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Fresh Voices or Sheer Numbers? How Online Review
Dynamics Shape Quality Perception
An Experimental Study

Bachelor's Degree Thesis in Marketing
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Abstract

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Title: Fresh Voices or Sheer Numbers? How Online Review Dynamics Shape Quality Perception

Purpose: The purpose of this essay is to investigate how the aspects of recency and quantity of online reviews influence consumers' perception of product quality. Through an experimental study, our research aims to establish the significance of these factors and the extent of their influence. Thus, we can contribute to empirical research that can be leveraged for successful marketing strategies.

Method: The findings of this thesis were collected through an experiment. A survey containing manipulations of the experimental variables and Likert scale questions was used for the data collection. The respondents were randomly split into four groups and each group was shown a picture with a specific combination of manipulations. The results were analyzed in the statistical tool SPSS through t-tests, ANOVA and linear regressions.

Conclusion: Respondents who were presented with recent reviews assessed the product's quality as better than those who were presented with old reviews. The sample provided sufficient evidence to support that the recency of reviews has an influence on how consumers perceive product quality. The sample did not provide enough evidence to support the claim that the quantity of reviews influences quality perception. We further found that if a person trusts reviews they are more likely to assess product quality as higher and that the influence of trust was relatively larger than that of the experimental variables.

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1. Introduction

The following chapter presents a background on the research topic by introducing the emergence and relevance of online reviews as well as the extent of its use. Next, a problem discussion is formulated which acts as a basis for the research purpose and question.

1.1 Background

The trend of digitalisation has become notably influential on the world of marketing and consumption through its implications on consumer audit culture (Hartmann et al. 2020). With the rapid development of technology, there has been a growth in the use of e-commerce. Consumers have also been provided with new communication channels that make sharing easier and information more accessible (Belk, 2013). As a result, *online reviews* have risen in popularity.

Consumers are increasingly using online reviews both to share and gather information about products (Chen et al., 2022), and they are used by consumers to compare and confirm their perception of a product (Hennig-Thaurau and Walsh, 2003). According to Hennig-Thaurau and Walsh (2003), consumers use online reviews to minimize both risks and time associated with making a purchase. Research shows that online reviews have become an important tool for consumers to make informed purchasing decisions (Zhang et al., 2014), and according to a study conducted by Lis (2013), one-third of consumers read product reviews before making a purchase.

Online reviews are different from conventional advertising and official product information in the sense that the information in online reviews is provided by other consumers and based on their own experiences with the product (Baek et al., 2012). Due to this, the information provided by online reviews is easier for consumers to accept (Mudambi & Schuff, 2010). In turn, online reviews have provided consumers with the opportunity to be promoted from solely receivers of marketing to creators of marketing through their expression about brands and products (Hartmann et al. 2020). Hence, online reviews allow consumers to attain new power as they can influence both companies and other consumers through their feedback (Watson & WU, 2022). Their notable influence on consumer behavior has resulted in more and more companies incorporating them on their websites (Matute et al. 2016).

1.2 Problem Discussion

Marketers all over the world are faced with a new challenge as online reviews increase in popularity. Research shows that the influence and usage of online reviews is not restricted to a certain culture or part of the world. In a study from 2016, it was reported that 78% of people in Spain read online reviews (Matute et al. 2016). Similarly, a study conducted in 2017 showed that 78% of American adults who make purchases online read reviews with the aim of helping with their purchasing decisions (Gottschalk & Mafael, 2017). According to Mudambi & Schuff, (2010), online reviews are a trusted tool that consumers use to gather information about products and they can therefore influence how consumers perceive *product quality*. The perceived quality of a product is significant for both consumers and marketers as quality perception influences consumer satisfaction as well as purchase intention (Hanifati & Salehudin, 2021). The substantial impact of online reviews on consumers highlights the importance for marketers to have an understanding of the topic.

Marketers can use research findings on the topic of online reviews as a tool to effectivize their strategies and successfully guide consumers in the direction they wish. According to Li and Zhang (2021), online reviews can provide marketers with insight into consumer characteristics. This information is deemed beneficial due to its ability to reduce risks. Additionally, online reviews can provide companies with a better understanding of both the market and consumer demand. As a result, it aids in the improvement of products and in the positive enhancement of brand reputation (Li & Zhang, 2021). Hence, it becomes apparent that awareness and understanding of the impact of online reviews on consumers is a powerful tool for brand and product success. Consequently, we find it highly relevant to focus research efforts on attaining deeper understanding of how the different features of online reviews can influence consumers' perception of product quality.

Previous research has identified that the different characteristics of online reviews have their own distinct influence on the extent and way in which a review impacts consumers. In a study, Li & Tan (2013) identified features such as the volume of the review, its source, and its content, as influential. Additionally, the helpfulness of the review was pinpointed as an important feature. The study found that in the instances where website managers prioritize reviews that consumers find helpful, online reviews can be distinguished as one of the most powerful marketing tools. Helpfulness is in turn determined by the consumer based on three

factors: perceived source credibility, content diagnosticity, and vicarious expression (Li & Tan, 2013). The perceived credibility has been established as strongly influential since consumers feel they can trust reviews with perceived credible information (Li & Sivakumar, 2019).

Existing studies have predominantly focused on elements relating to the content of the review, however, few have addressed the influence of attributes external to the content of the review, indicating a significant research gap. Prior research on external attributes has found that the numerical star ratings that often accompany reviews help consumers with information processing (Gavilan et al. 2018). In addition, Srivastava & Kalro (2019) found that the characteristics of the reviewer such as their age, gender, and profile picture can influence the reviews perceived helpfulness. This indicates that the same review can have a different impact depending on factors that are external to its content. Consequently, the exploration of extrinsic factors can provide valuable insights and contribute to a more balanced and well rounded understanding of the influence of online reviews. Therefore, this study aims to explore the influence of the following two variables: online review *quantity* and online review *recency*. By limiting the research to two variables we are able to take on an experimental approach which allows us to focus more intensely on the variables and get a deeper understanding of their direct effect. Our research will contribute to further knowledge on the influence and implications of online reviews and in turn the findings of this study can aid companies in successfully developing marketing strategies and designing e-commerce websites. Additionally, our findings will act as a stepping stone for future research and indicate which aspects need further exploration.

1.3 Research Question

Does the recency and quantity of a product's online reviews influence consumers' perception of a product's quality?

1.4 Purpose

The purpose of this study is to investigate how the aspects of recency and quantity of online reviews influence consumers' perception of product quality. Through an experimental study our research aims to establish the significance of these factors and the extent of their

influence. Thus, we can contribute to empirical research that can be leveraged for successful marketing strategies.

2. Literature Review

The following chapter presents a range of theoretical frameworks along with prior research surrounding the research topic. This information is the ground for this study, the result analysis, and the conclusion.

2.1 Online Reviews

Online reviews are defined as peer-generated product evaluations that are often accompanied with a numerical star rating that stretches from one star to five stars (Mudambi & Schuff, 2010). The reviews are provided by consumers who share their own experience with the product (Baek et al., 2012) and can be published on either a company's website or a third party's website (Mudambi & Schuff, 2010). There has been a number of studies conducted on online reviews in relation to consumer behavior. Choi & Maasberg, (2021) found that online reviews have an effect on consumer information processing. Further, Fernandes et al., (2022) concluded that online reviews help consumers reduce risks when online shopping as they provide an alternative information source to physically interacting with products. Prior research has also established that online reviews are primarily used as a tool to reduce uncertainty and gain an understanding of product quality, and therefore aid consumers in their purchasing decisions (Hennig-Thaurau and Walsh, 2003; Hu et al., 2008; Reimer & Benkenstein, 2016; Pooja & Upadhyaya, 2022). Additionally, Mudambi & Schuff, (2010) concluded that online reviews have the ability to attract consumers to visit a website and also prolong their time spent on that website.

2.2 E-WOM

Word-of-mouth, or WOM, is described as a process of information conveyance where consumers exchange marketing information with one another in a way that influences consumer attitude and consumer behavior (Katz & Lazarsfeld, 1956). This communication is described as a person-to-person communication tool that is independent of formal advertising (Litvin et al., 2008). Due to this independence, WOM is perceived as more credible, making it a more persuasive form of marketing in comparison to traditional marketing efforts (Chevalier & Mayzlin, 2006). With the rise of digitalisation consumers have been provided

with new communication channels (Belk, 2013), and in turn, the model of WOM has been modified to this new digital landscape, resulting in what is known as E-WOM, or electronic word of mouth.

E-WOM is described as the informal communication shared online through the internet, which addresses consumers in relation to product and service characteristics (Litvin et al., 2008). An example of E-WOM is online reviews which have an influential role on consumer behavior (Reimer & Benkenstein, 2016). Through online reviews, among other forms of E-WOM, information shared by consumers about their experiences with products is spreading at a faster rate and has become more accessible (Huete-Alcocer, 2017). This is due to the anonymity that online platforms provide (Huete-Alcocer, 2017). Unlike regular WOM, E-WOM does not require the receiver of information to know the communicator and is therefore not a private conversation. Hence, the anonymity provided by the internet makes online reviews more accessible than the information conveyed through regular WOM (Huete-Alcocer, 2017). This anonymity can however reduce the perceived trustworthiness of the information in the review (Reimer & Benkenstein, 2016).

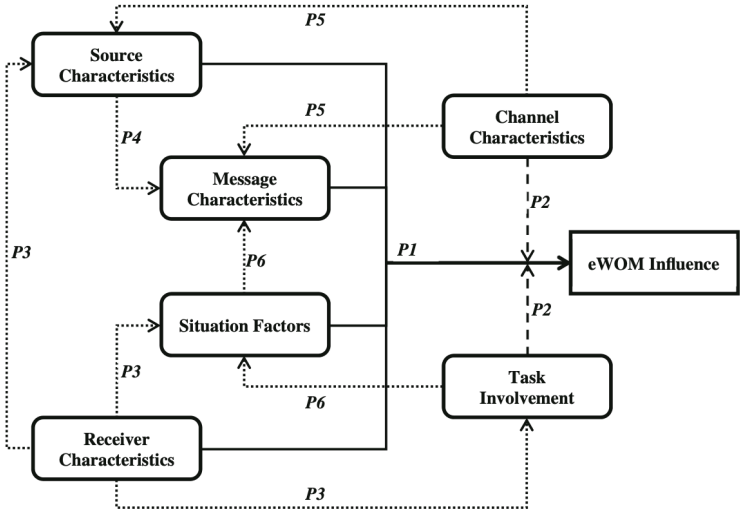
E-WOM provides companies with a new opportunity to understand consumer needs and in turn make relevant adjustments. For example, by analyzing the content of online reviews companies get valuable insight to consumer wants and needs. Additionally, it can contribute to buzz marketing through earned media when satisfied customers share their positive experiences (Hartmann et al. 2020). However, this means it can also pose a threat when customers are unsatisfied. E-WOM also presents a challenge for both companies and consumers as the infinite amount of information that consumers can easily access can be demotivating and result in choice paralysis (Iyengar & Lepper, 2000).

2.2.1 E-WOM Processing

A framework for E-WOM processing is presented by Le et al (2022). The framework is based on prior research on communication processing that has been expanded to create a more elaborate model that better conceptualizes the comprehensive information processing that E-WOM requires. Consequently, this framework can be used as a tool to better understand how consumers process online reviews and how different factors have different influences on this processing.

The model presents 6 categories of factors that impact the influence of E-WOM on the receiver: source characteristics, receiver characteristics, message characteristics, situation factors, task involvement, and channel characteristics (Le et al., 2022). The categories are based on two previous models developed by Sweeney et al. (2000) and Cheung and Thadani (2012), respectively. The first category, source characteristics, presents the credibility of the source and the closeness between the receiver and the source, as influential on how the information is processed. The second category, receiver characteristics, identifies the expertise and ability of the receiver as influential on how E-WOM information is processed. The third category, message characteristics, states that argument quality, valence and information congruence are influential to the receivers processing. The fourth category, situation factors, mentions participation, contagion and exposure as influential factors. The fifth category, task involvement, is divided into two main actors, task involvement and search difficulty, which are said to influence the motivation level for relying on E-WOM. Lastly, channel characteristics, such as platform, interactivity and network are identified as influential on the processing of E-WOM information (Le et al., 2022). The complete model is presented in Figure 1 and illustrates the relationships between the 6-factor groups as well as the groups' direct and moderating effects on E-WOM influence. The full lines show the main direct effects, the dashed lines show the moderating effect and the dotted lines show additional connections between the factor groups.

Figure 1
E-WOM processing framework (receiver's perspective) (Le et al., 2022)



2.2.2 E-WOM Trustworthiness

According to Chiou et al. (2018), consumers perceive online reviews as more trustworthy than traditional advertising because reviews are written by other consumers. Additionally, the study concludes that perceived credibility shapes the impact of an online review. Furthermore, the E-WOM processing framework states that a credible source has a bigger influence. The perceived trustworthiness of the source impacts the influence of E-WOM by improving the considered quality of the message and increasing the acceptance of the information (Le et al., 2022).

Research has found that there is a difference in how trustworthiness is perceived between online and offline information (Brown et al., 2007). According to Reichelt et al. (2014), this is due to the anonymity of online platforms. While conventional WOM participants are often familiar (Verma & Dewani, 2020), the anonymity of E-WOM means that credibility cannot be based on prior knowledge from already established relationships (Le et al., 2022). For example, the person who reads an online review usually does not know the message communicator and therefore their perception of trustworthiness is determined by other factors.

According to the E-WOM processing framework (Le et al., 2022), the characteristics of consumers will influence how they perceive the trustworthiness of a source. For instance, people who feel confident in their knowledge are more likely to harshly judge a source (Moran & Muzellec, 2017). Therefore, consumers who possess expertise on the subject of the review can have a decreased perception of the trustworthiness of the source (Le et al., 2022). Additionally, when a consumer experiences similarities between themselves and the reviewer, their confidence in the review increases (Chiou et al., 2018). The type of channel where the online review is presented also influences the consumer's perception of credibility. For example, when consumers are familiar with a platform they often find the source reliable, and in turn the information from said channel can be perceived as more credible (Le et al., 2022).

2.3 Cue Utilization Theory

According to the Cue Utilization Theory, products are made up of different cues that indicate the quality of the product to consumers (Richardson et al., 1994). The framework therefore provides an insight to how different types of information about a product influence how consumers perceive its quality (Kakaria et al., 2022). According to Richardson et al., (1994) the impact of a cue on quality perception depends on its predictive value and confidence value, where a high value gives a cue greater influence. The predictive value refers to the degree to which a consumer relates a cue to the product's quality and the confidence value refers to the degree of confidence a consumer has in their ability to judge cues accurately (Richardson et al., 1994).

Cues are categorized as either intrinsic or extrinsic, where intrinsic cues are product-related attributes that are part of the physical product while extrinsic cues are product-related attributes that are not part of the physical product (Olson, 1972). Online reviews are classified as extrinsic cues since they provide information about a product that is external to its tangible attributes (Kakaria et al., 2022). According to Samu et al (2024), there is a correlation between a consumer's chosen cue category and their motivation and product knowledge. Consumers with lower product knowledge and motivation use extrinsic cues for quality evaluation, while consumers with higher product knowledge and motivation use intrinsic cues for product evaluation (Yazdanparast & Kukar-Kinney, 2023). In the case of inconsistency between extrinsic and intrinsic cues, consumers who are more knowledgeable use a combination of the two (Samu et al., 2024). This indicates that online reviews are used more frequently for quality assessment by consumers with lower motivation and less knowledge about the product. Additionally, cues have been divided into high and low scopes, based on how hard they are to change, where high-scope cues are harder to change than low-scope cues (Samu et al., 2024). Online reviews, among other types of WOM, are classified as high-scope cues. Because they are harder to change, online reviews are characterized as more credible (Samu et al., 2024).

2.4 Recency of Online Reviews

The recency of online reviews refers to the time that has passed since the review was published. Cheung et al. (2008) used the term “timeliness” in their study and defined it as “whether the messages are current, timely, and up to date”. Liu (2006) found that the longer time that passes since the review is published the less helpful it will be to the consumer. Madu & Madu (2022) further emphasized the importance of websites being updated in order to provide users with valuable information. In a later study, Jindal and Liu (2008) found that more current reviews also get more attention. Zhao et al (2015) additionally found support for this by discovering a positive correlation between the timing of the review and purchasing intentions. In contrast, Cheung et al. (2008) did not find a significant relationship between reviews’ time of publication and their information usefulness. However, it is argued that the recency of the review might matter more in situations and offers that are time-dependent (Cheung at al., 2008). Online product reviews often have a function that provides the possibility to vote on the reviews' helpfulness. Depending on the website, the most upvoted review may be shown at the top of the list. Salehan and Kim (2016) argue that this function benefits older reviews since they have had more time to acquire more upvotes and are therefore more helpful to the consumer. We use this discussion to formulate the following hypothesis and null hypothesis:

H1 : The recency of online reviews does influence consumers' perception of product quality.

H₀₁ : The Recency of online reviews does not influence consumers' perception of product quality.

2.5 Quantity of Online Reviews

The quantity of online reviews is defined as the total number of online reviews that have been published about a product or service (Filiari, 2015). The quantity of reviews a product gets often implies how popular the product is as it indicates if previous sales have been high (Park et al., 2007). Apart from being a sign of popularity Davis and Khazanchi (2008) discuss how a higher quantity of reviews stands a better chance of drawing in information seekers, which leads to a boost in product awareness. However, this does not seem to apply to every product and service. Davis and Khazanchi (2008) and Godes and Mayzlin (2004) investigated book

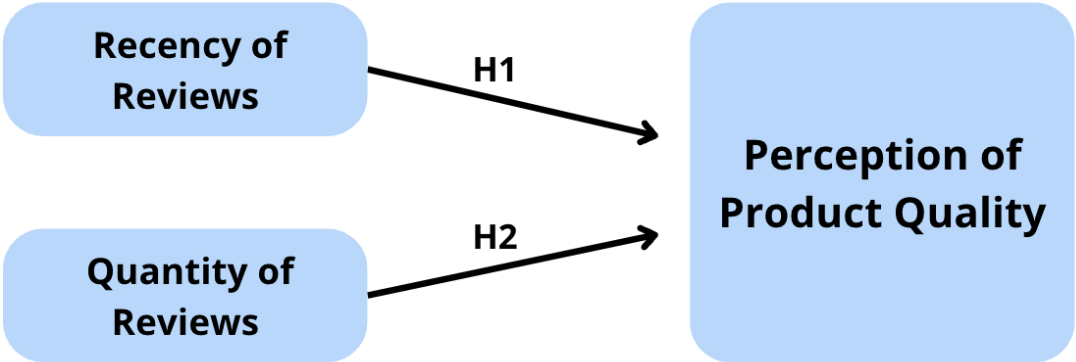
sales and box office revenues respectively, and both studies concluded that an increase in reviews had no large influence on revenue in the industries.

Filieri (2015) points out that a higher number of reviews helps the consumer find the information that they are looking for and thus understand the product's quality better. With more information, the potential consumer can also get an indication of consensus among the reviewers (Elliott, 2022). In contrast, research on quantity has also found that when receiving too much information the phenomenon of information overload can occur. According to the study conducted by J. Eppler & Mengis (2002), information overload happens when supply exceeds capacity. The study further states that stress, anxiety and reduced ability to make a decision are possible consequences when presented with too much information. Wang et al. (2019) also argue that with an increase in reviews, each review will matter less to the consumer. When there are few reviews, each review carries relatively important information but when there are many reviews information can become repetitive or only add minor value (Hu et al. 2008; Wang et al. 2019). We use this discussion to formulate the following hypothesis and null hypothesis:

H2 : The quantity of online reviews does influence consumers' perception of product quality.

H₀₂ : The quantity of online reviews does not influence consumers' perception of product quality

Figure 2
Theoretical model



3. Methodology

This chapter will discuss the research approach and methodology that was used in the study. It will enlighten the reader about how the research was conducted and how the data was collected and analyzed.

3.1 Research Approach and Strategy

Based on the purpose of our study we decided on a quantitative research method using a deductive approach. A quantitative approach is distinguished by the use of numerical data that can be analyzed with statistical tools (Saunders et al., 2023). Our decision was based on the fact that a trustworthy conclusion requires a large amount of collected data and according to Saunders et al. (2023) quantitative methods enable responses from a large number of people. A deductive approach was deemed appropriate for our study as it provides an opportunity to explain causal relationships between concepts and variables and to generalize findings to some extent (Saunders et al., 2023). A deductive approach entails creating hypotheses and using data collection to test already existing theories, and it is often the choice when using a quantitative method (Saunders et al. 2023). The choice of research approach was based on the fact that the subject of online reviews and their influence on perception of product quality has previously been studied.

3.2 Research Design

The aim of this study was to determine if the quantity and recency of a product's online reviews influence the consumers' perception of the product's quality. Therefore the research took on an explanatory approach as it aimed to investigate the relationship between variables (Saunders et al. 2023). The chosen research design is supported by Saunders et al. (2023) who states that explanatory research is suitable when conducting a quantitative study.

The research was conducted through a classical experiment. In an experiment, one variable is manipulated at a time and the change in the result is then studied (Field & Hole, 2003). This method was chosen as experiments are extremely precise and therefore deliver reliable results (Saunders et al., 2023). Our chosen method was further based on Field & Hole (2003), who explain that the conduction of an experiment does not allow for respondents to be influenced to give biased answers. Consequently, we chose to conduct an experiment as we concluded that it was the research design that would give us the most accurate answers.

3.3 Type of Data

The study includes both primary and secondary data. Secondary data is defined by Bryman and Bell (2014) as information that has already been collected by other researchers. Our study utilized this data through an array of academic articles, journals and books. The introduction, literature review and methodology chapters of this article are based on secondary data and laid the groundwork for our research design and the collection of the primary data. Primary data is defined as the data that the researcher was involved in collecting (Bryman & Bell, 2014). We collected primary data by conducting an experiment via an online questionnaire. This data-gathering method allowed for a relatively big sample given the time restraints (Bryman & Bell, 2014). The result discussion and conclusion used a combination of the primary data and the secondary data. The interplay of the two data types allowed for a more in-depth analysis. The secondary data was also used as a tool to get a better understanding of the primary data. Hence, the two data types allowed us to answer the research question and fulfill the research purpose (Bryman & Bell, 2014).

3.4 Research Method

3.4.1 Survey

We chose to conduct the experiment through a survey so we could reach more people and facilitate an easy answering process. The survey was created using the survey tool Qualtrics. Apart from the experimental manipulation, the survey included questions about demographics and three general questions about respondents' usage of online reviews and their trust in online reviews. The objective of the three general questions was to provide a more comprehensive understanding by gathering information about other influential factors. The included influential factors were chosen based on existing literature on online reviews.

According to Saunders et al. (2023), a survey should consist of four to eight split pages in order to be easy to work through and not perceived as too long. Our survey was therefore made up of five pages and each page contained fewer than five questions. We placed the experimental manipulation as the first question in the survey. This decision was made because of the benefit of placing the most important and enjoyable question first (Saunders et al, 2023). Peytcheva (2020) argues that when conducting a survey the language should be the

sample group's mother tongue. Since our study was conducted on Swedish consumers, we therefore chose to have all information, questions and answer options in Swedish.

The survey's structure and questions were the following:

1. Experimental manipulation: (Likert scale, Very bad (1) - Very good (7))
 - a. Study the picture and then assess how you perceive the quality of the face moisturizer.
2. Manipulation check statements: (Likert scale, Strongly disagree (1) - Strongly agree (5))
 - a. The picture presented in the previous question showed a face moisturizer that had received a high number of reviews.
 - b. The picture presented in the previous question showed a face moisturizer whose most recent reviews were published recently.
3. General questions: (Likert scale, Strongly disagree (1) - Strongly agree (5))
 - a. I read online reviews when I order a product online.
 - b. I read online reviews to get a feeling of the product's quality.
 - c. I trust online reviews.
4. Demographic questions:
 - a. Please specify your gender (Man/woman /do not want to answer or other)
 - b. Please specify your birth year (1945 -2010)

3.4.2 Experiment

We chose to conduct the experiment through a survey in order to reach as many people as possible. According to Patel and Davidsson (2019), to avoid individual factors affecting the respondents' answers you need to randomize which individuals are part of each group. Therefore, each respondent of our survey was randomly placed into one out of the four groups. All four groups were experimental groups that each received different manipulations. The respondents were presented with a picture showing an interface of an e-commerce website where you can buy face cream and the respondents had to evaluate the quality of the presented face moisturizer based on the information in the picture. Patel and Davidsson (2019) explain that in an experiment it is vital to make the situation end experience as similar as possible for every group. The picture showed four reviews, which were identical for all four groups. The manipulated variables in the picture were the number indicating the quantity

of reviews and the number indicating how recently the reviews were published. Except for the experimental manipulation, all other aspects of the picture remained identical between the four groups.

The four pictures had the following conditions:

1. The first picture had reviews posted from 2 days ago up to 1 week ago. The total number of published reviews was 4.
2. The second picture showed the 4 most recent reviews which were posted 2 days up to 1 week ago. The total quantity of published reviews was 521.
3. The third picture had reviews posted 5 to 10 years ago. The total quantity of reviews was 4.
4. The fourth picture showed the 4 most recent reviews which were published between 5 and 10 years ago. The total quantity of reviews was 521.

In order to clarify the difference between the four groups and which variables were manipulated among them, we designed the following 2x2 model.

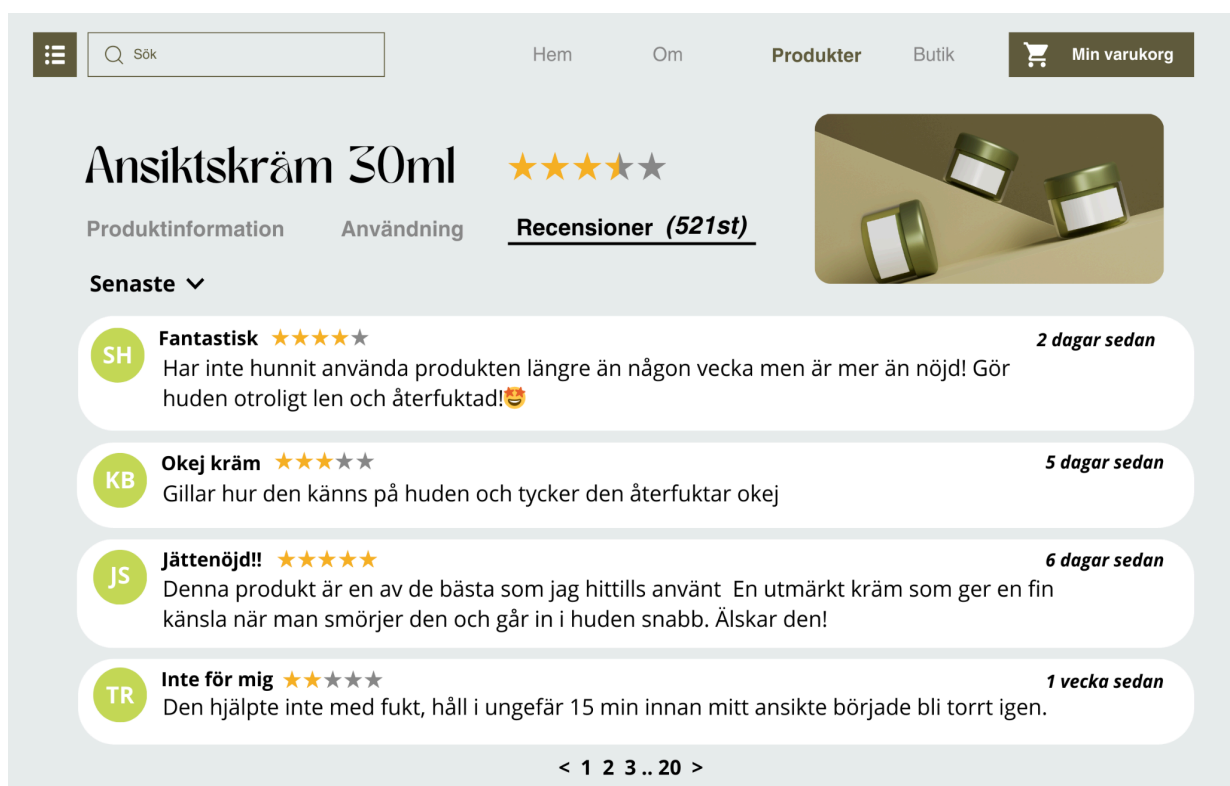
Figure 3
2x2 model

	Few	Many
Recent	1 Recent / Few	2 Recent / Many
Old	3 Old / Few	4 Old / Many

The picture used in the experiment was designed in the creative suite “Canva”. When designing the outlay of the pictures we took inspiration from real e-commerce websites. This was to make sure that our design would resemble a real-life scenario as much as possible. The content of the reviews was influenced by published reviews on various skincare and make-up resellers websites such as “Lyko.se” and “Nordicfeel.se”. Below you will find the picture that was presented to the group “Recent/Many”. In order to see all pictures used in the experiment see appendices.

Picture 1

Picture used in the experiment for the group “Recent/Many”



Below the picture, the respondents were asked to assess the face cream’s quality using a seven-point Likert scale. The scale stretched from “very bad” to “very good”. A seven-point Likert scale was chosen because of the possibility of choosing more precise alternatives that better correspond with how the respondent perceives the product's quality.

Following the experimental manipulation, we inserted a manipulation check. A manipulation check validates that the respondents acknowledged the manipulation in the picture (Hauser et al., 2018). The respondents were shown a statement about the quantity and a statement about

the recency of the reviews in the picture. They were then asked to answer to what degree they agreed with each statement. The manipulation check was in a Likert scale format however this time it was a 5-point scale that stretched from “strongly disagree” to “strongly agree”. When the respondent had answered the manipulation check statements in a way that aligns with the picture they were shown we were able to proceed with analyzing the effect of the manipulated variables.

3.4.3 Pilot Testings

Before we sent out the survey we conducted pilot testing. Saunders et al., (2023) highlight that before a survey is put to use it is important for it to be pilot-tested using a group that is equivalent to the actual sample. Further, it is advised that the smallest number to include in a pilot test is ten people. With this in mind, we sent out the survey to ten random people at the university. The main focus of the pilot test was to evaluate how the experimental manipulations performed. We did three pilot tests because the results from the manipulation check were unsatisfactory in the first two. The first manipulation check statement read “The previously shown picture presented a face cream that had received a high number of online reviews” if the respondent belonged to a group which had been shown a picture with many reviews we deemed the answers “Agree” or “Strongly agree” as correct. The second manipulation check statement was assessed in the same way where a “correct” answer depended on which group the respondent belonged to. In the first and second pilot test, many respondents answered the statement with “neither agree nor disagree” on the manipulation check, which made it hard for us to evaluate if the manipulations had been successful. Therefore, we modified the picture to better highlight the manipulated variables of quantity and recency and then conducted a third pilot test. The modifications that were made were increasing the size of all text in the picture and making the numeral indicators for recency and quantity bold. The third pilot test concluded that 80% of respondents answered “correctly” on both manipulation check statements which we found to be a satisfactory quota. Below you will find the results from all three pilot-testings.

Table 1

Manipulation check success rate for Pilot Test 1

Number of manipulation check statements	Success rate
0	30%
1	50%
2	20%

Table 2

Manipulation check success rate for Pilot Test 2

Number of manipulation check statements	Success rate
0	20%
1	30%
2	50%

Table 3

Manipulation check success rate for Pilot Test 3

Number of manipulation check statements	Success rate
0	0%
1	20%
2	80%

3.5 Sampling

The sampling method was chosen based on which process would generate the biggest sample group. This was prioritized because a bigger sample means that the generated results are more representative of the entire population (Field & Hole, 2003), and because an appropriate sample size is necessary to be able to identify statistically significant differences or associations (Bryman & Bell, 2014). Due to time and resource constraints, a random probability-based sample was not feasible for this study. We therefore used a non-probability sampling method. The non-probability sampling method we chose was convenience

sampling. Convenience sampling is when respondents are chosen due to their accessibility (Bryman & Bell, 2014). The sample group was reached using this method through the university email chain. When choosing this method we were aware it would result in respondents sharing similar traits, such as age and occupation. However, since our findings are based on an experiment the similar characteristics would not undermine our study (Li et al., 2021; Pierce et al., 2017). Therefore, convenience sampling was chosen as it allowed us to quickly gather a sufficient amount of responses without invalidating the results, making it suitable for our study given the time restraints.

3.6 Method for Data Analysis

The survey was made and published in the survey tool Qualtrics. After one week we closed the survey and exported the answer to the software SPSS (Statistical Package for the Social Sciences). The choice to use SPSS was made based on recommendations from literature on research methods (Saunders et al., 2023; Bryman & Bell, 2014). In order to analyze the effect of the experimental manipulations independently we created two new variables in SPSS that represent the qualities of quantity and recency of the review. The variable for quantity was computed to have two values where 1 = few and 2 = many. The variable for recency also has two values where 1 = recent and 2 = old. The collected data have been analyzed using the statistical measures of T-Test, ANOVA and linear regression.

3.6.1 T-Test

In order to evaluate the success of the manipulation check an independent sample t-test was conducted. The independent t-test was utilized as it is used to compare the means of two groups where different respondents are used in each group (Field & Hole, 2021). A t-test also computes the significance level (P-value), standard deviation and confidence interval, among other measures (Field & Hole, 2021). A t-test was conducted on each manipulation check statement, thus comparing the mean between the groups few and many in one test and new and old in the other. Additionally, a t-test was used to test each hypothesis to compare the mean of the product quality perception between the groups that received few and many reviews as well as between the groups that received recent and old reviews. We used a 95% confidence interval and were therefore able to accept the null hypothesis if $p < 0.05$ and reject the null hypothesis if $p > 0.05$.

3.6.2 ANOVA

An ANOVA (Analysis of Variance) test is similar to a t-test but instead of only being able to compare two groups it can be used to compare the means of three groups or more (Field & Hole, 2021). We used a one-way independent ANOVA test to analyze the data collected from the four experimental groups to determine if there was an overall significant difference between the groups. In a one-way ANOVA test there is only one independent variable. The independent variable, which was determined by the combination of recency and quantity, was tested against the dependent variable of product quality. The four manipulations of the independent variable were: recent/few, recent/many, old/few and old/many. An independent ANOVA test means that all participants will only take part in one group (Field & Hole, 2021). Additionally, Field & Hole (2021) recommends including a Post Hoc analysis to compare each participating group's mean value to all the other groups' mean values and determine if the mean differences are significant (Field & Hole, 2021). Thus, we conducted a Post Hoc Bonferroni test to identify specifically between which of the groups there was a significant difference.

3.6.3 Linear Regression

A multiple linear regression analysis was used to investigate the relationship between the three influential factors and how the respondents perceived the quality of the product. A linear regression predicts the value of the dependent variable based on the value of the independent variable (IBM, n.d.). A multiple regression model can include several independent variables but only one dependent variable (IBM, n.d.). Two regressions were performed. The first regression investigated the relationship between the dependent variable quality perception and the three independent variables which were based on the general questions. The second regression investigated the relationship between the dependent variable quality perception and the three independent variables trust, recency of review, quantity of review and quality perception. The analysis provided values for the standardized and unstandardized beta as well as the p-value for each independent variable.

3.7 Quality Criteria

The reliability and validity of the study are affected by the pilot test and the survey's design and structure (Saunders et al., 2019). We have throughout the data collection process taken measures to ensure that this study's results are reliable and valid.

3.7.1 Reliability

According to Patel and Davidson (2019), reliability tells us how well the study can withstand the influence of random elements that can affect the results. In other words, the reliability is measured by repeating the study and seeing if the results are the same. If the results do not turn out to be similar then it is possible that one of the studies was influenced by random circumstances. Since our study was conducted with a time limit we did not have the possibility to repeat the experiment. However, in order to test the reliability we looked at the findings of previous research conducted in the same area, which we discuss in Chapter 5.

Saunders et al. (2023) inform that both the authors and respondents can be a threat to reliability. To ensure that we, the authors, did not affect the reliability, both of us contributed to the research design and analysis of the results. Thus, we ensured that both of us interpreted the results in the same way. We further used randomization to assign respondents to one of the four groups in order to eliminate systematic biases. Along with having a large sample size this further ensured the reliability of the experiment.

3.7.2 Validity

The validity of a study refers to the degree to which the study succeeds in measuring what it aims to measure and is divided into three categories: measurement validity, internal validity and external validity (Bryman & Bell, 2014). Measurement validity refers to the degree in which the measurement tool is able to assess what it claims to assess (Bryman & Bell, 2014). Our measurement tool was an online questionnaire and the pilot test results were used to determine if the questionnaire successfully measured the influence of quantity and recency of online reviews. Following multiple modifications the third pilot test results, shown in Table 1, indicated a measurement valid experiment.

Internal validity refers to whether the result of the study is due to the causal relationship between the independent and dependent variable, or the influence of other factors (Bryman & Bell, 2014). According to Lin et al (2021), experimental research maximizes internal validity due to the extent of control over variables experiments allow. Since our experiment was constructed by creating conditions where the manipulation of the independent variable is the only difference between groups, it can be assumed that any difference in results between groups is caused by the independent variable (Price et al., 2017).

External validity refers to whether the results of the study can be generalized and applied to other contexts (Bryman & Bell, 2014). According to Lin et al (2021), the controlled conditions of experimental settings reduce external validity, making it difficult to achieve both high external and internal validity. However, the prevalence of both high internal and external validity is often not needed in experimental studies. Since our experiment uses hypothesis testing to test theories it should be assessed on its ability to tell something about the tested theories and not on its generalizability (Lin et al, 2021). We therefore prioritized the internal validity of our study. However, to ensure external validity to some degree, our experimental manipulation was designed to resemble real-life encounters with online reviews as much as possible. According to Price et al (2017) external validity is higher when the experimental setting resembles the real life situation that the findings aim to apply. Hence we were able to increase the likelihood of our findings being a valid indicator of the general influence of the tested variables.

3.8 Ethical Considerations

Field and Hole (2021) state that ethical considerations should be taken into account when conducting an experiment. The ethical concerns include consent, deception, confidentiality and harm to participants (Field & Hole, 2021). At the beginning of our survey, we informed the survey takers that their personal information would be collected and that information collection would comply with GDPR standards. The respondents then had the chance to opt out of the study. All respondents were above 18 years of age which meant that no parental consent was needed (Field & Hole, 2021). The experiment was of a kind where the participants had to remain unaware of what was being investigated. We informed the potential respondents that the study was on the subject of marketing, but did not specify that we investigated the quantity and recency of reviews. The decision to keep the participants uninformed of the research topic was made to make sure that their answers were not affected. The respondents were only asked to specify their gender and year of birth which meant that they can not be identified. The individual answers were further not shared with anyone except the authors to ensure confidentiality (Field & Hole, 2021)

4. Results

This chapter will begin by outlining the demographics of the respondents. We then go on to present the results from the manipulation check and from the experimental manipulation. Lastly, we present the results for the three additional influential factors.

4.1 Demographics

The experiment was conducted on students at the University of Gothenburg. The students received an email with a link to a survey accompanied by a text encouraging them to participate in the study. In total, there were 239 respondents, however only 219 finished the entire survey. Among these 117 (53%) were women, 99 (45%) men and 3 (1%) did not want to answer or identify with the two above-mentioned genders. The largest group of respondents were 20-27 years old making up 84% of the total respondents. The oldest participant was 65 years old while the two youngest were 19 years old.

4.2 Manipulation Checks

As previously mentioned, the manipulation checks consist of two statements which investigate if the respondent registered the quantity and recency of the reviews in the experimental manipulation. The respondents were provided with a 5-point scale that stretched from “strongly disagree” to “strongly agree” to evaluate the presented statement. In order to study the experimental manipulations independently of each other we used the created variables recency and quantity, as presented in 3.6.

4.2.1 Recency

A significance test was conducted on the manipulation check for the recency of reviews to determine whether participants took this variable into account when assessing the quality of the product. Table 4 presents the group statistics and Table 5 presents the result for the t-test. Table 4 shows that there was a difference in the number of respondents between the group that received “recent” reviews and the group that received “old” reviews, with 104 and 122 respondents respectively.

Table 4

Group statistics of the variable “Age” from the manipulation check

Group statistics	Age	<i>N</i>	Mean	<i>SD</i>	<i>SEM</i>
Recency of reviews	Recent	104	3.87	1.043	0.102
	Old	122	1.80	1.171	0.106

Table 4 shows a mean value of 3.87 for the group that received recent reviews and 1.80 for the group that received old reviews. According to Table 5, the mean difference is deemed significant at the 0.05 level ($p < 0.001$). We can therefore reject that there is no difference between the mean values and conclude that respondents took the recency of reviews into account when assessing the quality of the face moisturizer.

Table 5

Independent samples test of the variable “Age” from the manipulation check

Independent samples test		<i>F</i>	<i>sig.</i>	<i>t</i>	<i>df</i>	sig. (2-tailed)	95% Confidence Interval of the Difference	
							Lower	Upper
Recency of reviews	Equal variances assumed	2.854	.093	13.925	224	<.001	1.777	2.363
	Equal variances not assumed			14.053	223.547	<.001	1.780	2.361

4.2.2 Quantity

A significance test was also conducted on the manipulation check for the quantity of reviews to determine whether participants took this variable into account when assessing the quality of the product. Table 6 presents the group statistics and Table 7 presents the result of the t-test. There were 113 people who were shown the picture with few reviews and 113 people who were shown the picture with many reviews.

Table 6

Group statistics for the variable “Quantity” in the manipulation check

Group statistics	Quantity	<i>N</i>	Mean	<i>M(SD)</i>	<i>SEM</i>
Quantity of Reviews	Few	113	2.20	1.262	0.119
	Many	113	3.88	1.078	0.101

Table 6 shows that the mean value for the groups that were presented with few reviews was 2.20 while the mean value for the groups that were presented with many reviews was 3.88. Table 7 shows that the mean difference is significant at the 0.05 level ($p < 0.001$). We can reject that there is no difference between the mean values and conclude that respondents took the quantity of reviews into account when assessing the quality of the face moisturizer.

Table 7

Independent samples test of the variable “Quantity” on the manipulation check

Independent samples test		<i>F</i>	<i>sig.</i>	<i>t</i>	<i>df</i>	<i>sig. (2-tailed)</i>	95% Confidence Interval of the Difference	
							Lower	Upper
Quantity of reviews	Equal variances assumed	12.703	<.001	-10.711	224	<.001	-1.980	-1.365
	Equal variances not assumed			-10.711	218.697	<.001	-1.980	-1.365

4.3 Experiment Result

As the significance test performed on the manipulation check concluded that respondents acknowledged the experimental manipulation we can continue on to look at the result of the experiment.

4.3.1 ANOVA

We use significance testing to evaluate if the quantity and recency of reviews have a significant influence on perception of product quality. A one-way ANOVA was performed to determine if the four group means are equal or if at least one group mean differs significantly from the others. The result of the ANOVA analysis is presented in Table 8.

Table 8 shows that there is a statistically significant difference between the group means at the 0.05 level ($p=0.048$). We therefore reject that all group means are equal and conclude that at least one group's mean is significantly different compared to the other group's means.

Table 8

One-way ANOVA Analysis of perceived product quality by quality and recency of reviews

Source	SS	df	MS	F	p
Between Groups	9.778	3	3.259	2.681	.048
Within Groups	285.720	235	1.216		
Total	295.498	238			

As the ANOVA analysis does not let us know between which of the specific groups the mean difference is significant we conduct a post hoc test to compare each condition with every other condition. Table 9 presents the Bonferroni post hoc comparison result and Table 10 presents the descriptive statistics for the test.

According to Table 9, the mean value for product quality between the group that received recent/few reviews ($M=3.9831$) and old/few reviews ($M=3.4262$) was significantly different ($p=0.037$). However, no other pair of groups had a statistically significant mean difference. We therefore conclude that the only statistically significant mean difference ($MD=0.55682$) is between the groups recent/few and old/few. As these groups have a common variable of

“few” reviews we predict that we will be able to reject the first null hypothesis and fail to reject the second null hypothesis. We further evaluate this in chapter 4.3.2.

Table 9
Post hoc Bonferroni test multiple comparisons

(I) Group	(J) Group	MD	SE	p	95% confidence interval	
					Lower	Upper
Recent/few	Recent/many	.20123	.20667	1.000	-.3487	.7511
	Old/Few	.55682*	.20134	.037	.0211	1.0926
	Old/many	.32680	.19901	.611	-.2027	.8563
Recent/many	Recent/few	-.20123	.20667	1.000	-.7511	.3487
	Old/Few	.35559	.20503	.505	-.1900	.9011
	Old/many	.12557	.20274	1.000	-.4139	.6650
Old/few	Recent/few	-.55682*	.20134	.037	-1.0926	-.0211
	Recent/many	-.35559	.20503	.505	-.9011	.1900
	Old/many	-.23002	.19730	1.000	-.7550	.2950
Old/many	Recent/few	-.32680	.19901	.611	-.8563	.2027
	Recent/many	-.12557	.20274	1.000	-.6650	.4139
	Old/Few	.23002	.19730	1.000	-.2950	.7550

*The mean difference is significant at the 0.05 level.
Dependent variable: perceived product quality

Table 10

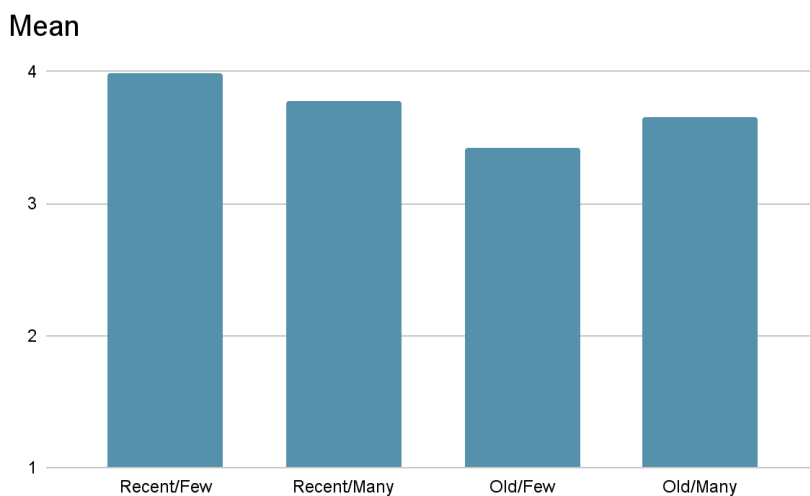
Descriptive statistics for perceived product quality

Perceived Product Quality	N	Mean	SD	SE	95% Confidence Interval for Mean		Min	Max
					Lower	Upper		
Recent/Few	59	3.9831	.97364	.12676	3.7293	4.2368	2	6
Recent/Many	55	3.7818	1.18151	.15931	3.4624	4.1012	1	7
Old/Few	61	3.4262	1.16131	.14869	3.1288	3.7237	1	6
Old/Many	64	3.6563	1.08699	.14587	3.3847	3.9278	1	6
Total	239	3.7071	1.11427	.07208	3.5651	3.8491	1	7

Figure 4 presents the mean score of each group in the form of a bar graph. The graph shows that the mean value for the group with recent/few reviews and old/few reviews is notably the highest and lowest respectively. This helps to illustrate the result of the post hoc test as it clearly demonstrates that the mean difference between these two groups takes on the highest value.

Figure 4

Mean scores for perceived product quality depending on recency and quantity of reviews



4.3.2 Hypotheses

In this section we use significance testing to determine if we can reject or if we fail to reject our null hypotheses:

H_{01} : The recency of online reviews does not influence consumers' perception of product quality.

H_{02} : The quantity of online reviews does not influence consumers' perception of product quality

The significance tests in this section were conducted on the experimental portion of the survey where respondents assessed the quality of a face moisturizer using a 7-point Likert scale stretching from “very bad” to “very good”.

4.3.2.1 Recency

The first significance test was conducted to establish if the recency of the reviews had a significant influence on the participants' perception of the product's quality. Table 11 presents the group statistics and Table 12 presents the result of the t-test. This information is used to determine if we can reject our first null hypothesis:

H_{01} : The recency of online reviews does not influence consumers' perception of product quality.

Table 11 shows that the mean value for the group presented with recent reviews was 3.8860 while the mean value for the group that was presented with old reviews was 3.5440. According to the t-test result presented in Table 12, the mean difference between the two groups is statistically significant at the 0.05 level ($p=0.017$). Therefore, we can reject the null hypothesis and conclude that the recency of online reviews has a significant influence on how consumers perceive the quality of a product.

Table 11

Group statistics for the variable “Age” on perceived quality

Group statistics	Age	<i>N</i>	Mean	<i>SD</i>	<i>SEM</i>
Perceived product quality.	Recent	114	3.8860	1.07883	0.10104
	Old	125	3.5440	1.12525	0.10065

Table 12

Independent samples test for the variable "Age" on perceived quality

Independent samples test		<i>F</i>	<i>sig.</i>	<i>t</i>	<i>df</i>	sig. (2-tailed)	95% Confidence Interval of the Difference	
							Lower	Upper
Perceived product quality.	Equal variances assumed	2.842	.093	2.393	237	.017	.06046	.62347
	Equal variances not assumed			2.398	236.400	.017	.06101	.62292

4.3.2.2 Quantity

The second significance test was conducted to establish if the quantity of the reviews had a significant influence on participants' perception of the product's quality. Table 13 presents the group statistics and Table 14 presents the result of the t-test. This information is used to determine if we can reject our second null hypothesis:

H_{02} : The quantity of online reviews does not influence consumers' perception of product quality

Table 13 shows that the mean values were similar between the group that was shown few reviews ($M= 3.7000$) and the group that was shown many reviews ($M= 3.7143$). According to the t-test result presented in Table 14, the mean difference between the two groups is not statistically significant at the 0.05 level ($p=0.921$). Therefore, we fail to reject the null hypothesis.

Table 13

Group statistics for the variable "quantity" on perceived quality

Group statistics	Quantity	<i>N</i>	Mean	<i>SD</i>	<i>SEM</i>
Perceived product quality	Few	120	3.7000	1.10461	0.10084
	Many	119	3.7143	1.12854	0.10345

Table 14

Independent samples test for the variable "quantity" on perceived quality

Independent samples test		<i>F</i>	<i>sig.</i>	<i>t</i>	<i>df</i>	sig. (2-tailed)	95% Confidence Interval of the Difference	
							Lower	Upper
Perceived product quality.	Equal variances assumed	.105	.746	-.099	237	.921	-.29886	.27029
	Equal variances not assumed			-.099	236.789	.921	-.29886	.27032

4.4 Other Influential Factors

To control if any other variables had a significant influence on the respondents we used regression analysis on the three additional questions in the survey regarding the respondents' usage and trust in online reviews. Table 15 presents the relationship between perceived product quality and the three independent variables. The findings are based on the respondents' own perceptions of themselves.

Table 15 indicates that we cannot conclude that the respondents' prior tendencies of reading or not reading online reviews had a significant influence on how they perceived the product's quality in the experiment ($p=0.974$). Further, we were not able to conclude that whether respondents used online reviews with the aim to get a better understanding of the product quality or not had a significant influence on how they perceived the product's quality in the experiment ($p=0.616$). Additionally, the results show that respondents' trust in online reviews did have a statistically significant influence on how they perceived the product's quality in the experiment ($p=0.025$).

We can therefore not conclude that the extent to which consumers have priorly used online reviews, and whether or not they purposefully use them for insight on product quality, significantly influences how they end up perceiving a product's quality. We can however conclude that whether a consumer has trust in online reviews or not does significantly

influence their perception of a product's quality, and that for each one unit increase of trust there is a 0.205 unit increase in perceived product quality.

Table 15

Regression coefficients predicting perceived product quality

	Unstandardized coefficients		Standardized coefficients	<i>t</i>	<i>p</i>
	<i>B</i>	<i>SE</i>	Beta		
I read online reviews before I order a product online	.004	.117	.003	.032	.974
I read online reviews to get a better understanding of product quality	.065	.129	.047	.503	.616
I trust online reviews	.205*	.091	.168	2.251	.025

*The change is significant at the 0.05 level.

Dependent variable: perceived product quality

Since the variable trust is determined to have a significant influence we conduct a new regression model to investigate the relationship between perceived product quality and the three independent variables trust, recency and quantity. The results are presented in Table 16.

According to Table 16, with a one-unit increase in trust, the perceived product quality increases by 0.238, when holding all other variables constant. With a one-unit increase in quantity, the perceived product quality increases by 0.121, when holding all other variables constant. With a one-unit increase in review recency, there is a 0.321 increase in perceived product quality, when holding all other variables constant. The variables trust ($p=0.004$) and recency ($p=0.029$) have a statistically significant influence on the perception of product quality, while the influence of quantity is not found to be statistically significant ($p=0.409$). This conclusion of significance coincides with the prior test results presented in chapter 4.3. Additionally, Table 16 shows that the standardized Beta in absolute terms is larger for the

variable trust ($\beta=0.195$) than for the variable recency ($\beta=0.145$). Therefore, we can conclude that consumers' trust in online reviews has a relatively stronger influence on their perception of product quality than the recency of the review does.

Table 16

Regression coefficients predicting perceived product quality

	Unstandardized coefficients		Standardized coefficients	<i>t</i>	<i>p</i>
	<i>B</i>	<i>SE</i>	Beta		
I trust online reviews	.238*	.081	.195	2.950	.004
Review quantity	.121	.146	.055	.828	.409
Review recency	.321*	.146	.145	2.195	.029

*The change is significant at the 0.05 level
 Dependent variable: perceived product quality

5. Analysis and Discussion

In this chapter, we analyze the results and acknowledge the implications of our findings for researchers and marketers. We also discuss our findings in relation to the previously presented theoretical frameworks and existing literature on the topic.

5.1 Recency

Through testing H1 we were able to look into *if the recency of online reviews influences consumers' perception of product quality*.

H1: The recency of online reviews does influence consumers' perception of product quality.

We rejected the null hypothesis that the recency of online reviews does not influence consumers' perception of product quality at the 5% significance level, and were able to conclude that *the influence of recency is statistically significant*. Our findings showed that the groups that were presented with recent reviews assessed the product's quality as better than the groups who were presented with old reviews. The result is strengthened by existing literature which has found that reviews that are more recent get more attention (Jindal and Liu 2008). Additionally, recent online reviews have been established as more helpful to the consumer (Liu, 2009). According to Li & Tan, (2013) the helpfulness of online reviews is one of the most powerful marketing tools, which adds to the reliability of our findings.

Although our findings coincide with a number of existing literature, they contradict the findings of the study conducted by Cheung et al. (2008). According to Cheung et al. (2008), the recency of reviews does not have a significant influence on the perceived usefulness of the information. One possible reason for the discrepancy between the findings is the difference in our chosen methodology. To minimize bias, the respondents of our survey were presented with a fictional platform. Additionally, the respondents received reviews where the manipulation of the independent variable was the only difference between the groups. In contrast, the study conducted by Cheung et al. (2008) used an existing online platform that all the respondents had prior experience with. According to the *E-WOM processing framework*, the type of channel that presents the reviews is influential. The framework suggests that when consumers are familiar with a platform they often find the source reliable and therefore the information from said channel more credible (Le et al., 2022). It is therefore possible that the

findings in the study conducted by Cheung et al. (2008) was influenced by the chosen methodology.

According to the *E-WOM framework*, the anonymity of online platforms makes information easier to share and more accessible (Huete-Alcocer, 2017). In turn, there is an infinite amount of information about products to be found online, which is constantly being updated. Our findings suggest that the accessibility of E-WOM is beneficial as it continuously provides consumers with newer information, which in turn significantly influences their perception of a product's quality. According to Reimer & Benkenstein, (2016), the anonymity of E-WOM can however reduce the perceived trustworthiness of the information. Considering the significant influence of recency in our study, our findings suggest that the recency of E-WOM may be able to counterbalance the concerns that arise with anonymity. The *E-WOM processing framework* further suggests that due to the anonymity consumers can't assess credibility based on prior knowledge from already established relationships and instead have to turn to other factors (Le et al., 2022). Our research therefore suggests that one factor that consumers turn to instead to assess the credibility of E-WOM is the recency of the information. Therefore our findings indicate a benefit of adding recency as one of the influential factors of message characteristics in the E-WOM processing framework. Additionally, based on this framework, our findings suggest that the recency of E-WOM increases the acceptance and perceived quality of the information.

According to the *Cue Utilization Theory*, the impact of an online review on quality perception is partly determined by the cues' predictive value, which is the degree to which a consumer relates a cue to the product's quality (Richardson et al., 1994). Prior research has found a positive correlation between the recency of reviews and purchasing intentions (Zhao et al. 2015). Our findings therefore indicate that the recency of an online review correlates with its predictive value. In turn, our research contributes to the existing literature on the cue utilization theory by suggesting that the recency of an extrinsic cue can influence its impact. Consequently, we can provide new insight that indicates the importance of studying the influence that the characteristics of extrinsic cues have.

According to Madu & Madu (2022) keeping websites up-to-date is highly important as it provides users with valuable information. We can therefore speculate that the significant

influence of recency in our study is due to recent information being perceived as more valuable. Considering that products are constantly being improved and released to the market, it is possible that recent reviews feel more relevant as they are more intact with the current market and consumer trends. With the release of new products, the relative perception of quality also changes. A skincare product that was rated five out of five stars six years ago may be rated lower today as consumers can compare it to newer products with improved formulas and ingredients. Every new release promises better quality and functions and in turn older models seem dull in comparison. Therefore, consumers might feel that recent reviews are more valuable since the information reflects the current market and the latest version of products.

Our research contributes to the credibility of prior research with similar findings and challenges the findings of the study conducted by Cheung et al. (2008). The findings of our study therefore indicate the relevance for researchers to further examine the impact recency of online reviews has on consumers. Considering the rapid changes in the digital world and the increase in usage of online reviews, there is a need for up-to-date research to ensure that our knowledge and understanding of the topic reflect current consumer trends. Additionally, our findings suggest that it would be beneficial for existing frameworks and models, such as the cue utilization theory and the E-WOM processing model, to incorporate the recency of information for a more comprehensive understanding and framework.

Our findings regarding the recency of online reviews can be leveraged by marketers to create successful strategies. Since our findings highlight the benefit of having recent reviews it suggests that marketers should focus their efforts on encouraging satisfied consumers to leave reviews. For instance, an implementation of a reward system where consumers who leave reviews shortly after their purchase receive a coupon code for their next purchase could be to a brands advantage. Another suggestion is for marketers to showcase recent reviews in their campaigns to leverage the positive influence of recent online reviews on consumers' quality perception of their products. Since our findings strengthen existing literature that states that consumers find recent reviews more helpful, by including a feature where consumers can choose to sort reviews by their recency or even having this as a default setting, our findings can be favorable for both marketers and consumers.

5.2 Quantity

Through testing H2 we were able to look into *if the quantity of online reviews influences consumers' perception of product quality*.

H2: The quantity of online reviews does influence consumers' perception of product quality.

We failed to reject the second null hypothesis that the quantity of reviews does not influence consumers' perception of product quality at the 5% significance level, and were *not able to conclude whether the influence of quantity is statistically significant*. Failing to reject the null hypothesis entails that our sample provided insufficient evidence for a significant difference, however, this doesn't prove that an effect does not exist. It is still possible that there is an effect that the experiment failed to detect, which can happen when the sample size is too small or when it is fluky, meaning it's not representative of the population.

The findings of our study diverge from prior findings on the quantity of online reviews which state that a higher quantity of reviews boosts product awareness (Davis and Khazanchi, 2008), and are helpful to the consumer (Filieri, 2015; Elliott, 2022). Therefore, our research provides new insight into the topic by suggesting that the quantity of online reviews is potentially not as impactful as previously believed. Additionally, our findings contribute to existing literature on the theory of *information overload* which states that large amounts of information can be demotivating and result in choice paralysis (Iyengar & Lepper, 2000). The mean difference between the group that received few and many reviews was only 0.0143. The similar mean value of the two groups suggests that the additional amount of reviews provided to the second group might not have been influential. According to the theory of information overload, receiving more information than possible to process can reduce the ability to make a decision and can cause stress and anxiety (J. Eppler & Mengis, 2002). It is therefore possible that the low mean difference is because the additional information provided to the group that received more reviews exceeded the amount that was processable. Additionally, the theory states that with every newly added review, each review will matter less to the consumer (Wang et al. 2019). In turn, even if one consumer had access to more reviews than another, their perception of product quality could be similar because the additional information becomes relatively less impactful.

It is however possible that our findings regarding the quantity of online reviews, were influenced by the methodology of the study. The methodological limitations could potentially have contributed to our experiment's failure to detect the effect of quantity as we were not able to provide the group that received more reviews with the additional reviews. In our experimental manipulation, the group that received many reviews were able to see and read the same four reviews as the group that received few reviews. The difference between the two groups was the number indicating how many reviews that were published. The group who were presented with 521 reviews is therefore not likely to have experienced information overload as they only saw that 521 reviews were available but couldn't see those additional reviews. Additionally, prior research has found that quantity of reviews does not largely influence some industries as the revenue from book and box office sales was not significantly impacted by the quantity of reviews (Davis and Khazanchi (2008); and Godes and Mayzlin 2004). We can therefore speculate that our findings diverge from prior research due to the product category we chose to examine. Consequently, it is possible that our findings are not fully representative of reality due to the methodological limitations our study faced.

Our study contributes to the topic of online reviews by indicating that there is a need for more research on the quantity of E-WOM to determine its influence on consumers. Specifically, our research design suggests a need for researchers to focus on a design model where participants can fully interact with the manipulated variables for a more realistic and representative result. By replicating our study with modifications of the methodology researchers can strengthen or weaken both our and prior findings on the topic and in turn provide an improved understanding. The findings of our study also indicate that a numerical indicator for quantity may not be enough to cause information overload, which opens the door for researchers to further investigate how information is processed when it is presented in the form of numbers. Our research further suggests that it could be beneficial to investigate if different product categories are impacted differently by the quantity of E-WOM for a more comprehensive framework. In turn, researchers can leverage our findings to create research designs that allow for more nuanced and in-depth exploration that can be used to create more elaborate frameworks which contribute to effective marketing strategies.

5.3 Other Influential Factors

For a deeper and more nuanced understanding of the experimental findings, we acknowledge the complexity of the study and recognize that other factors can contribute to the results. Through regression analysis, we were able to test if the following three independent variables had a significant influence on the respondents' perception of the products quality:

Variable 1: Respondents prior usage of online reviews

Variable 2: Respondents' prior usage of online reviews with the aim to get a better understanding of the product's quality

Variable 3: Respondents trust online reviews

The significance test concluded that there was not enough evidence to support a significant influence of Variable 1 ($p=0.974$) and Variable 2 ($p=0.616$), however, Variable 3 ($p=0.025$) was found to have a statistically significant influence on how the respondents perceived the quality of the product.

The significant influence of trust found in our study coincides with existing literature, increasing the reliability of our result. Prior research states that online reviews influence consumers' perception of product quality as they are deemed to be a trusted source of product information (Mudambi & Schuff, 2010). According to the *Cue Utilization Theory* online reviews are high-scope cues and therefore perceived as more trustworthy (Samu et al., 2024). This characteristic makes them more persuasive and influential (Chevalier & Mayzlin, 2006). Our findings strengthen the credibility of prior research on the framework and further contribute to the existing literature by highlighting the significance of cues' perceived credibility. According to the *E-WOM framework*, consumers find E-WOM to be more trustworthy because the communication is independent from formal advertising (Price et al. 1989). In turn, this communication has been identified as more persuasive (Chevalier & Mayzlin, 2006). Our findings are able to support this framework by strengthening the credibility of the information. Additionally, the *E-WOM processing framework* indicates that the degree of trust in a source will highly impact how a review is processed. This framework can therefore help explain the significant influence of trust in our study as it states that consumers who find online reviews to be a trustworthy source will find the message quality to be better and also be more accepting of the information (Le et al. 2022)

For further analysis, a second regression model was created where the significant variable trust was tested together with the experimental variables recency and quantity in relation to the dependent variable of perceived product quality. Similar to prior tests, the second regression analysis found trust to be significant ($p=0.004$) along with recency (0.029), while quantity ($p=0.409$) was not found to be statistically significant. Further, the findings indicate a positive relationship between trust and quality perception as well as recency and quality perception. Lastly, the regression analysis established a relatively larger standardized beta value for the variable trust in comparison to the variable recency. We can therefore conclude that whether a consumer trusts online reviews has a larger influence on their perception of product quality than the recency of the review does.

The relatively larger influence of trust on quality perception coincides with the *E-WOM framework* which states that the degree of trust will shape the impact of E-WOM (Chiou et al., 2018). Further, the *E-WOM processing framework* states that sources that are perceived as credible have a bigger influence (Le et al., 2022). In turn, we can speculate that the reason that trust has a relatively larger influence than recency is due to a correlation between the two variables. For instance, it may be that more recent reviews increase the trust that consumers have in online reviews. It is also possible that the variable of trust acts as a mediation device and in turn affects the impact of recency on quality perception. In such a case, recency is significantly influential on quality perception, however, the degree of its influence is moderated by the level of trust making the variable trust more influential. The combination of the two variables of trust and recency can therefore result in a greater effect where the influence of recency is strengthened when the consumer trusts the source.

Through the examination of the influence of trust in online reviews on perceived product quality, we are able to contribute to knowledge on online review influence. Our study confirms existing findings of the importance of trust in consumer behavior and in turn increases the credibility of this information. Moreover, our research broadens existing knowledge by establishing that while both trust and recency are significantly influential factors, trust has a relatively larger effect. Hence, we provide a more nuanced understanding that highlights a complex interplay between the different factors that influence consumers' processing of online reviews. The findings of our study therefore pave the way for future research on online reviews and suggest researchers to look into the relationship between trust

in reviews and recency of reviews and check for any collinearity. Researchers can further use the *cue utilization theory* and look into whether there is a relationship between trust in reviews and consumer motivation and product knowledge, which according to the theory impacts the degree to which consumers use online reviews for quality assessment (Samu et al., 2024). Additionally, since our findings suggest that different factors weigh differently, researchers can use this to create an improved version of the *E-WOM processing model* by adding the weighted influence of each factor group in the model.

Considering the increasingly digital nature of our society, knowledge of online reviews becomes a significantly important tool for creating a successful business. Given consumers' extensive use of online reviews as a source for product information and quality assessment, our findings can guide marketers in creating efficient strategies. Our research suggests that marketers should focus on creating review platforms that enhance consumers' trust. By being transparent and responding to negative reviews and highlighting positive reviews, marketers can enhance credibility and in turn strengthen their brand reputation. Additionally, by recommending consumers to look out for unreliable reviews and promoting credible sources, marketers can encourage conditions that will benefit both the consumer and the brand. Consequently, our findings regarding trust create an opportunity for marketers to leverage the impactful tool that is online reviews to build a successful brand.

6. Conclusion and Recommendations

In the following section we conclude the findings of our study to answer the initial research question: *Does the recency and quantity of a product's online reviews influence consumers' perception of the product's quality?* We also present the limitations of our study design and provide recommendations for future research on the subject.

6.1 Conclusion

The purpose of this essay was to investigate if the recency and quantity of online reviews influence consumers' perception of product quality. We addressed the research question by testing two hypotheses: (H1)The recency of online reviews does influence consumers' perception of product quality, and (H2)The quantity of online reviews does influence consumers' perception of product quality. Through a classical experiment, we were able to reject the null hypothesis for H1 while we failed to reject the null hypothesis for H2. We were therefore able to conclude that the recency of online reviews does influence how consumers perceive a product's quality, where recently published reviews resulted in product quality being perceived as better. We were not able to conclude if the quantity of reviews influences how consumers perceive a product's quality. The result of H1 allows us to conclude that by only changing the date of publication the identical reviews had different influences on quality perception. This indicates that attributes external to the content of a review can impact how the review influences consumers.

We further investigated if there were other factors that can influence the consumers' perception of product quality. The following three variables were chosen based on the suggestion of prior research: prior usage of online reviews, prior usage of online reviews with the aim to get a better understanding of product quality, and trust in online reviews. We were able to conclude that trusting online reviews had a positive influence on consumers' perception of product quality. Additionally, our findings indicated that the variable trust had a relatively larger influence on quality perception than the experimental variables.

6.2 Limitations and Recommendations for Future Research

While our findings provide valuable insights, it is important to acknowledge the limitations of our study design as they may have influenced the conclusions of our result. We were not able to find a statistically significant difference in perceived product quality between the groups

who received few reviews and many reviews through our experiment. Although we designed the experiment in a way that was as realistic as possible we were limited by time and resources. Due to these constraints, the methodology was limited to an online questionnaire and the experimental manipulation had to be simplified for the variable of quantity. Therefore a downside to our experiment was that the group that received the higher quantity of reviews were only informed of the quantity but not able to read all the reviews. In turn, this could have affected the group's assessment of the product's quality and could be a reason for why an effect was not detected. If a similar experiment is conducted in the future, we recommend making an interactive website so respondents can see and interact with all information just like in real life. This will make the experiment more realistic and the results more valid.

The study was limited geographically as all members of the sample group are located in Gothenburg, Sweden. The sampling method was also limited to a non-probability method. Therefore, the research questions could benefit from being explored using a larger sample size that was selected through a probability sampling method. This could provide a more representative result and strengthen the external validity, which was not prioritized in our study due to the time and resource constraints. Additionally, we recommend this modification of the sampling method so that if an effect of quantity exists it can be detected. The experiment was also limited to a specific product type. A face moisturizer was chosen as the product to base the experiment on. This product type was chosen to avoid any bias as the study includes people of different ages and genders and this product is not limited to either. We therefore recommend future research to investigate the research question using other product categories for a more comprehensive understanding.

Furthermore, we recommend for future research to focus on including more variables in the investigation. Our study only investigated a limited number of variables and in turn may not provide an overall picture that is applicable to the reality of the influence of online reviews. While our experiment provides valuable insights through the isolation of the investigated variables, in reality there are many factors and their interplay that determine the outcome of a review's influence. Based on the cue utilization theory it could be beneficial to investigate the different influence of negative and positive reviews. Lastly, based on the E-WOM framework, we suggest future research to include factors such as the quality of the review, consumer motivation and knowledge and source familiarity.

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Appendices

Picture 1.

Shown to experiment group one.

The screenshot shows a product page for 'Ansiktskräm 30ml'. The page has a navigation bar at the top with a search bar, 'Hem', 'Om', 'Produkter', 'Butik', and 'Min varukorg'. The product title is 'Ansiktskräm 30ml' with a 4-star rating. Below the title are tabs for 'Produktinformation', 'Användning', and 'Recensioner (4st)'. The 'Senaste' section shows four reviews:

- SH** Fantastisk ★★★★★ 2 dagar sedan
Har inte hunnit använda produkten längre än någon vecka men är mer än nöjd! Gör huden otroligt len och återfuktad! 😊
- KB** Okej kräm ★★★★★ 5 dagar sedan
Gillar hur den känns på huden och tycker den återfuktar okej
- JS** Jättenöjd!! ★★★★★ 6 dagar sedan
Denna produkt är en av de bästa som jag hittills använt. En utmärkt kräm som ger en fin känsla när man smörjer den och går in i huden snabb. Älskar den!
- TR** Inte för mig ★★★★★ 1 vecka sedan
Den hjälpte inte med fukt, håll i ungefär 15 min innan mitt ansikte började bli torrt igen.

Picture 2.

Shown to experiment group two.

The screenshot shows the same product page for 'Ansiktskräm 30ml', but with 521 reviews. The 'Recensioner' tab now shows '(521st)'. The reviews are identical to those in Picture 1. At the bottom of the page, there is a pagination control: '< 1 2 3 .. 20 >'. The navigation bar and product information are the same as in Picture 1.

Picture 3.

Shown to experiment group three.

The screenshot shows a product page for 'Ansiktskräm 30ml'. At the top, there is a navigation bar with a search bar, 'Hem', 'Om', 'Produkter', 'Butik', and a shopping cart icon labeled 'Min varukorg'. Below the navigation, the product name 'Ansiktskräm 30ml' is displayed with a 4-star rating. There are three tabs: 'Produktinformation', 'Användning', and 'Recensioner (4st)'. A dropdown menu labeled 'Senaste' is open. Below this, four reviews are listed:

- SH** Fantastisk ★★★★★ 5 år sedan
Har inte hunnit använda produkten längre än någon vecka men är mer än nöjd! Gör huden otroligt len och återfuktad! 😊
- KB** Okej kräm ★★★★★ 6 år sedan
Gillar hur den känns på huden och tycker den återfuktar okej
- JS** Jättenöjd!! ★★★★★ 7 år sedan
Denna produkt är en av de bästa som jag hittills använt. En utmärkt kräm som ger en fin känsla när man smörjer den och går in i huden snabb. Älskar den!
- TR** Inte för mig ★★★★★ 10 år sedan
Den hjälpte inte med fukt, håll i ungefär 15 min innan mitt ansikte började bli torrt igen.

Picture 4.

Shown to experiment group four.

The screenshot shows the same product page for 'Ansiktskräm 30ml', but with a 521-star rating and 521 reviews. The 'Recensioner (521st)' tab is selected. The reviews are the same as in Picture 3, but the total number of reviews is now 521. At the bottom of the page, there is a pagination link: '< 1 2 3 .. 20 >'. The rest of the page layout is identical to Picture 3.

