual reviews. The method can be used to connect terms with one another.

Source: Own work.

3 RESEARCH ANALYSIS AND RESULT

This chapter summarizes the results of online survey and the sentiment analysis. The main topics in the survey are monitoring the information source, evaluating the trustworthiness of online reviews, determining consumer's motives for writing online reviews, and finding what kinds of online reviews are most attractive to consumers. The sentiment analysis, by contrast, is focused on understanding the importance of text mining text using the outcomes in the managerial decision- making process. This chapter first analyzes the outcomes of the survey and, secondly, describes the tool and interprets the data obtained in the sentiment analysis.

3.1 Survey

For businesses to achieve the ultimate goal of increasing profitability, only focusing on sales numbers is no longer relevant. Markets need to investigate how consumers behave, understanding their likes and dislikes throughout the entire purchase experience. Therefore, the goal of this research is to understand the role and importance of online reviews in the consumer purchase decision-making processes, and how companies can strengthen their performance based on consumer behavior. Consumer behavior relating to the online reviews is analyzed from the survey outcome. To achieve the research goal, characteristics of the sample are presented, followed by the importance of online reviews in the purchase decision-making process. This part mainly focuses on identifying the motives consumers have for writing online reviews. Do they rely on information obtained from online reviews during online and offline shopping, and at which stage of purchase process do they resort to online reviews? This analysis will help managers better understand whether online reviews need to be implemented in their marketing strategies, and when and how they need to communicate with consumers through this platform.

For further investigation, it is conducted a factor analysis with the help of Statistical Product and Service software. The process outputs are presented in Appendix 3 and Appendix 4. From the factor analysis, it is obtained two constructs: the purchase intention and trust in the source of information. It is tested whether these two constructs correlate positively to determine if trust in the source of information influences the purchase intention. Next, it is also tested the degree of trust in online reviews and the types of information sources that influence purchase intention the most. Based on the results, managers can decide which information sharing and communication channels they need to invest in order to reach their target consumers. The last part of the research is dedicated to investigating online reviews and determining whether they are comparably important during both pre- and post-purchase stages. The outcome will help companies determine when to interact with consumers via online reviews.

Using the same construct – "purchase intention" – it is tested online reviews based on the characteristics that are deemed the most trustworthy and that impact purchase intention the

most. Using this information, companies can categorize the most important online reviews and focus more on analyzing and offering consumers this specific kind of online reviews. This chapter concludes by presenting the key findings and providing recommendations based on statistical analysis.

3.1.1 Sample characteristics

The sample consists of 122 valid survey responses. Before progressing to further analysis, it is necessary to take a look at the respondent's characteristics. At the beginning of the survey, respondents are asked to answer classification questions pertaining to gender, age, education, and monthly wage, which is summarized in Table 4. These types of questions are organized using a single-selection scale, where respondents select options that best fit them. The described methods of data collection results in a sample with a nearly equal gender distribution. Sixty-two (51 %) respondents are female and sixty (49 %) are male. With regards to the age variables, respondents are supposed to opt for one of four age groups: up to 20 years, 21–30 years, 31–40 years, and 41 years and more. As can be seen in Figure 14, the majority of the respondents (66 %) are between 21 and 30 years old, and the smallest group (7 %) are respondents 41 years old or more. As far as education is concerned, the majority of respondents have a master's degree (33 %), following by high school education (27 %).

Table 4: Frequency and percentages of classification questions

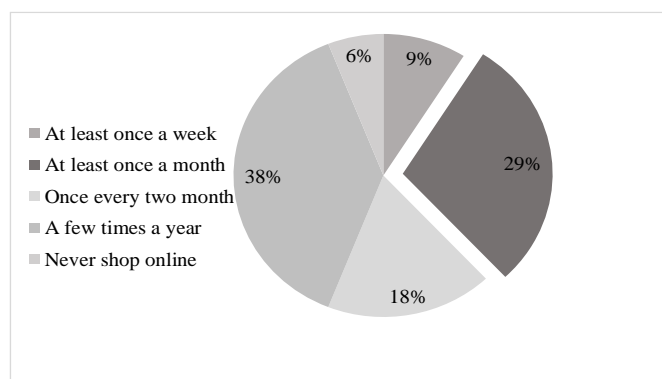
Classification	Frequency	Percent
Gender		
Male	60	49%
Female	62	51%
Age		
Up to 20 years of age	14	11%
21-30 years of age	80	66%
31-40 years of age	18	15%
41 years of age or more	10	7%
Education		
Under secondary school	3	2%
Secondary school	10	8%
High school	33	27%
Associate degree	4	3%
Bachelor degree	27	22%
Master degree	42	33%
Above master degree	3	2%
Monthly wage		
Less than 500€	36	30%
501-1500€	65	52%
1501-2500€	12	10%
More than 2500€	9	7%

Source: Own work.

3.1.2 Online review importance in purchasing decision

The importance of and engagement with online reviews during the purchase process are increasing, with the ability to shop online significantly affecting purchase behavior. Based on our sample, 29 % of respondents shop online at least once a month (Figure 8). 35 % of online shoppers consider the information collected from online reviews on the Internet to be an important factor when choosing to buy a product online, while 32 % of online shoppers consider online reviews as a very important factor that makes consumers prefer purchasing online rather than in-store. In fact, the ability to acquire information from online reviews is the second most important factor after free shipping in influencing impulse buying during an online purchase.

Figure 8: The frequency of online shopping



Source: Own work.

Consumers dig into the information about the product and service to reduce purchase risk. On average, 36% of consumers spend more than 15 minutes reading online reviews before making the decision, and out of that, 19% of respondents invest more than 30 min in reading user-generated online information. Intuitively, the information available about the consumer experience will influence purchase decision-making. Research shows that the first 10 reviews have the highest impact magnitude, with 52 % of respondents relying on the first 10 reviews when making a decision based only on this information. Recent data shows that when it comes to making a purchase decision, males are more involved in conducting accurate research and gathering all possible information than females. The majority of respondents who spend more than 15 min reading online reviews are males.

Based on our sample, people mostly write online reviews when the experience is extremely bad, with the highest average score of 3.2. Respondents also warn one another about potential fraud, since sometimes pictures on social media do not reflect the real product appearance or quality. 11 % of the respondents always write online reviews to inform and help other consumers get correct and more reliable information about the product. It should also be noted that a high proportion of the respondents perceive writing online reviews as a means of helping organizations increase brand awareness and sales. However, informing

organizations and their signals for improvement has a greater indicator, with 30 % of the respondents almost always writing online reviews for this reason.

According to the average rating, most consumers write online reviews when the experience is really bad, with the average rating of 3.236. Conversely, the respondents are less likely to write online reviews when the experience is really good. The minimum rating is aligned with social benefits, meaning that the majority of the respondents would rarely consider writing online reviews to gain social benefits (Table 5).

Table 5: The reasons for writing online reviews

Survey Question	Average	Std.deviation
When the experience is really good	3.036	0.693
When the experience is really bad	3.236	0.793
To inform other consumers and give them correct information	3.127	0.963
To inform business and send them a signal for improvement	3.018	1.027
To help business increase brand awareness and sales	2.618	1.009
To harm the company's profitability	2.036	0.999
When the experience is really good	3.036	0.693

Note: Five-point Likert scale, 1 = never, 5 = always

Source: Own work.

Furthermore, the survey checks whether consumers read online reviews in online as well as offline shopping. The results show that, on average, the respondents rely on the information from online reviews and recommendations before making online purchase decisions more often than they do during in-store shopping. Nevertheless, our sample shows that online reviews impact purchase decisions before and during in-store shopping as well, which is summarized in Table 6 below.

Table 6: Frequency of shoppers reading online reviews

Shopping type	Average	Std. Deviation
Before and/or during online shopping	3.9	0.93
Before and/or during in-store shopping	3.0	1.08

Note: Five-point Likert scale 1 = never, 5 = always

Source: Own work.

Besides the importance of online reviews, the star rating also plays an essential role in the purchase decision-making process. According to our sample, 99 % of the respondents look at star rating indicators before even considering reading online reviews. The 38 % likelihood that consumers read online reviews about a particular product typically peaks at the rating of 4. According to studies by the Spiegel Research Center (2017), the optimal star rating varies according to the product type, however, their studies showed that 5 stars were not optimal regardless of the product category, stating that five stars are just “too good to be true”.

Engagement with online reviews during purchase decision-making varies with product involvement. 61% of respondents spend more time looking at online reviews before purchasing high-priced products, while 34% of consumers spend an approximately equal amount of time with both cheap and expensive products. Looking at the results for the engagement level in the purchase decision-making process, it was not surprising that the average number of the surveyed people claim that online review engagement is the highest when checking hotels and education options, followed by electrical equipment, clothing, and footwear, which have an average score of 3.5. On average, the respondents do not read online reviews during purchasing groceries, which is indicated by an average score of 2.6 (Table 7).

Table 7: Online review engagement by product category

Product category	Average	Std. deviation
Restaurants booking	3.3	1.15
Grocery stores	2.6	1.08
Medical	3.0	1.20
Clothing and footwear	3.5	1.13
Hotels	3.6	1.26
Entertainment/going out	3.2	1.16
Automotive	3.2	1.31
Electrical equipment	3.5	1.35
Internet subscriptions	3.0	1.23
Hair and beauty	2.8	1.41
Pet services	2.3	1.22
Furniture and homewares	3.3	1.17
Education	3.6	1.17
Major household appliances	3.3	1.25
Books, DVD, music or games	3.2	1.26
Sport and leisure	3.0	1.18
Car hire	2.7	1.36

Note: five-point Likert scale 1 = never, 5 = always

Source: Own work.

The purchase decision-making process comprises different stages, which are divided into two categorical groups: pre-purchase and post-purchase. The study is focused on understanding whether online reviews are significantly important in both the pre- and the post-purchase stage. For this reason, several questions are combined to analyze the utility of online reviews separately during the pre- and post-purchase stages. The importance of the pre-purchase stage is measured using five questions asking how often they use online reviews: to develop the desire to buy a product that refers to the need recognition stage; to collect information about the product that refers to the information search stage; to evaluate the alternative; to purchase the same product; and to measure the impact of online reviews on facilitating loyalty. On the other hand, the post-purchase stage is combined by two questions: to determine the importance of responding to consumer online reviews by companies; and to establish if they are willing to express their opinion about their experience (Table 8).

Table 8: Purchase process stages and the survey questions

Purchase stage	Survey questions
Pre-purchase	Reading reviews always develops a desire to buy the same product again
	Reading reviews always helps me to discover a new product
	Reading reviews always develops a desire to buy a new product
	I use online reviews to search for information about product or service
	I always use online reviews to evaluate alternative products or service
Post-purchase	I always read the business response to my online reviews
	I always write a recommendation and opinion about the product or service after experiencing it

Source: Own work.

As seen in Table 9, the information about a product or service provided by online reviews seems to be almost equally important in the pre-purchase as well as the post-purchase stages. The majority of the survey respondents frequently read online reviews to discover new products, to search for information about a product, and to evaluate the alternative products. During the post-purchase stage, people frequently read business responses to their online reviews. 35 % of the respondents agree with the statement, “I always read the business response to my online reviews.” During the post-purchase stage, the majority of the respondents write reviews after experiencing the product, with 38 % of the respondents only writing an online review from time to time and 13 % very often.

Table 9: Importance of the online reviews on purchase decision stages

Purchase stages	Average	Std. deviation
Pre-purchase stage		
Reading reviews always develops a desire to buy the same product again	3.10	0.86
Reading reviews always helps me to discover new products	3.50	0.85
Reading reviews always develops a desire to buy new products	3.20	1.00
I always use online reviews to search for information about products or services	3.50	0.94
I always use online reviews to evaluate alternative products or services	3.50	0.86
Post-purchase stage		
I always read the business response to my online reviews	3.50	0.85
I always write a recommendation about the product or service after experiencing it	3.10	1.12

Note: five-point Likert scale, 1 = extremely unlikely, 5 = extremely likely

Source: Own work.

3.1.3 Influence of online reviews on purchase decision

To define the influence of online reviews on purchase decisions, a factor analysis is conducted to obtain the two main constructs: the purchase intention and trust in the information source with Cronbach’s Alpha 0.684 and 0.672, respectively. In this part, the research is focused on finding how influential online reviews are when compared to other information sources in purchase decision-making, and on determining which online reviews

influence purchase intention more based on on their characteristics. Before testing the impact of each information source on purchase intention, the Pearson correlation was conducted to determine the relationship between trust in the information source and the purchase intention. The test showed that there is a positive correlation (0.320) between the purchase intention and trust in the information source, where the significant value is less than 0.5 (0.004). This result clarifies that trusted information positively impacts the purchase intention (Appendix 5). The respondents answered a question about different information sources and how each source influences their purchase decision. They are asked to provide a rating ranging from 1 (extremely unlikely) to 5 (extremely likely). As shown in Table 10, an average majority of the survey respondents are mostly influenced by their family and friends' recommendations (3.89), followed by online reviews and online recommendations with an average rating of 3.69. TV advertisements, information that is mainly generated by the organization, has the smallest impact on the purchase decision with an average rating of 2.14.

Table 10: Descriptive statistics of variables of information source

Information sources	Average	Std. deviation
Online reviews and recommendations	3.69	0.8955
Family and friend recommendations	3.89	0.9089
TV advertisements	2.14	1.0251
Advertisements on the company's website and/or on their social media	2.76	1.0162
Recommendations from experts and professional website	3.58	0.9231
Sales assistants' recommendations	2.8	1.0249

Note: five-point Likert scale, 1 = extremely unlikely, 5 = extremely likely

Source: Own work.

In order to statistically test the impact of and relationships between purchase intention and each information source, a multiple regression analysis is conducted. Based on the result shown in Table 11, online reviews and recommendations, recommendations by friends or family members, and expert recommendations have a positive and highly significant relationship with the consumer purchase intention. Thus, there is sufficient evidence to prove that online reviews, family and friend's recommendations, and information from experts correlate positively to the consumer purchase intention. On the other hand, this test did not produce any evidence (p-values higher than 0.05) to prove a positive relationship between the purchase intention and TV advertisements or the information provided by retailers and sales assistants. Chen, Teng, Yu, and Yu (2014), tested the impact of information sources on consumer's decisions. The result shows the consumers perceive e-word-of-mouth a more useful information source than neutral/third party and manufacturing/retailer sources.

Table 11: Relationships between the information source and online purchase intention

Explanatory variables/dependent factor	Correlation index	Sig.(2-tailed)
Online reviews and recommendations	0.327	0.000
Family and friend recommendations	0.227	0.011
TV advertisements	0.130	0.098
Advertisements on the company's website and social media	0.074	0.232
Recommendations from experts and professional website	0.186	0.032
Sales assistants' recommendations	0.069	0.248

Note: five-point Likert scale, 1 = extremely unlikely, 5 = extremely likely

Source: Own work.

The influence of online reviews and the possibility to read certain online reviews vary based on different factors, including the length, recency, star rating, response status, etc. The factors that are tested in this research are listed in Table 12. Based on the survey data, consumers mostly like to look at online reviews containing pictures of the product, with an average point of 4.115 and a standard deviation of 0.9. Conversely, consumers dedicate the least attention to online reviews written by famous people.

Table 12: Factors in user-generated online reviews

Factors of online reviews	Average	Std. deviation
Long reviews	3.064	1.0108
Recent reviews	3.808	0.9678
Reviews that are responded by the business	3.256	0.9036
Reviews that include a photo	4.115	0.8970
Video reviews	3.744	1.2529
Reviews are written by verified buyers	3.872	0.9851
Reviews are written by the expert in this field	3.808	0.9678
Reviews are written by a famous person	2.538	1.1246
Online reviews with punctuation marks and emojis	2.603	1.0732
Positive reviews	3.705	0.8545
Reviews with maximum rating stars	3.808	0.9125
Reviews with minimum rating stars	3.333	1.0771
Negative reviews	3.679	0.9999

Note: five-point Likert scale, 1 = extremely unlikely, 5 = extremely likely

Source: Own work.

Furthermore, this research focused on figuring out which factors of online reviews positively correlated with the online purchase intention. A Spearman correlation is conducted to test the correlations and the significance of the results. Based on the research results, only recent reviews and the reviews that were written by verified consumers is statistically significant and correlated positively with the online purchase intention, producing correlation indices of 0.207 and 0.265, respectively. The same research shows that reviews written by famous people and positive reviews are correlate negatively with the purchase intention, however,

the significant value of these online review characteristics exceeds 0.05, therefore, there is not enough evidence to prove their negative correlation (Table 13).

Table 13: Correlations between online review factors and the online purchase intention

Characteristics of online reviews	Pearson Correlation index	Sig. (2-tailed)
Long reviews	0.155	0.176
Recent reviews	0.223	0.049
Reviews with a business response	0.207	0.049
Reviews that include a photo	0.135	0.238
Video reviews	0.136	0.235
Reviews written by verified buyers	0.265	0.019
Reviews written by an expert in the field	0.174	0.128
Reviews written by famous people	-0.128	0.263
Online reviews with punctuation marks and emoji	0.098	0.392
Positive reviews	-0.001	0.993
Negative reviews	0.098	0.392
Reviews with a maximum star rating	0.178	0.118
Reviews with a minimum star rating	0.043	0.705

Note: five-point Likert scale, 1 = extremely unlikely, 5 = extremely likely

Source: Own work.

3.1.4 Limitations

While there are plenty of positive benefits in using online-based surveys to collect data, there are also certain limitations that have to be taken into consideration when analyzing the outcomes. The outcomes should be interpreted with caution since several issues might impact the result, such as language-related barriers, a low response rate, and the time that participants are willing to spend on filling in the questionnaire.

The first limitation might be considered as a language-related barrier. The questionnaire is drawn up in English and distributed in different countries. The respondents come from 20 different countries where the first language is not English. Therefore, the language barrier might limit the accuracy of the outcome and impact productivity. The second limitation could be the number of respondents as only 122 filled-in valid questionnaires are submitted. Therefore, the result of this survey needs to be analyzed with caution. A larger sample is recommended for any future research on the subject in order to produce better and more generalizable findings. The third limitation is the time factor. A respondent is unlikely to stay fully engaged and focused on answering the questionnaire for the entire duration of their surveying. To complete a questionnaire as fast as possible, respondents might express unintentional opinions

3.1.5 Discussion

The long-term sustainability of a company depends on its ability to properly meet their needs and act in accordance with consumer preferences and the demand. For this reason, companies need to understand consumer behavior clearly. Therefore, the survey is organized to gain an understanding of online reviews' role in consumer purchase behavior in order for managers to be able to develop appropriate strategies.

The key findings based on the results are summarized in Table 14. The findings from the thesis split the importance of online reviews between the consumer purchase process, the company strategy, and its influence on consumer purchase decisions. Judging by the results, companies need to develop a comprehensive model to estimate the relative information from online reviews in order to better understand and evaluate their product. After all, the majority of respondents are motivated to write online reviews by their desire to inform companies about the product and about what needs to be improved to meet their needs. However, companies must understand their industry, the product type, and the price range of the product before making online reviews their core communication channel.

As is analyzed, consumers invest more time in reading online reviews when the product is expensive. In addition to this, engagement in online reviews in the purchase decision-making process differs from industry to industry. More and more people spend time on reading reviews to evaluate hotels, and this method of information collecting is highly popular among consumers searching for education options as well.

An interesting fact that is obtained in the survey analysis is that consumers often read consumer opinions not only before the online purchase, but also in brick-and-mortar settings. Therefore, it would be strategic from the management team to display online reviews in-store so that consumers can easily see the reviews of this particular product in the store. Consumers always search for a credible source of information. Thus, a traditional advertisement provided by the company is no longer trustworthy enough to be deemed a sufficient source of product information as it is incentivized and controlled by the company itself. The information flow about the product, product images, and discussions about the product's features all depend on which information the company is willing to share and which information it wants to hide.

With the spread Internet, the popularity of online reviews has increased dramatically. Consumers are increasingly involved in online reviews, so companies must invest in advertising the product through this platform if they are to reach their consumers via their preferred communication channel. This master's thesis suggests that managers improve their website, allowing consumers to participate in the brand-building process and providing a means of creating a user profile on the company's website, the reason being that the impact of online reviews written by verified consumers is high.

Table 14 Key findings of the survey

Survey topic	Findings on consumers' purchase behavior	Lessons for companies
Importance of reviews for the consumer purchase process and the company's strategy	<ul style="list-style-type: none"> – People write online reviews to send a signal to the company and inform them about product and service performance. – Consumers use online reviews during online and in-store shopping. – Engagement in online reviews on varies based on product type. Consumers spend more time reading online reviews when purchasing an expensive product. Consumers engage in online reviews during each stage of the purchase process. 	<ul style="list-style-type: none"> – Companies need to develop a comprehensive model for estimating relative information, understanding, and evaluating products through online reviews. – Companies need to implement online reviews in their in-store strategies running. Businesses with large portfolios need to pay special attention to online reviews for expensive products. – Businesses need to foster their communications and relationships with consumers after they make a purchase and post a review, responding to them effectively. Online reviews need to be handled by businesses to provide information about the product, represent new products, show they are better than their competition, and keep a connection with the consumers even after their purchase.
Influence of reviews on the purchase decision	<ul style="list-style-type: none"> – Information from online reviews have a greater impact than a traditional advertisement – The impact of online reviews on purchase decisions differs based on specific characteristics; online reviews containing a photo and the reviews written by verified users have the highest impact. More than half of respondents find the first 10 reviews to be the most influential. 	<ul style="list-style-type: none"> – Companies need to invest more in understanding the concept of the online review platform in their particular industry, and then manage this platform as part of their marketing strategies. – Companies first need to allow consumers to create their own page with a verified profile on their website. They should ask consumers to upload photographs of the product and focus more on recent reviews.

Source: Own work.

3.2 Sentiment analysis

The second part of the data analysis is dedicated to text mining in order to examine what companies can learn from the textual reviews available on the Internet, and to determine how they can use these findings to improve their performance. In order to achieve this research goal, several methods are used, such as sentiment analysis, polarization, and content analysis.

Sentiment analysis helps managers establish how their brand is perceived by its target market over time; **polarization** classifies the opinions and attitudes as positive, negative, or neutral; and, lastly, **content analysis** helps managers identify the most frequently used terms in the online reviews and pay attention to the most relevant and important aspects as defined by consumers. As an example, online reviews for one specific brand are collected at heureka.cz. The website offers a numerical evaluation – a star rating that typically ranges from one to five stars. A low rating indicates a negative view of the product; by contrast, a high star rating reflects positive consumer attitudes towards the product and the experience with the product. Besides providing a star rating, consumers can write down their opinions or attitudes, describe their experience with purchasing product and their communication with the company, and provide information regarding their satisfaction.

3.2.1 Relationship between numeric and textual evaluations

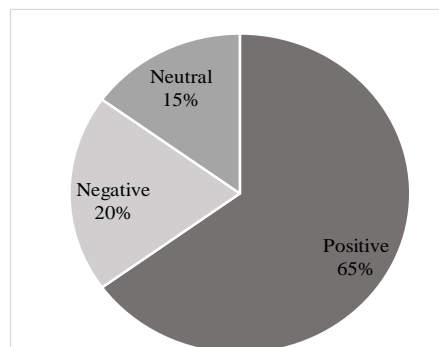
Some consumers, and also companies, rely solely on the star rating when filter options and looking the alternatives. The essence of the star rating is to send an important signal about the overall quality of the product or service and about the consumer satisfaction level to both consumers and managers. Theoretically, the evaluation of online reviews and star rating has to be highly correlated, as it is expressed and ranked by the same consumer on the same product. However, there are cases when the evaluation of online reviews does not match the star rating value. Therefore, managers should not rely only on the numeric evaluation alone as it represents an incomplete summary of the textual evaluation. To prove this fact, a sentiment analysis is conducted and compared to numerical values.

In the studied sample, the average sentiment of the online reviews was 0.18, which reflects an overall positive attitude and experience of the consumers. The average numerical rating was around 3.63, which also indicates that positive opinions about the product are prevalent. However, the correlation between the sentiment score and the numerical evaluation is weak ($R = 0.278$). Furthermore, the numerical value does not provide any information that may be useful in strategical decision-making. Therefore, this master's thesis suggests that managers implement the text mining process in their marketing strategies. Moreover, the thesis explains how managers can use sentiment and content analyses in their decision-making processes.

From a managerial perspective, the polarization of reviews represents an interesting input. It classifies the reviews as positive, negative, or neutral. In this master's thesis, each online review

is identified as either positive, negative, or neutral. To determine the polarity of the reviews, sentiment scores are used. Anything below 0 is tagged as negative, anything above 0 is tagged as positive, and 0 is tagged as neutral. Based on the results, managers can assume that the majority of consumers (65 %) who submitted online reviews have expressed positive attitudes towards the product. However, there is a lot to improve since 20 % of online reviewers had a negative overall opinion about the product (Figure 9). To carry out a more detailed analysis of a certain aspect's polarity, an aspect-based analysis is conducted, which is explained later in this section.

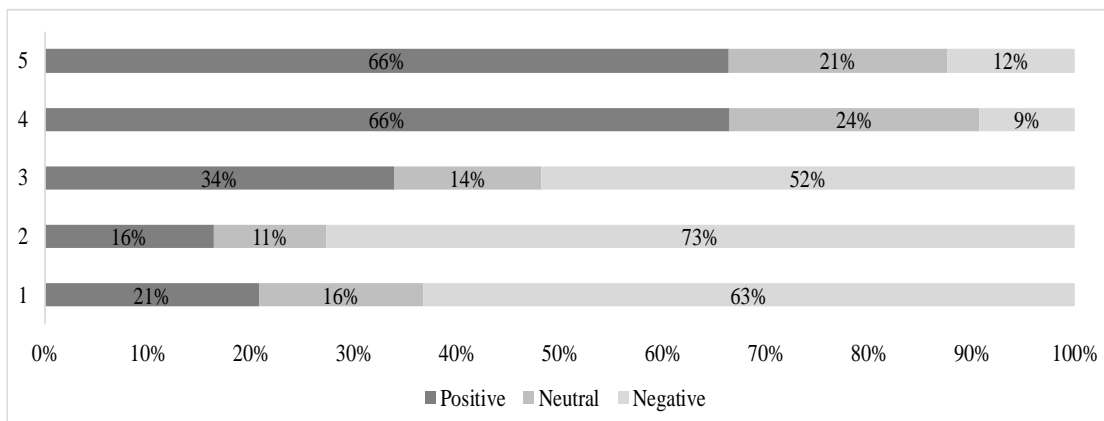
Figure 9: Polarization of online reviews



Source: Own work.

Looking at the share of reviews with a positive, neutral, or negative polarization, which are classified by star ratings, provides additional evidence that textual evaluation and the star rating are not correlated. As an example, out of all the reviews rated with 5 stars, 12 % of the reviews are identified as negative; on other hand, out of all reviews rated with 1 star, 21 % of the reviews are found to have a positive overall sentiment (Figure 10). Therefore, studying the content of online reviews is essential for managers to be able to act correctly since the rating does not always convey a precise signal.

Figure 10: Share of reviews with positive, neutral, or negative polarization classified by star ratings



Source: Own work.

To conclude this subchapter, textual evaluation has to be implemented in marketing strategies since star ratings and overall average star scores do not always provide accurate information. On the other hand, numeric values only detect the level of consumer satisfaction, while information obtained from textual data can help managers properly evaluate consumers' behavior, their needs, and attitudes towards specific aspects. This information allows managers to respond to markets effectively as well as make strategic decisions and tactical moves aimed at improving performance based on consumer inputs. Furthermore, this chapter pinpoints the ways managers can use the information obtained by text mining to develop and improve their strategies.

3.2.2 Consumer satisfaction by time

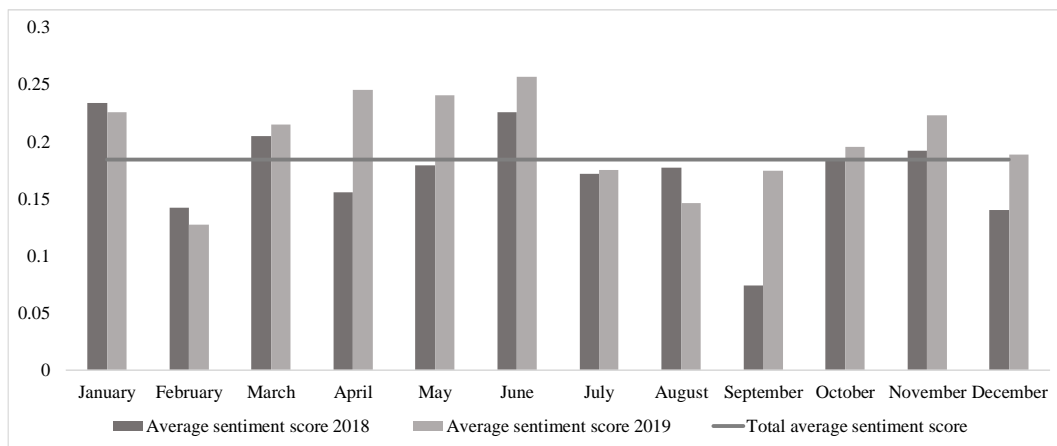
Sentiment analysis can provide important information for measuring the performance of marketing campaigns and for evaluating how the market perceives innovative and upgraded products. Should a company upgrade their product, sentiment analysis can be leveraged to compare the consumers' level of satisfaction with that towards the old product and upsell products based on a time frame.

Some companies have launched campaigns for different products from the same product category the same year. However, not every product and every campaign is equally successful. The brand I used as an example has the same marketing structure. Each year, they provide consumers with different products from the same product category, and run different campaigns within the same time frame. For such companies, sentiment analysis and score observations by time can be a valuable source of information for measuring the success of their campaigns and the performance of their products based on consumer inputs.

In our studied sample (Figure 11), consumer satisfaction increases over the year. In 2018, the average sentiment score is 0.17, jumping to 0.19 in 2019, which indicates a 11 % growth over one year. The difference between the satisfaction score can be attributed to product development over the year or product delivery through effective marketing activities.

Managers can observe the sentiment scores on monthly bases. For instance, the campaign launched in June seems to have been successful, but there is a downfall in July and the consumer satisfaction level dropped by 31%. On the other hand, the result pinpoints that the campaign and the marketing activities performed successfully in the autumn season of 2019. Based on the marketing calendar, the seasonal campaign that was running in the autumn of 2019 in this specific country was extremely successful in terms of the consumer satisfaction, which are in the end related to profit.

Figure 11: Sentiment score evaluation over months



Source: Own work.

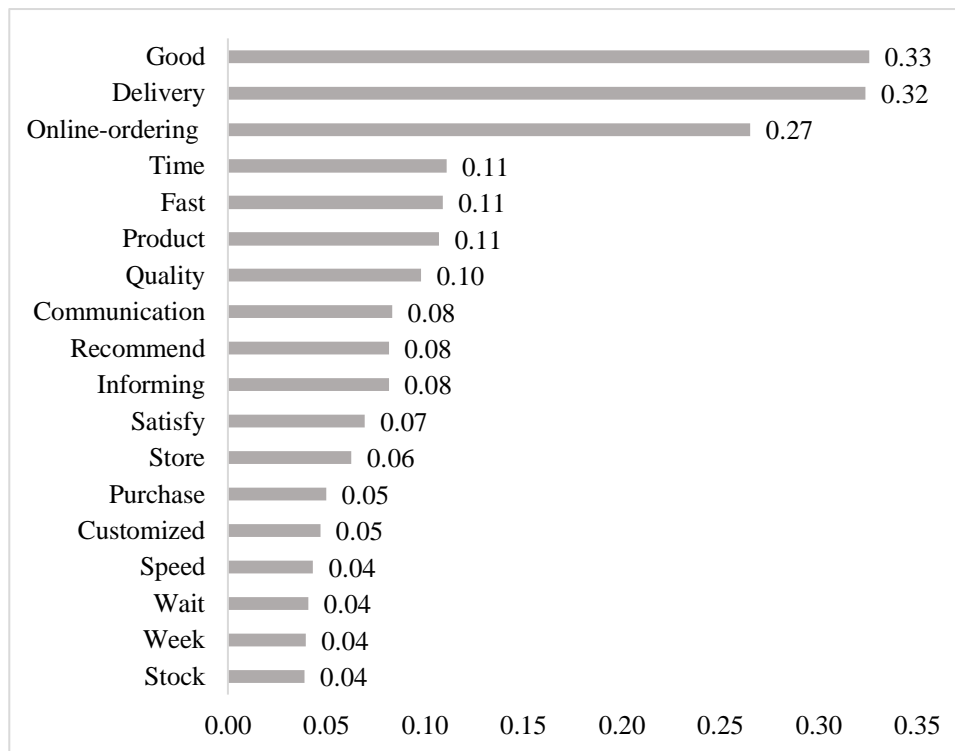
Based on this data, managers can either drill down to the source text of successful campaigns (March, April, May, and June) or their failed marketing activities (February, July, and August) for inspection and further adjustments in their future strategies. This additional information will lead managers to logically develop a connection between the performance of the new product and the success of the campaign and sales in order to derive strategic decisions.

3.2.3 Content analysis

It is essential for managers to analyze the content of the text in the reviews within a short time frame to make quick and guided strategic decisions. Small retail companies will find it manageable to read online reviews on a daily basis. However, it is impossible for Internet-based and international companies to manually read their consumer reviews. Content analysis is a great option for managers to analyze the text. The literature provides different approaches to analyzing a text, however, this master's thesis is focused on three main methods: keyword analysis, aspect-based sentiment analysis, and topic analysis.

Keyword analysis is used to identify the most frequently mentioned terms in the text. It identifies the factors that are the most important to consumers. According to our sample data, the most frequently used terms were: “good”, “delivery”, “online-ordering”, “time”, “fast”, and “product” with a relative share of around 0.11 or more (Figure 12). The results show that consumer are concerned about delivery time, quality, and communication.

Figure 12: The most common terms in the text (relative word frequency in %) (N = 1657)



Source: Own work.

Therefore, it is the manager's task to conduct an in-depth analysis based on consumer concerns, in this case time, quality, and communication. They need to evaluate their offers and make sure that the gap between company offers and consumer needs is minimized.

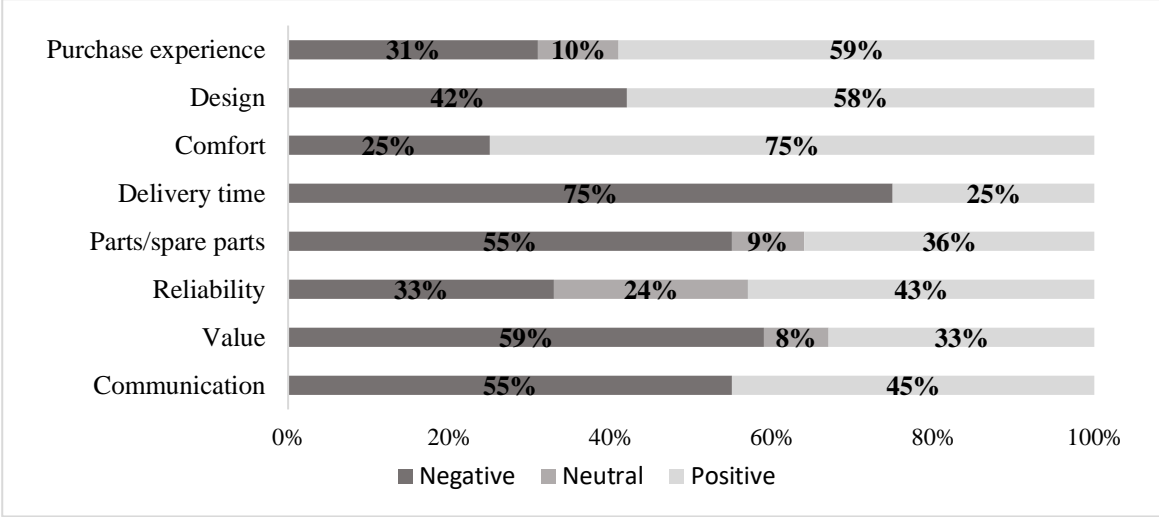
Aspect-based sentiment analysis provides an additional input. This approach helps to identify the aspects that are important to consumers. In addition to this, the identified aspects are tagged as positive, negative, or neutral based on the textual information. Based on the data collected, eight major aspects are identified: purchase experience, design, comfort, delivery time, parts/spare parts, reliability, value and communication. Out of all these aspects, people are the most concerned about the quality and value of the product. In some cases, online reviews can express positive attitudes towards one aspect, while at the same time expressing negative attitudes towards another aspect. For instance, the example below is considered to be negative with regard to the delivery experience, however, it is defined as positive with regard to quality:

I was expecting a product for the 23rd of November, but it arrived late. I needed a product on this day. They called me and let me know about this delay. I was disappointed but the quality that I received was great. So, the delay was not such a disaster any more.

Such an analysis can be a valuable tool for managers when determining the satisfaction or dissatisfaction with specific aspects that could lead to improving their strategy. For instance, in our study, what seems to be problematic is the value of the product since 59 % of consumers

complained about the value, while their attitude towards the comfort of the product (75 % of attitudes are positive) is the key beneficial factor for this brand (Figure 13).

Figure 13: Share of reviews with positive, neutral, or negative polarization classified by aspects



Source: Own work.

Topic analysis is useful in cases when one online review touches upon more than one topic. To identify the topics, Latent Dirichlet Allocation is used. It is a process of topic modeling that categorizes the text in a document based on the particular topic. It builds a topic-per-document model and words-per-topic model, modeled as Dirichlet distributions. The process applied in this model required the creation of 10 specific topics and terms that are most often associated with one other. As seen in Table 15 topic 2 is focused around payment-related terms, which managers might find useful when analyzing how satisfied consumers are with the payment terms, what they would change, and what their preferred process for increasing their level of satisfaction is. For instance, topic five highlights the consumers’ concerns about the delivery dates of goods, while topic three is centered around the brand's strong factors, such as product quality.

Table 15: Words categorized into five topics

Topic 1		Topic 2		Topic3		Topic 4		Topic 5	
Topic words	Weight	Topic words	Weight	Topic words	Weight	Topic words	Weight	Topic words	Weight
price	11	card	22	custom	264	mattress	62	good	471
quality	11	pay	12	good	179	pillow	50	order	329
poor	10	discount	11	quality	146	day	46	delivery	176
package	9	payment	11	product	114	bought	28	late	163
damaged	6	wanted	8	satisfy	106	sleep	18	time	157

Source: Own work.

3.2.4 Limitations

The sentiment analysis has shortcomings as a tool for text mining and opinion forming. In this master's study, there are three limitations: the language-related barrier, the recognition of sarcasm, jokes, and irony; and incorrectly targeted sentiments.

The data used in sentiment analysis is collected in the Czech language. Since the program is trained on English data exclusively, further steps were taken to translate the reviews into English using Google Translate. As a result, some online reviews may not reflect the original opinion expressed by consumers.

Sentiment analysis and overall machine learning are parts of computer software which hardly recognizes sarcasm, jokes, irony, exaggeration or other things humans might have trouble identifying. In every language-based analysis, content matters. Software will find it incredibly difficult to detect content, since it is trained to classify opinions based on the polar spectrum. It can even be problematic when the system targets sentiments incorrectly. For instance, sentiment analysis processed in Rapid minor is calculated based on the specific predefined lexicon. In this lexicon, words are predefined as negative, positive, or neutral. Some sentences might be identified and classified as expressing negative sentiments solely due to the presence of negative words, even though the overall opinion might be neutral or positive.

3.2.5 Discussion

In almost every industry, textual reviews can provide essential information containing important business intelligence. The main purpose of this analysis method was to show the importance of evaluating online reviews, propose processes that can be implemented to obtain this valuable information, and demonstrate how this data can be used in strategical decision-making. The key findings are summarized in Table: 16.

There are a few important findings related to text mining that can be used in monitoring and analyzing online consumer reviews, which managers may find useful for making effective decisions aimed at improving performance. Analysis should not be limited to numerical values alone because textual evaluation is important for making strategical decisions. Our research found that the relationship between textual and numeric evaluation varies because the correlation between online reviews and numeric evaluation is sometimes absent. The numerical value only provides partial information with a poor correlation of 0.278. Therefore, this master's thesis encourages managers to develop specific tools and text mining processes for extracting consumers' opinion from text. Relying on numerical values only may not provide managers with accurate consumer opinions. Similarly, G mar & Jim nez-Quintero (2015) argued in favor of studying written reviews. They claimed that the information provided by consumers influences a company's performance and controls consumer behavior. In fact, online reviews impact the direct choice of consumers and their decision to select products from a variety of alternatives.

Table: 16 Key findings from text mining

Text mining topics	Method	Results	Importance of information for managers
Relationship between textual and numeric evaluation	Sentiment analysis Polarization	<ul style="list-style-type: none"> - Online reviews and numeric evaluation are not always correlated. The numerical value only provides partial information. A poor correlation of 0.278. - In general, the majority of consumers (65 %) express positive attitudes towards this particular brand. 	<ul style="list-style-type: none"> - When evaluating consumers, numeric value is not enough. Managers need to analyze textual online reviews to guide better decisions. - Managers can identify the emotion of the consumers towards the brand, product, or entire company.
Consumer satisfaction over time	Sentiment analysis	<ul style="list-style-type: none"> - Identifying the period of time when the level of satisfaction is high, as well as analyzing the period when satisfaction is poor. Overall satisfaction increases each year. The strongest months by sentiment scores are April, May, and June, while February represents the weakest month in 2019. 	<ul style="list-style-type: none"> - With this information, managers can track marketing activities and their success. They can repeat a successful campaign and adjust poorly implemented activities to gain better recognition.
Content analysis: Most important terms appearing in online reviews	Keyword analysis Aspect-based sentiment analysis Topic modeling	<ul style="list-style-type: none"> - Identifying the most frequent words in the document. In this example, words “good”, “delivery”, and “online” are the most frequently used, followed by “time”, “product”, and “quality”. - Understanding brands’ or products’ core and critical aspects. In this specific study, the strongest aspects are “comfort”, “purchase experience”, and “design”, while concerns include “delivery time”, “value”, and »communication«. - Categorizing text in a document into a particular topic. This study set has five main topics. Topics included payment terms, quality, delivery, and value. 	<ul style="list-style-type: none"> - Managers can obtain information about consumers’ concerns and focus on these factors. - Information pinpoints the areas with room improvent. This specific company has to focus on delivery time, develop new strategies to deliver goods on time, keep communicating with consumers, answer their reviews, inform them about delays in delivery, and provide them with updates about upcoming new products. - The information provides managers with the terms that most frequently appear together in the text.

Source: Own work.

What is more, sentiment analysis enables us to actually identify the time period when customers' satisfaction level is the highest or the lowest. For instance, observing sentiment score by time allows managers to target a specific campaign or marketing activity success and upsell product performance based on consumers' satisfaction. The analysis helps them to track down marketing activities and assess their success level, according to which, they can repeat their successful campaign or adjust poor activities to receive better results with higher recognition.

The results also allow for identifying the key aspects of the brand and its performance. Based on the company selected as the example, consumers are concerned about "delivery", "online", "time", "product", and "quality", which means these are the factors they evaluated in their written reviews. The key aspects were revealed by both keyword analysis and topic modeling. Text mining also allows for identifying consumers' satisfaction level of for each of these specific aspects, which is usually done by conducting an aspect-based sentiment analysis. Precise monitoring of specific aspects helps enhance the understanding of the core of both brands and products. The strongest aspects identified in this study are "comfort", "purchase experience", and "design", while the concerns mainly expressed by consumers include "delivery time", "value", and "communication".

Overall, such an analysis is highly effective for two reasons. Firstly, they help managers obtain information about customers and focus on these factors and, secondly, they guide managers in the direction where improvements are needed. According to our analysis, the company needs to focus more on delivery time by developing new strategies to deliver goods on time, and keep an open communication with customers, respond to their reviews, and provide them with updates about upcoming new products.

CONCLUSION

Advanced technologies, mobile commerce, and the development of new sales channels and touch-points naturally affect consumer buying behavior. The linear purchase decision model has shifted to a more complex, non-linear purchase decision journey (Clark, 2010) In this new model, consumers use various channels simultaneously to search for information and shop (Molenaar, 2016, p. 15). Therefore, online reviews and the integration of online and offline shopping channels are the predominant factors contributing to these changes (Wolny, 2014). Online review platforms can be considered as new information providers to both consumers and companies (Valant, 2015).

Moreover, the world of the Internet has impacted the methods of communication between consumers and companies. In the past, companies held the power to control the information flow. They were the ones to decide when, where, and how the information about a product would be provided. According to this traditional method, consumers were perceived as passive recipients of messages. However, the ownership of information has moved from companies to consumers (Eid & El-Gohary, 2013).

The popularity of engagement in online reviews has increased dramatically, therefore, online reviews are perceived as information providers about consumers and their opinions towards a brand. Understanding consumers' needs to create intangible value within the company allows a business to remain sustainable (Thomas, Peters, Howell & Robbins, 2012). The study focused on the importance of managers in factoring in consumer opinions expressed by online reviews to gain a better understanding of consumers' demands and needs (Thomas, Peters, Howell & Robbins, 2012). Prior to this, an online survey was conducted to gain insights into the importance of online reviews and their impacts on the purchase decision-making process.

Considering all these changes in the business environment also transforms the way companies do business to improve their performance, retain consumers, and offer people their desired products. Particularly, the Internet allows managers to reveal consumers' opinions about their product and the purchase experience altogether. Online reviews provide a huge amount of valuable information that can be employed to help managers make effective strategical decisions as well as adjust their marketing strategies.

This master's thesis encourages managers to consider online reviews in their decision-making process by mining texts using sentiment analysis. Therefore, I carried out (1) a general sentiment analysis on the sentence level, which measured consumers' level of satisfaction with the product, purchase experience, and brand; (2) topic modeling and a keyword analysis to find out what buyers found important and what they discussed; and, finally, (3) an aspect-based analysis to identify the positive and negative attitudes of consumers with regard to specific aspects.

Based on the general sentiment score, I analyzed the relationship between the sentiment score and the numerical value. The results indicate that the numerical value alone does not provide sufficient and, in some cases, accurate enough information and the desired satisfaction level, since the correlation between the sentiment score and the star rating was weak. On the other hand, textual data provides additional information, such as consumers' satisfaction by time, which can be used to evaluate marketing campaigns and categorize them as positive or negative consumer attitudes. The result showed an overall positive attitude towards the brand, however, 20% of consumers have expressed negative opinions, which highlights the fact that this brand still needs to improve if it is to achieve a higher recognition. What is more, with the help of topic modeling and keyword analysis, it can recognize the most important topics for consumers and specific brand needs to focus more on delivery and product quality, since these are the keywords most frequently mentioned by consumers in their online reviews. These methods were used to find out the frequency of the words used in online reviews. Subsequently, positive and negative attitudes towards these aspects were identified by means of an aspect-based sentiment analysis. The outcome will help managers target the aspects that require improvement and aid in adjusting their marketing strategies to facilitate a better performance.

The main objective of this master's thesis is to contribute to the understanding of how online consumer reviews influence the purchase decision process and, consequently, a company's profitability. It can help companies manage online reviews productively while providing them with a useful text mining tool, which managers can use to translate raw data into useful business intelligence.

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APPENDIXES

Appendix 1: Summary in the Slovenian language

V današnjem konkurenčnem poslovnem okolju mednarodna konkurenca podjetja sili, da nenehno iščejo nove načine za izboljšanje svoje učinkovitosti, pritegovanje potrošnikov in prepričevanje le-teh, da je njihov produkt oziroma storitev boljša od konkurenčne (Pelau, 2011). Da bi bili med številniki produkti, ki obstajajo na trgu, izbrani njihovi, morajo managerji raziskati potrošnikove potrebe, izluščiti potrebne informacije ter ugotoviti, kakšno je obnašanje kupcev. (Hunt & Arnett, 2004). Tržniki morajo zato iskati nove načine pridobivanja informacij o potrošniku, njegovem mnenju in vedenju.

Platformo spletnih pregledov lahko štejemo kot novega ponudnika informacij tako potrošnikom kot podjetjem. Spletni pregledi temeljijo na subjektivnem mnenju, ki povzema izkušnje, stališča in mnenja, izražena s strani potrošnikov (Lu, Chang & Chang, 2014). Priljubljenost spletnih pregledov med potrošniki strmo narašča. Eden od razlogov, zakaj je temu tako, je zagotovo ta, da lahko potrošniki dobijo zanesljive informacije o posameznem produktu. Veliko potrošnikov je postalo skeptičnih glede sposobnosti velikih blagovnih znamk pri držanju obljub glede kakovosti izdelkov. Zaradi tega se potrošniki raje obrnejo na neodvisne vire informacij, ki pa so povezani s subjektivnimi mnenji potrošnikov. (Constantinides, 2016). Po drugi strani je razumevanje sprememb v potrošnikovem vedenju ključnega pomena za vrhunsko uspešnost podjetja. Zato je spletna platforma zanimiva tudi za tržnike podjetij, ki lahko v kratkem času pridobijo veliko povratnih informacij o navadah in obnašanju kupcev ter o zadovoljstvu kupcev, trendih in konkurentih (Payne & Frow 2005).

Kljub vsem prej omenjenim prednostim pa spletni pregledi predstavljajo resnična tveganja za podjetja, saj imajo le-ta manj nadzora nad informacijami, ki krožijo med uporabniki in ki jih uporabljajo za sprejemanje odločitev (Delopitte, 2015). Analiza vsebine informacij, pridobljenih s spletnimi pregledi, je lahko za podjetja lahko zahtevna, predvsem pa dolgotrajna. Posledično ima lahko preučevanje numeričnih podatkov in besedil, ki jih pridobimo v pregledih, veliko vlogo pri izboljšanju konkurenčnosti podjetja (He & Tian, 2016). V hitro spreminjajočem se okolju morajo podjetja hitro prepoznati relevantne podatke. Avtomatizirana tehnika in orodja lahko podjetjem omogočajo učinkovito tekmovanje na svetovnem trgu (Ruhi, 2014).

Razumevanje, sledenje in upravljanje spletnih pregledov bistveno vpliva na uspešnost in dobičkonosnost podjetij. Za vodje je pomembno, da razumejo rezultate spletnih pregledov, saj lahko potrošniki pomagajo pri promociji izdelka ali pa uničijo ugled podjetja oz. blagovne znamke, kar lahko znatno škodi prodaji izdelka. Kljub pomembnemu vplivu spletnih pregledov na uspešnost podjetij pa ogromno podjetij ni prepoznalo te pomembnosti in celotnega vpliva na postopek odločanja o nakupu.

Cilj tega magistrskega dela je prispevati k razumevanju tega, kako spletni pregledi potrošnikov vplivajo na postopek odločanja o nakupu ter na dobičkonosnost podjetja.

Podjetjem bo pomagalo pri produktivnem upravljanju spletnih pregledov in jim ponudilo odlično orodje za rudarjenje besedil, ki bo vodjem v pomoč pri prevajanju surovih podatkov v uporabno poslovno inteligenco. Metoda raziskovanja tega magistrskega dela je sestavljena iz dveh delov. Prvi del ugotavlja pomen spletnih pregledov pri odločanju o nakupu, kasneje pa bo bomo managerjem predlagali, kako uporabljati preglede, da bi čimbolj povečali uspešnost.

Na podlagi rezultatov svoje analize bom odgovorila na naslednja raziskovana vprašanja:

1. Kakšen je pomen spletnih pregledov za potrošnike in kateri spletni pregledi so po njihovih značilnostih bolj privlačni za potrošnike? Kateri spletni pregledi po svojih značilnostih bolj vplivajo na namero potrošnika o nakupu? Ali se vpletenost spletnih pregledov razlikuje med spletnim oziroma navadnim nakupovanjem?
2. Zakaj bi morala podjetja razmisliti o spletnih pregledih ter mnenjih, ki jih ustvarijo uporabniki, in kako lahko na podlagi tega izboljšajo svoje delovanje. Namen analize je:
 - a. preučiti, česa se lahko podjetja naučijo iz spletnih pregledov, ki so na voljo za njihov product, in razmisliti, kako lahko te ugotovitve uporabijo za izboljšanje svojih procesov.
 - b. preučiti, kako se obnašajo potrošniki, kako se odločajo za nakup in kako se pripravijo na spletni pregled. Tako lahko pridobimo podatke za boljše razumevanje podjetja, potrošnikov in njihovih nakupovalnih navad. Te ugotovitve bom uskladila z relevantnimi informaciji.

Za merjenje stopnje vpliva in pomembnosti spletnih pregledov na potrošnikovo odločitev o nakupu je bila izvedena spletna anketa. Raziskava je bila ustvarjena s pomočjo spletne strain za izvajanje anket 1KA.si. Rezultat je bil analiziran v programskem okolju SPSS (Statistical Product and Service Solutions) in Excelu. Za izvedbo raziskave so bili uporabljeni družbeni mediji, kot sta Facebook in Linkdin, ter e-pošta. Pristop je bil izbran kot najbolj primeren za pridobivanje boljšega razumevanja razlogov, mnenj, motivacij in vedenja potrošnikov.

Glavne ugotovitve raziskave so, da morajo vodje v svojih marketinških strategijah izvajati spletne preglede, saj je eden od razlogov, zakaj potrošniki pišejo spletne ocene ta, da podatke o izdelku pošiljajo podjetju in jim predlagajo izboljšave, osnovane na lastnih potrebah. Poleg tega je treba spletne ocene uporabljati kot orodje za izmenjavo informacij in komunikacijo v vseh fazah nakupa, vključno s fazo po nakupu, kar pomeni, da morajo podjetja ohraniti odnos s potrošniki tudi po samem nakupu izdelka. Vendar pa se raven spletnih pregledov razlikuje glede na njihove značilnosti. Potrošniki raje berejo spletne ocene, ki vsebujejo slike in ki jih pišejo preverjeni potrošniki.

Poleg tega, da je raziskava znanstveno dokazana metoda, so v tem magistrskem delu bile tri glavne omejitve. Prva je jezikovna ovira, saj je bila anketa izvedena v angleščini, anketiranci pa so bili večinoma iz držav, kjer angleščina ni prvi jezik. Druga omejitev je število

anketirancev, tretja pa je časovni dejavnik, saj je verjetnost, da so bili anketiranci med izpolnjevanjem ankete popolnoma zbrani, majhna.

Drugi del raziskave je temeljil na iskanju besedila. Za analizo spletnih pregledov na spletnem mestu heureka.cz je bil uporabljen Rapid Miner. Za pridobivanje ključnih ugotovitev je bila uporabljena kombinacija analize sentimenta in analize ključnih besed, za ključne ugotovitve pa je bil uporabljen tako-imenovani topic modeling.

To magistrsko delo predlaga, kako lahko vodje spletne preglede oziroma ocene uporabljajo za izboljšanje svojega delovanja, tako da ugotovijo oceno sentimenta, analizirajo polarnost in zaznajo splošno mnenje potrošnika o izdelku ali blagovni znamki. Uporaba ključne besede vodjem pomaga pri prepoznavanju najpogosteje uporabljene besede v dokumentu, ki povzema najbolj prevladujoče teme v besedilu. Analiza vsebina je pomagala prepoznati izraze, ki so med seboj povezani, in jih razvrstiti v določene teme. Te metode v kombinaciji z analizo na podlagi vidika, ki prepozna in razvrsti vidike kot pozitivne ali negativne, vodjem pomagajo pri prepoznavanju potrebo po izboljšanju in poudarjanju pozitivnih vidikov.

V tem besedilu so bile prepoznane tri omejitve, in sicer jezikovna ovira, prepoznavanje sarkazma, šale ali ironije ter napačno usmerjena čustva.

Magistrsko delo je sestavljeno iz štirih delov. Prvi del je osredotočen na teorijo o vlogi spletnih pregledov v organizaciji, ki se osredotoča na spremembe v poteku nakupovanja potrošnikov in to, kako lahko podjetja tem spremembam sledijo. V nadaljevanju se osredotoča na vpliv spletnih pregledov na uspešnost podjetij. V drugem delu je predstavljena metodologija, ki se začne z analizo ankete ter rudarjenjem besedil.

Tretji del analizira rezultat, zadnji oz. četrti del pa je zaključek magistrskega delo.

Appendix 2: Questionnaire for quantitative research

This questionnaire identifies consumer's purchase behaviour and role of online reviews in decision making process. If you are using online reviews during purchase process your answer would be highly appreciated and helpful.

Thank you in advanced for your participation

1. Your gender is

- Male
- Female
- Non-binary
- Prefer not to answer

2. In which age group do you belong?

- up to 20 years of age
- 21 - 30 years of age
- 31 - 40 years of age
- 41 years of age or more

3. What is your highest level of formal education?

- Under secondary school
- Secondary school
- High school
- Associate degree
- Bachelor degree
- Master degree
- Above master degree

4. What is your current monthly income?

- Less than 500€
- 501-1500€
- 1501-2500€
- More than 2500€

5. On average how many hours per week do you use internet for fun?

- Less than 1 hour
- 1-5 hours
- 6-15 hours
- 16-30 hours
- More than 30 hours

6. On average how often do you shop online?

- Every day
- At least once a week
- At least once a month
- Once every two month
- A few times a year

Never shop online

7. Comparatively, how important are the factors below for you to buy something online rather than in store?

	Not Important	Slightly Important	Moderately Important	Important	Very Important
Ability to shop 24/7	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ability to compare product price in different website	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Save time spend to drive and shop at local shop	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ease of return/exchange	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Free shipping offer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The convenience of everything in one place	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ability to read online reviews/ consumer experience	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

8. How often do you read online reviews and recommendations before making decision for the product or service?

	Never	Rarely	Sometimes	Very Often	Always
Before and/or during online shopping	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Before and/or during in-store shopping	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9. Rate from 1 to 5, the likelihood that you look at

	1 (Extremely unlikely)	2	3	4	5 (Extremely likely)
Long reviews	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Recent reviews	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reviews that are responded by the business	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reviews that include a photo	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Video reviews	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reviews are written by verified buyers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reviews written by the expert in this field	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reviews written by the famous person	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Online reviews with punctuation marks and emojis	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Positive reviews	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Negative reviews	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reviews with maximum rating stars	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reviews with minimum rating stars	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

10. Please, rate level of online reviews engagement in your purchase decision process by category

	1 (Lowest)	2	3	4	5 (Highest)
Restaurants booking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Grocery stores	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Medical	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Clothing and footwear	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hotels	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Entertainment/going out	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Automotive	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Electrical equipment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	1 (Lowest)	2	3	4	5 (Highest)
Internet subscriptions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hair and beauty	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pet services	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Restaurants booking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Education	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

11. How likely below listed information source impact your purchase decision?

	1 (Extremely unlikely)	2	3	4	5 (Extremely likely)
Online reviews and recommendations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Family and friends recommendations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
TV advertisement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Advertisement on company's website and/or on their social media	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Recommendations from experts and professional website	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sales assistance recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

12. On average how many online reviews do you read before you feel you can trust a product?

- 1-10
- 11-20
- 21-30
- 31-50
- more than 50

13. On average how much time do you spend reading reviews before making a purchase decision?

- less than 1 min
- 1-5 min
- 6-15 min
- 16-30 min
- More than 30 min

14. Before I decide to read online reviews I check star rating indicator

- Yes, always
- Yes, very often
- Yes, sometimes
- Yes, rarely
- No, never

IF (1) 14 = [1, 2, 3, 4]

15. When selecting online reviews to read, what is preferred star rating to have it?

Multiple answers are possible

- 1 out of 5
- 2 out of 5
- 3 out of 5
- 4 out of 5
- 5 out of 5

16. Please, read the following statements and rate them according to your personal opinion

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
I spend more time to look at online reviews before purchasing low priced product	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I spend more time to look at online reviews before purchasing high-priced product	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I spend approximately equal amount of time for cheap or expensive products	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

17. Please, read the following statements and rate them according to your personal opinion

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Reading reviews always develops a desire to buy again the same products	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reading reviews always help me to discover new products	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reading reviews always develops a desire to buy new products	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I always use online reviews to search for information about products or services	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I always use online reviews to evaluate alternative products or services	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I always read the business response on my online reviews	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I always read online reviews to reduce purchase risk	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

18. Have you ever written recommendation and opinion about the product or service after experiencing it?

- Yes, always
- Yes, very often
- Yes, sometimes
- Yes, rarely
- No, never
- I do not remember

IF (2) 18 = [1, 2, 3, 4]

19. How often do you write online reviews?

	Never	Rarely	Sometimes	Very often	Always
When experience is really good	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When experience is really bad	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To inform and help other consumers to get correct information	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To inform business and send them the signal for improvement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To help business to increase brand awareness and sales	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To harm company's profitability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To get social benefits	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Appendix 3: Factor analysis constructs purchase intention

Table 1. Reliability indicator of factor analysis on purchase intention

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.684
Bartlett's Test of Sphericity	Approx. Chi-Square	95.219
	df	21
	Sig.	.000

Table 2. Communalities of each variables of construct purchase intention

Communalities		
	Initial	Extraction
Ability to shop 24/7	1.000	.668
Ability to compare product price in different website	1.000	.508
Save time spend to drive and shop at local shop	1.000	.341
Ease of return/exchange	1.000	.745
Free shipping offer	1.000	.580
The convenience of everything in one place	1.000	.251
Ability to read online reviews/ consumer experience	1.000	.439

Extraction Method: Principal Component Analysis.

Appendix 4: Factor analysis construct trust in information source

Table 3. Reliability indicator of factor analysis on trust in information source

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.672
Bartlett's Test of Sphericity	Approx. Chi-Square	128.184
	df	15
	Sig.	.000

Table 4. Communalities of each variables of construct trust in information sources

Communalities		
	Initial	Extraction
Online reviews and recommendations	1.000	.731
Family and friends recommendations	1.000	.673
Add	1.000	.595
Add on website	1.000	.637
Recommendation from experts	1.000	.600
Sales assistance	1.000	.646

Extraction Method: Principal Component Analysis.

Appendix 5: Pearson correlation between purchase intention and trust in information source

Table 5. Pearson's Correlation Coefficient on the relationship between the Purchase intention and trust information

Correlations

		Purchase Intention	Information Source
Purchase Intention	Pearson Correlation	1	.265**
	Sig. (2-tailed)		.008
	N	122	122
Information Source	Pearson Correlation	.265**	1
	Sig. (2-tailed)	.008	
	N	122	122

** Correlation is significant at the 0.01 level (2-tailed).

Appendix 6: Pearson correlation between purchase intention and information sources

Table 6. Pearsons Correlation Coefficient on the relationship between the purchase intention and information sources

		Purchase intention	Q15_2a	Q15_2b	Q15_2c	Q15_2d	Q15_2e	Q15_2f
Pearson Correlation	Purchase intention	1.000	.327	.227	.130	.074	.186	.069
	Online reviews and recommendations	.327	1.000	.516	-.029	.062	.379	-.013
	Family and friends recommendations	.227	.516	1.000	.071	.113	.378	.139
	Add	.130	-.029	.071	1.000	.469	.170	.421
	Add on website	.074	.062	.113	.469	1.000	.311	.467
	Recommendation from experts	.186	.379	.378	.170	.311	1.000	.401
	Sales assistance	.069	-.013	.139	.421	.467	.401	1.000

“(table continues)”

“(continued)”

Table 6. Pearsons Correlation Coefficient on the relationship between the purchase intention and information sources

	Purchase intention	Q15_2a	Q15_2b	Q15_2c	Q15_2d	Q15_2e	Q15_2f
Sig. (2-tailed)		.000	.011	.098	.232	.032	.248
AverageRatingScore							
Online reviews and recommendations	.000		.000	.386	.271	.000	.448
Family and friends recommendations	.011	.000		.242	.131	.000	.084
Add	.098	.386	.242		.000	.046	.000
Add on website	.232	.271	.131	.000		.001	.000
Recommendation from experts	.032	.000	.000	.046	.001		.000
Sales assistance	.248	.448	.084	.000	.000	.000	
N							
AverageRatingScore	122	122	122	122	122	122	122
Online reviews and recommendations	122	122	122	122	122	122	122
Family and friends recommendations	122	122	122	122	122	122	122
Add	122	122	122	122	122	122	122
Add on website	122	122	122	122	122	122	122
Recommendation from experts	122	122	122	122	122	122	122
Sales assistance	122	122	122	122	122	122	122