

The Effects of Negative Consumer Online Product Reviews and Company-Based Response Strategies

THESIS

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Preface

This doctoral thesis focuses on the effects of consumer online product reviews and company-based response strategies. It is the report of several very time and effort consuming publication processes. The thesis is composed of a general introduction, four research articles that have been published in co-authorship in refereed journals or refereed conference proceedings and a general conclusion. The four research articles presented henceforth have been elaborated and published in a sequence of several years. The doctoral thesis is based on the articles and was written with some time delay after their publication. The introduction presents the state of the research at the time before the four research projects were started. More recent studies are included in the conclusion to support the obtained results or to show that recent research has yielded different results thus demonstrating how the body of research on online word-of-mouth communication has developed over the years.

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Abbreviations

ANCOVA	Analysis of covariance
ANOVA	Analysis of variance
e.g.	Exempli gratia (for example)
GPR	General propensity to show reactance
i.e.	Id est (namely)
n.s.	Not significant
PSR	Propensity to show reactance to advertising
vs.	Versus
WOM	Word-of-mouth

1. General introduction

1.1. Research context

Word-of-mouth (WOM) communication has longtime been acknowledged to exert a powerful influence on consumers (e.g., Arndt 1967, p. 295; Chakravarty et al. 2010, p. 191; Lee et al. 2008, p. 347; Smith and Vogt 1995, p. 145). Consumers rely upon experiences, opinions and recommendations coming from other consumers because peers are considered as being a credible (Godes and Mayzlin 2004, p. 545; Krishnan et al. 2012, p. 293) and reliable (Gruen et al. 2006, p. 454) source of information about a brand or a product and its quality (Burnkrant and Cousineau 1975, p. 213; Zhu and Zhang 2010, p. 133; Park et al. 2007, pp. 126-127). Particularly in situations where consumers perceive a high purchase risk, they actively search for WOM information (Bansal and Voyer 2000, p. 175).

The term WOM communication originally relates to a personal peer-to-peer exchange of information (Petrescu and Korgaonkar 2011, p. 216). The reach is limited to the closer consumer environment consisting of friends, family and colleagues (Davis and Khazanchi 2008, p. 131). With the electronic progress and the worldwide spread of the Internet, however, a less personal but more universal form of WOM communication, the so called online WOM or eWOM communication, came up (Brown et al. 2007, p. 3; Chatterjee 2001, p. 129; Cheung et al. 2009, p. 9; Davis and Khazanchi 2008, pp. 130-131). This more recent form has become an important source of consumer product information (Chen and Xie 2008, p. 477-478). The technological progress in Web 2.0 applications allows consumers an easy access to peer information on the Internet (Gatautis and Kazakeviciute 2012, p. 1457; Lu et al. 2013, p. 1783). Consumers can now read other consumers' product reviews and publish their own ones without comprehensive online knowledge (Chen et al. 2011, p. 85; Hoffman 2010, p. 741). Contrary to offline WOM communication, online WOM communication enables consumers to read about the experiences, opinions and recommendations of a great number of unknown other consumers from anywhere in the world (Chen and Xie 2008, pp. 479-480; Cheung et al. 2009, p. 9 and 11; Hennig-Thurau et al. 2004, p. 39; Lee et al. 2008, pp. 342-343). Another characteristic inherent in online WOM communication is that it is often available for a long period of time (Hennig-Thurau and

Walsh 2003/04, p. 66; Hennig-Thurau et al. 2004, p. 39; Schindler and Bickart 2005, p. 38) and can thus be consulted directly before a product purchase. This is an important factor to consider regarding the potential impact of online WOM communication compared to the traditional form. The reason is that in an offline context the influence of negative product information on consumers' attitudes and behaviors can be attenuated when some time passes after consumers' contact with the information (Berger et al. 2010, p. 821). However, such a weakening effect is less plausible in an online environment, e.g. for online purchases, because product information from other consumers can also be retrieved from the Internet shortly before a product is bought. Furthermore, even in an offline environment, mobile Internet enables consumers nowadays to read other consumers' opinions about the product of interest directly at the point of purchase. Online WOM communication therefore exerts a stronger influence on consumers' attitudes and behavior than offline WOM communication.

Before the advent of the World Wide Web, the restricted spread of WOM communication made consumers very dependent on the product information provided by the manufacturer (Hu et al. 2011, p. 627). The Internet and its possibilities of easy information access and sharing, however, have led to an increased market transparency (Hennig-Thurau and Walsh 2003/04, p. 66) and thus to a consumer information empowerment (Cova and Pace 2006, pp. 1087 and 1090; Breazeale 2009, p. 313; Wathieu et al. 2002, p. 298). It enables consumers to share opinions and product experiences thus exerting a significant influence on other consumers' purchase decisions (Smith et. al. 2005, p. 16) and therefore a growing pressure on brands and their products (Riegner 2007, p. 436).

The possibilities for consumers to read about other consumers' experiences with a product or to publish their own experiences are manifold. Consumers can, for example, exchange their product experiences via E-Mail, chatrooms or instant messaging services (Riegner 2007, p. 437; Schindler and Bickart 2005, p. 38). Access to this type of information is limited to a small number of consumers. Furthermore, it is only available for a restricted time period (Riegner 2007, p. 437; Schindler and Bickart 2005, p. 39). Compared to other communication channels, the influence of WOM communication shared in such a way can therefore rather be neglected.

Another form of consumer online information sharing are brand communities (Adjei et al. 2009, p. 634; Cova and Pace 2006, p. 1101). An example is the Nike community [1], where members exchange their brand experiences. A major characteristic of these communities is that members often have emotional bonds with the community. Factors like a feeling of being part of a group and similar interests, thoughts, feelings and objectives play an important role (Brown et al. 2007, p. 11; Koh and Kim 2004, p. 157). It can therefore be assumed that particularly consumers who have strong ties with a specific brand use these communities but not consumers who are looking for objective product information. The reach of product information shared in brand communities is therefore also limited.

WOM communication can also be spread through discussion forums (Hennig-Thurau et al. 2004, p. 39; Schindler and Bickart 2005, p. 38). On such forums, opinion leaders play an important role (Clement et al. 2006, p. 797; Haenlein and Libai 2013, p. 70; Lu et al. 2013, p. 1784). Discussion forums require a certain effort when looking for product information. They often contain a big amount of information about a specific topic and numerous comments can be found that are irrelevant for a product purchase. Thus, consumers searching for objective product information must be willing to spend time to select the relevant information. Discussion forums therefore not only serve for knowledge sharing (Koh and Kim 2004, p. 164) but also for social interactions and exchanges between consumers. Similar motives can be expected on social networks such as facebook.com. Many of these forums (e.g. forum for GPS TomTom [2]) and social networks are only open for members. Consequently, the information is not easily accessible for other consumers and its reach is limited.

The most popular source of online WOM communication are consumer-generated product reviews (Schindler and Bickart 2005, p. 42). Reading or publishing online product reviews does not require specific online knowledge (Hennig-Thurau and Walsh 2003/04, p. 52; Hennig-Thurau et al. 2004, p. 40). Such reviews are often written about products which are difficult to evaluate before use regarding their quality. Examples are relatively expensive, complex electronic products (Riegner 2007, p. 443; Huang et al. 2009, p. 59; Park et al. 2007, p. 131) like mobile phones and cameras. Product reviews are mainly published on manufacturer websites and online retailer websites like amazon.com or on independent specialized opinion platforms like epinions.com

(Chatterjee 2001, p. 129; Chen and Xie 2008, p. 477; Hennig-Thurau et al. 2004, p. 39; Mudambi and Schuff 2010, p. 186; Schindler and Bickart 2005, p. 38). They are therefore easily accessible for consumers. Online retailer websites, however, are sometimes not objective in that marketing managers decide which product reviews are published or not (Park and Kim 2008, p. 400). Particularly in important and highly involving purchase decisions, consumers prefer consulting opinion platforms (Schindler and Bickart 2005, p. 43), because they are independent from the manufacturer or retailer and the published content is therefore less likely to be censored (Hennig-Thurau and Walsh 2003/04, p. 52). This characteristic makes product reviews published on independent opinion platforms one of the mostly used forms of online WOM communication (Hennig-Thurau et al. 2004, pp. 39-40) serving as informational basis before a product purchase (Chen and Xie 2008, p. 477; Chevalier and Mayzlin 2006 p. 345).

Consumers are not only strongly influenced by online WOM communication but are also more susceptible to information coming from other consumers than to company-based information (Bickart and Schindler 2001, p. 37). This effect can be explained by the fact that companies have commercially-driven purposes, tend to hide the weaknesses of a product and to highlight its strengths (Park et al. 2007, p. 127). Companies are therefore considered as rather biased (Bickart and Schindler 2001, p. 32; Murali et al. 2005, p. 308). Consumers, in contrast, are considered to provide truthful information about positive and negative product attributes (Park et al. 2007, p. 127). Considering the growing popularity of online product reviews, it is obvious that product information provided by companies is more and more losing its importance. Companies are therefore faced with a considerable loss of control regarding the type and scope to which information about their brands and products is spread (Breazeale 2009, p. 313).

Whereas positive consumer online product reviews contain favorable product experiences and purchase recommendations and thus are rather beneficial for a company, negative reviews often report very disappointing product experiences and thus can be rather harmful for a company. Furthermore, consumers tend to give greater attention to negative information (Chakravarty et al. 2010, p. 191) and also tend to weight it more heavily when forming attitudes than positive information (Ahluwalia 2002

pp. 274-275; Skowronski and Carlston 1989, p. 131). This negativity effect can be explained as follows: consumers tend to perceive negative information as more valuable (Chen and Lurie 2013, p. 468) and trustworthy (Pan and Chiou 2011, p. 72; Xue and Zhou 2011, 52) than positive product information. Also, negative information is perceived to be more diagnostic (Ahluwalia 2002, p. 274; Herr et al. 1991, p. 456) because objects that receive a strongly negative evaluation can be more easily attributed to a negative category than it is the case vice versa with positive information (Herr et al. 1991, p. 457). A qualitatively inferior product can, for example, have some very positive attributes whereas a product that is considered as being of good quality has almost no negative attributes (Chiou and Cheng 2003, p. 52; Herr et al. 1991, p. 457). Consequently, a negativity bias occurs in that negative information gains more weight in judgment than positive.

It is therefore plausible that consumers intentionally look for negative reviews about a product they are interested in to avoid making a wrong purchase decision. Due to the great number of published reviews on the Internet, consumers are also likely to not only read one but several of such negative reviews about a specific product. Several opinion platforms enable consumers to sort the published reviews depending on their valence and on their quality or usefulness previously rated by other consumers (Hennig-Thurau and Walsh 2003/04, p. 52; Mudambi and Schuff 2010, p. 186; Schlosser 2011, p. 229; Sen and Lerman 2007, p. 80). This makes it very easy for consumers to filter the information they consider as being relevant to make a purchase decision. If a consumer is confronted with several negative reviews about a specific product that have been rated as high in their review quality and usefulness, it is probable that he/she is strongly influenced by the reviews, perceives an increased purchase risk (Lin et al. 2010, p. 61), forms a negative attitude towards the product and eventually decides not to buy it.

Thus, from a theoretical as well as practical perspective, the effects of online product reviews on consumer response variables present an important topic to study. First, from an academic point of view, this field of research has so far received insufficient academic attention. Only few empirical studies have systematically analyzed the effects of negative online product reviews on variables that play an important role in marketing. Furthermore, research on possible communication strategies as a company

response to negative online product reviews is scarce. New empirical studies are therefore necessary to shed light on important research questions that emerge. Second, from a marketing point of view, negative online product reviews present a real challenge for a company. Taking into consideration that consumers' attitudes are strongly influenced by negative online WOM communication (e.g. Lee et al. 2008, p. 348), it is plausible that an important higher-level concept, the consumer-based equity of a brand, is also negatively affected. For many companies, the value of their brand has become a management focus (Keller and Lehmann 2006, p. 754) which makes brand equity one of the key marketing constructs in both research as well as practice (Aaker 1992, p. 56; Srinivasan et al. 2005, p. 1433). However, previous studies in the field of online WOM communication have not yet examined the possible detrimental effects of negative online product reviews on this important marketing concept. Research provides the notion that consumer-based brand equity describes the differential effect that brand knowledge has on consumers' value perceptions of brands that are comparable regarding their major attributes (Keller 1993, p. 8 and 13). It comprises both attitudinal and behavioral components (Agarwal and Rao 1996, pp. 238-239; Dawar and Pillutla 2000, pp. 220-221; Yoo and Donthu 2001, p. 14). These brand value perceptions are likely to be revised when consumers are confronted with negative product reviews thus presenting a risk of brand equity dilution.

A possible company-based communication strategy to recover the potentially harmful effects of negative online product reviews could be to implement an advertisement. This type of communication is often used when companies are faced with negative publicity (Ahluwalia et al. 2000, p. 210). The two forms of advertising that are commonly found in research and practice are cognition- and emotion-based advertising (Geuens et al. 2011, p. 420; Ruiz and Sicilia 2004, pp. 659-660; Van Den Putte 2009, p. 677). Cognition-based advertising provides objective arguments, and concrete information about product attributes and benefits (Dubé et al. 1996, p. 84; Pang et al. 2009, p. 609; Ruiz and Sicilia 2004, p. 660; Van den Putte 2009, p. 677). In emotion-based advertising, emphasis is often put on evoking a pleasant product experience and inducing positive feelings towards the advertised product (Pang et al. 2009, p. 609; Van Den Putte 2009, p. 677) which is frequently done with a slogan (Laran et al. 2010, p. 1000). However, previous research suggests that consumers do not only show

positive reactions to positively framed product information after having been confronted with negative product information (Muthukrishnan and Chattopadhyay 2007, p. 339). Advertising can, for example, trigger reactance effects which in turn can lead to a weakening influence of the ad (Clee and Wicklund 1980, p. 392). Triggered reactance can even lead to attitude changes into a negative direction (Carver 1977, pp. 506-507). Thus, it is plausible that a company-based response strategy to negative online product reviews can comprise the risk of triggering unintended boomerang effects within consumers.

Another phenomenon that has received insufficient research attention and presents a challenge for companies in the context of consumers' online WOM communication is the increasing spread of fake product reviews (Dellarocas 2006, pp. 1577-1578). In times of information overload caused through company communication it is more and more difficult to exert an influence on consumers. That is why some companies take advantage of the anonymity of the Internet (Mayzlin 2006, p. 161) and of consumers' weak resistance to information coming from other consumers (Trusov et al. 2009, p. 90). Through targeted manipulations of online WOM communication, companies try to influence consumers to form positive attitudes towards their products and to eventually buy them. Some companies ask, for example, their employees to publish fake positive reviews about their products to increase their sales (Dellarocas 2006, pp. 1577-1578; Hu et al. 2011, p. 627) or fake negative online reviews about competitor products to harm them (Dellarocas 2006, p. 1577). Companies even hire consumers or professional agencies to spread manipulated consumer reviews [3]. Reports about review manipulations are increasingly found in the media. From a consumer point of view, it is almost impossible to distinguish truthful online product reviews from non-authentic ones. Due to the anonymity of the Internet, consumers cannot be sure about the reviewer's motives (Schindler and Bickart 2005, p. 37) and thus don't know if a review was conceived for commercial purposes or reflects a consumer's true experience (Breazeale 2009, p. 298). Even if some opinion platforms ask the authors of online product reviews to confirm their truthfulness, the authenticity cannot be verified. A company that is faced with review manipulations through its competitors could be interested in warning consumers about such dishonest marketing tactics. However, especially when the company is confronted with manipulated negative

reviews about its products, consumers could perceive such a company-based communication strategy as less credible because they could think that the company has a hidden self-interest in accusing competitors of publishing fake product reviews. They could assume, for example, that the company tries to discredit truthful negative information about their products to avoid possible harmful effects. If the knowledge of review manipulations is provided by an unbiased source, e.g., an independent newspaper, in contrast, consumers should not perceive a self-interest and trust the information more. Thus, in such a context, the credibility of the source providing the knowledge about review manipulations could play an important role regarding the extent to which consumers are influenced by such information.

1.2. Research relevance, focus and outline

The increasing popularity of online product reviews published on opinion platforms and the lack of empirical results on their potentially detrimental effects for companies and on the effects of company-based response strategies to negative reviews illustrate the practical and academic importance of gaining deeper insights into this field of research.

Focus of the present thesis is the following realistic situation of consumer behavior on the Internet. It is based on scenarios used in previous research (e.g. Adjei et al. 2009, p. 645) as well as on observations in practice. A consumer is interested in an electronic product towards which he/she has a positive prior attitude. As the product is relatively expensive and its quality cannot be evaluated before product use, he/she perceives an uncertainty about the positive and possible negative product attributes (Krishnan et al. 2012, p. 293; Park and Lee 2009, p. 62) and thus a high purchase risk (Ha 2002, no page numbers available). That is why the consumer visits an independent opinion platform to read about other consumers' experiences with the product and thus to reduce his/her uncertainty. Of major interest for the consumer are product reviews containing a detailed description of product experiences and evaluations of relevant product aspects because such reviews are perceived as particularly useful as informational basis to form an attitude (Schindler and Bickart 2005, p. 50). Furthermore, the consumer is particularly interested to see if other consumers have left negative reviews about the product of interest in order to avoid making a wrong

purchase decision. Electronic products were chosen as test product because for such highly involving products consumers often perceive a high purchase risk (Laurent and Kapferer 1985, p. 45; Pepels 2000, p. 170) and engage in an intensive information search and processing (Park and Lee 2008, p. 395; Petty et al. 1981, p. 853).

Parting from the above-described context, this doctoral thesis concentrates on an examination of the effects of negative consumer-generated online product reviews and company-based communication strategies that could be implemented to cope with the harmful effects of negative reviews. Furthermore, by means of several empirical studies, this work aims at filling research gaps and providing advice and suggestions for marketers.

Several aspects that are relevant in such a context and that haven't been analyzed in previous research are explored in this thesis by means of four different research projects. The thesis is structured as followed: Chapter 1.3 presents the body of research that existed before the different research projects were started. The presented studies allowed to gain preliminary insights into the effects of negative online product reviews as well as into factors that could play a role in such a context. They also allowed to identify research gaps (see Chapter 1.4) thus constituting the basis for the four projects. Chapter 1.4 illustrates these research gaps and presents the research questions, objectives as well as the academic and practical contributions of the doctoral thesis.

The main body of this thesis is organized in four research articles relating to several aspects of effects of online product reviews that have been briefly discussed in Chapter 1.1. Chapters 2 to 5 present these four different articles that are written in co-authorship and published in refereed journals (Bambauer-Sachse and Mangold 2011, 2013, 2014) or as full text in refereed conference proceedings (Bambauer-Sachse and Mangold 2012). The articles are based on different sets of empirical data and can be read independently. They are all organized in a similar way in that they are composed of an introduction, a summary of the state of the research, the developed theoretical framework, a presentation of the empirical research and its results, as well as of a conclusion.

Chapter 2 presents research project 1 on "Brand equity dilution through negative online

word-of-mouth communication". The research article is published in the *Journal of Retailing and Consumer Services* (Bambauer-Sachse and Mangold 2011). The research was motivated by the observation that consumers are more and more influenced by online product reviews and that company-based product information increasingly loses its importance. Furthermore, previous research indicates strong detrimental effects of negative online product reviews on consumer response variables such as attitudes (e.g. Chiou and Cheng 2003, pp. 56-57; Lee et al. 2008, p. 348). In such a context, it was interesting to examine the effects of online product reviews on a response variable that plays an important role in marketing but had not yet been examined with regard to the effects of reviews. Consumer-based brand equity was identified as such and the effects of online product reviews on the selected target variable were analyzed by means of an empirical study.

Chapter 3 corresponds to research project 2 on "The role of perceived review credibility in the context of brand equity dilution through negative product reviews on the Internet" (Bambauer-Sachse and Mangold 2012). It was published as full text in the ACR conference proceedings. The research was designed as a follow-up study of the first research project on the basic effects of online product reviews. Starting point was the particularity of online WOM communication in that a large volume of information is available on the Internet. Consumers therefore have to decide which reviews they read or not. Whereas in an offline environment, consumers base their decision of using specific information or not on the perceived credibility of the communicator, in an online context the source is in general unknown and the credibility assessment of online WOM information has to be made on a textual basis. A closer look at product reviews published on opinion platforms shows that they differ considerably in their content. On the one hand, reviews can be identified that provide detailed arguments why a product is evaluated positively or negatively. These reviews usually have high review quality and usefulness rankings made by other consumers who have read the reviews. On the other hand, there are reviews that are more subjective, written in an emotional style and give no clear reasons why a product received a positive or negative product evaluation. Those reviews are generally ranked rather low in their quality and usefulness. This observation was backed up by previous research which indicates, that high-quality reviews contain an objective and factual evaluation of the product and

provide detailed product information. Precise and detailed affirmations about product aspects are made and clear reasons as well as striking arguments why a product is negatively or positively evaluated are given (Lee et al. 2008, p. 345; Park et al. 2007, p. 128; Racherla et al. 2012, p. 98; Schindler and Bickart 2005, p. 49). A low-quality review, in contrast, is formulated in a more emotional and subjective way (Park et al. 2007, p. 128). Such content differences highlight the possibility that consumers are influenced differently by online product reviews depending on their quality which in turn affects the perceived review credibility.

Chapter 4 which corresponds to research project 3 displays the paper “Can advertising compensate the detrimental effects of negative online product reviews”. It was published in the *Marketing Journal of Research and Management* (Bambauer-Sachse and Mangold 2014). The starting points of project 3 were the findings of projects 1 and 2 that particularly high-quality negative online product reviews can present a serious threat to a company’s consumer-based brand equity. As previous studies had not yet examined the effects of a possible company response to negative online product reviews, it was important to examine the effects of company-based communication strategies that could be used to recover the harmful effects of such reviews. For that purpose, a second target variable was required because the numerical values for brand equity can only be calculated on an aggregated data level. Attitudes were chosen as focal construct for the subsequent research projects which can be explained as follows: first, consumer-based brand equity comprises an attitudinal component and the two concepts are thus closely related. Second, attitudes can be easily changed (Bonfield 1979, p. 239) and persuasive communication aims primarily at influencing attitudes (Cacioppo et al. 1994, p. 262). One might argue that companies are predominantly interested in product sales and that the behavioral aspect of consumer-based brand equity, e.g. in terms of purchase intentions, is more relevant. However, using consumers behavioral intentions as indicator for the effectiveness of a company-based communication strategy can lead to false interpretations. A consumer can, for example, have a positive attitude towards a product but financial restrictions can lead him/her to have no intention to purchase the product of interest. As behavior cannot always be explained through attitudinal aspects (Bonfield 1979, p. 239), using product attitudes instead of behavioral intentions as a target variable can be considered as a

pertinent choice. Two empirical studies were conducted that analyzed the effects of a cognition-based versus emotion-based ad for a product about which consumers' previously read negative online reviews. These two types of advertising have been chosen because they are often used in practice and also found in research. As cognition-based advertising contains objective arguments and factual product information about product features and benefits (Dubé et al. 1996, p. 84; Pang et al. 2009, p. 609; Ruiz and Sicilia 2004, p. 660) an advertisement was used which positively highlights the product attributes that had been negatively criticized in the online reviews about the product. To convey the positive feelings towards the advertised product as it is typically done in emotion-based advertising (Geuens et al. 2011, p. 420; Van Den Putte 2009, p. 677) a slogan that evokes positive emotions during product use was developed for the second advertisement. The results of the first study show that consumers react positively as well as negatively to the same type of advertisement. It seemed therefore plausible that a person-specific variable is a determinant factor leading to such different reactions to the same stimulus. Consumers' propensity to show reactance was identified as a variable that could play an important role because previous research has shown that such a predisposition can have a significant negative influence on consumers' reactions to a specific stimulus (e.g. Dillard and Shen 2005, p. 159; Fitzsimons and Lehmann 2004, p. 90). Whereas previous research focused on a general propensity to show reactance (called GPR in the following) this research examined the effects of a specific type, i.e. consumers' propensity to show reactance to company-based communication in terms of advertising (called PSR in the following) by means of a second empirical study.

Chapter 5 presents research project 4 which focuses on the question "Do consumers still believe what is said in online product reviews? A persuasion knowledge approach". It was published in the *Journal of Retailing and Consumer Services* (Bambauer-Sachse and Mangold 2013). Research project 4 started from the observation that media increasingly report about online product reviews that have been manipulated by companies. This aspect has not been taken into account in earlier studies on effects of online product reviews. However, it can be assumed that consumers are more and more informed about such dishonest marketing tactics and thus develop a comprehensive "persuasion knowledge" (cf. Friestad and Wright 1994, p. 1).

Persuasion knowledge can be defined as consumers' knowledge about companies' persuasion tactics and strategies (Friestad and Wright 1994, p. 1) and has been found to alter consumers' reactions to companies' persuasion attempts (e.g. Hardesty et al. 2007, p. 207; Wei et al. 2008, p. 37; Yoo 2009, p. 409). Thus, it is plausible that the effects of online product reviews are different when consumers are knowledgeable about review manipulations compared to those who believe that reviews reflect truthful consumer experiences. Whereas the focus of the first three research projects was set on the effects of negative online product reviews, for research project 4 the effects of exclusively positive reviews were also of interest. Extending the research focus to the effects of positive online product reviews was important insofar, that positive online product reviews constitute a free advertising for companies. A loss of their positive impact could therefore be disadvantageous for a company. Two empirical studies are presented that examine the effects of consumers' persuasion knowledge about review manipulations as well as of the credibility of the source providing the information about review manipulations.

Chapter 6 provides a general conclusion of the thesis. A resume of the relevant findings, the theoretical contributions and the managerial implications of the overall research project will be presented. Furthermore, the limitations and the starting points for future research are discussed.

1.3. State of the research

The purpose of this chapter is to present the findings of the studies that allowed preliminary insights into the effects of online product reviews and company-based communication strategies. Only studies are considered that have been published in established scientific journals such as Marketing Science, Journal of Interactive Marketing etc. Note that studies exist that seem to fit well to the research focus considered here. However, a closer look shows that their objectives and structures are characterized by important differences which makes it impossible to make deductions regarding the present research focus. For reasons of completeness, these studies will be mentioned briefly and it will be explained why they are not relevant.

Studies that provide insights into the basic effect of interest for the four research projects, i.e. the effects of negative online product reviews, constitute the global focus and will be presented in a first step. Subsequently, studies that were relevant for the four different research projects will be presented in separate chapters. As most of the studies are comprehensive, only aspects that are pertinent for the research topic considered here will be presented.

1.3.1. State of the research common to the four projects: studies on effects of online product reviews

Various studies can be identified in which the effects of online product reviews have been examined on focal constructs such as the choice between various products (e.g. Huang and Chen 2006, p. 419), consumers' intention to use the review as an informational basis for a purchase decision (e.g. Park and Lee 2009, p. 64), or real sales data (e.g. Chevalier and Mayzlin 2006, p. 351; Chintagunta et al. 2010, p. 946; Davis and Khazanchi 2008, p. 135-137; Dellarocas et al. 2007, pp. 27-28; Duan et al. 2008a, p. 1011; Duan et al. 2008b, pp. 236-237; Forman et al. 2008, p. 298; Liu 2006, p. 79; Zhu and Zhang 2010, pp. 138-139). These studies will not be presented in detail because they focus on clearly different target variables than considered here. As previous research has not yet examined the link between negative reviews and brand equity dilution, only studies will be presented (Table 1) in which the effects of online product reviews have systematically been examined on variables such as product attitudes and evaluations because they are closely related to the concept of consumer-based brand equity. Note that in accordance with previous research (e.g. Laczniak et al. 2001, p. 63; Lord and Lepper 1999, pp. 270-271; Miller 1976, pp. 231-232) attitudes and evaluations are considered to be synonyms because attitudes that are formed towards an object comprise evaluations of the object (Argyriou and Melewar 2011, p. 445; Cacioppo et al. 1994, p. 261; Eagly and Chaiken 1993, p. 1; Lord and Lepper 1999, p. 265; Ostrom 1971, p. 593, Petty and Cacioppo 1986, p. 127). In consumer research, attitudes are often measured with regard to a brand and/or a product (e.g. Chiou and Cheng 2003, p. 56; Doh and Hwang 2009, p. 195; Pan and Chiou 2011, p. 71). A synonymous use of these two concepts is also relatively common because

attitudes towards a brand are frequently measured using a specific product of that brand (e.g. Muthukrishnan et al. 1999, p. 234).

Table 1: Studies on the effects of negative vs. positive online product reviews

Study	Objective	Valence manipulation	Important numeric results	Interpretation
Chiou and Cheng (2003)	Analysis of the effects of negative and positive reviews about a mobile phone on consumers' attitudes.	Negative review valence (4 neg., 1 neutral, 1 pos.) vs. positive (4 pos., 1 neutral, 1 neg.) vs. neutral (4 neutral, 1 pos. and 1 neg.)	ANOVA: attitudes negative review valence (M=4.39) vs. neutral (M=4.63) vs. positive (M=4.73; F=5,96; p<0,01) (7-point scale)	Negative reviews can significantly deteriorate attitudes, positive reviews have no significant positive effect.
Sen and Lerman (2007)	Analysis of the effects of negative and positive reviews for utilitarian and hedonic products on consumers' attitudes.	Negative review valence (1 neg.) vs. positive review valence (1 positive)	ANOVA: attitudes negative review valence (M=3.43) vs. positive review valence (M=5.80; F=31.42, p < 0.001) (9-point semantic differential scale)	Review valence affects consumers' attitudes towards the product.
Lee et al. (2008)	Analysis of the effects of negative and positive reviews about an MP3 player on consumers' attitudes.	High number of negative reviews (4 neg., 4 pos.) vs. low number of negative reviews (2 neg., 6 pos.)	ANCOVA: Attitudes high number of negative reviews (M=3.75) vs. low number of negative reviews (M=4.57; F=52.56 p<0.001) (7-point scale)	A higher number of negative reviews leads to more negative attitudes.
Chakravarty et. al (2010)	Analysis of the effects of negative and positive movie reviews on consumers' attitudes.	Negative valence (60% neg., 40% neutral reviews) vs. positive valence (60% pos., 40% neutral reviews). No information about concrete number of reviews provided.	ANOVA: Attitude change negative valence (M= -1.03) vs. positive valence (M=+0.44; F=84.18; p<0.001) (7-point scale)	Consumers attitudes are more influenced by negative than by positive reviews.

Note: ANOVA = Analysis of Variance; ANCOVA = Analysis of Covariance

The above-presented studies suggest that negative online product reviews have stronger effects on consumers' attitudes towards the product than positive ones thus providing support for a strong harmful effect of negative reviews. Furthermore, the studies show that the strong negative effect of negative reviews on attitudes increase with an increasing number of negative reviews. It is therefore plausible that negative online product reviews in the context considered here exert a strong negative influence on consumer-based brand equity.

1.3.2. State of the research specific to research project 1 and 2: Studies on brand equity dilution

As no studies could be identified in which the effects of negative online product reviews on consumer-based brand equity have been analyzed, a closer look will be taken on other factors that have been identified in previous studies as context cues susceptible to provoke a brand equity dilution.

Firstly, dilution effects have been demonstrated in the field of unsuccessful brand extensions. Loken and Roedder John (1993, pp. 77-78), Milberg et al. (1997, p. 133-134), and Roedder John et al. (1998, pp. 26-27) found, for example, that when brand extension attributes are inconsistent with consumers' beliefs about the family brand, favorable attribute beliefs associated with the family brand name are likely to dilute. Buchanan et al. (1999, p. 351) analyzed the effects of a retailer's presentation of a specific high-equity brand among competitor brands and showed that displaying a high-equity brand next to an unfamiliar brand can deteriorate its equity. Brand equity dilution effects have also been demonstrated in the research field of product-harm crises. Dawar and Pillutla (2000, p. 222) showed that a company's crisis situation provoked through harmful substances found in their products and the company's subsequent response can significantly affect consumer-based brand equity.

The above-presented studies illustrate that negative context cues can lead to a dilution of consumer-based brand equity. Therefore, it is plausible that negative online product reviews which have been found to exert a strong influence on consumers' attitudes can also constitute a negative context cue that leads to brand equity dilution.

1.3.3. State of the research specific to research project 2: Studies on effects of review quality and perceived review credibility

Some studies in the field of online product reviews indicate that reviews differ considerably in their quality. Schindler and Bickart (2005) gained a valuable understanding of factors that determine review quality by conducting a qualitative study. They found that reviews containing a detailed product evaluation are perceived as being useful whereas colloquial language reduces the perceived review

trustworthiness (Schindler and Bickart 2005, p. 50). In a quantitative approach, Park et al. (2007) found a significant influence of the quality of online product reviews on consumers' purchase intentions. They demonstrated that consumers are particularly influenced by high quality product reviews providing objective information about specific product attributes and clear reasons for a negative or positive product evaluation (Park et al. 2007, pp. 128 and 135-136). Mudambi and Schuff (2010, p. 194) found that the length of a review plays an important role for consumers' usefulness perceptions with comprehensive reviews being generally perceived as more useful than short ones.

Furthermore, a study could be identified that provides insights into the link between review quality and perceived review credibility. Cheung et al. (2009) examined the mediating role of perceived review credibility in the relation between the argument strength of negative and positive online product reviews and the intention to adopt the review. The results of their study show that strong arguments positively influence the perceived credibility of a review which in turn has a positive effect on consumers' intention to adopt the recommendation made in the review (Cheung et al. 2009, p. 25 and 27). Similarly, McKnight and Kacmar (2006) found a mediating effect of perceived credibility of a legal recommendation on the willingness to follow the recommendation. Even though their study was conducted in a different context, the identified mediator effect of perceived credibility (McKnight and Kacmar 2006, p.7) is of interest for the present research.

The above-presented findings suggest that the quality of an online product review influences consumers' perceptions of review credibility which in turn has an impact on consumer response variables. Thus, it is plausible that high-quality reviews are perceived as being more credible and thus lead to a stronger brand-equity dilution than low-quality reviews.

1.3.4. State of the research specific to research project 3

1.3.4.1. Studies on positive effects of company-based communication

Consumers' reactions to product advertising after having been confronted with negative online product reviews have not yet been analyzed in previous research. However, studies could be identified in which the effects of company communication implemented to counter negative information about the company or its products have been examined in different contexts. Several researchers analyzed the effects of company responses to a crisis situation evoked by events like tampered products (Coombs 1998, pp. 183-186), the accidental release of toxic gas (Coombs 1999, pp. 132-137) or chemicals (Lyon and Cameron 2004, pp. 222-227), consumer injuries due to explosions in laptops (Dawar and Pillutla 2000, pp. 223-224), bacteria in food (Dean 2004, pp. 200-206) and other product harm crises (Xie and Peng 2009, pp. 579-585). The focus of these studies is based on rather extreme incidents that present a health risk for consumers. Such scenarios are not comparable with the situation considered here of an electronic product that is criticized in negative online product reviews because of, for example, a lack of usability. Thus, the company responses that have been examined in the studies presented above consisting of a product recall or public excuse (Dawar and Pillutla 2000, p. 220; Dean 2004, p. 200; Xie and Peng 2009, p. 579) are not plausible as a possible reaction to negative online product reviews. Consequently, these studies do not provide insights into the effects of a cognition-versus emotion-based ad as a company response to negative online product reviews.

Only one study was found that has a similar focus to the present research but was conducted in an offline context. Smith and Vogt (1995) examined the effects of company communication as a response to negative product information in terms of WOM communication. Among other effects, they examined the influence of an emotional ad for a vacation destination on consumers who have been confronted with a negative, orally transmitted evaluation of this destination. The results of their study show that consumers attitudes which were negative due to respondents' exposure to negative WOM communication were more positive after having received the emotional ad ($M=1.10$) than those in the control group who did not see the ad ($M=0.25$). Attitudes were measured through a semantic differential (Scale: -3, ..., +3). Note that the authors

did not provide information about the significance of the effect. However, the mean values show, at least in tendency, a positive effect of advertising on consumers who have received negative WOM communication about a product (Smith and Vogt 1995, pp. 142-146). Even though the results of the study cannot be transferred directly to the present study focus due to major differences in the research context, the study still provides primary insights into the recovery potential of advertising after consumers' contact with negative WOM communication.

1.3.4.2. Studies on negative effects of company-based communication

When consumers are confronted with negative online reviews about a specific product and subsequently see an advertisement positively highlighting the product, it is plausible that they do not only show positive reactions to such a company-based communication. Previous research has demonstrated in different contexts that negative consumer reactions to company-based communication in terms of reactance occur. The empirical studies have mainly been conducted in the research field of health communication. Examples of stimuli triggering reactance thus leading to a reduced effectiveness of the communication are persuasive messages intended to make consumers drink less alcohol (Dillard and Shen 2005, p. 152 and 159; Rains and Turner 2007, pp. 248-252; Shen and Dillard 2005, pp. 77-79), do regular physical exercise (Miller et al. 2007, p. 227 and 231; Quick and Stephenson 2008, pp. 456-464), use preservatives (Quick and Stephenson 2007, p. 260 and 266) and sunscreen (Quick and Stephenson 2008, pp. 456-464). Reactance effects have also been shown in studies on the effects of recommendations in a product choice situation (Fitzsimons and Lehmann 2004, pp. 85-86), product limits (Lessne and Notarantonio 1988, pp. 37-39), and product eliminations (Ringold 1988, p. 198 and pp. 203-205).

The mentioned studies have in common that a company tries to exert a direct influence on consumers' behavior either through recommendations to change their behavior regarding rather sensitive topics or through restrictions of the availability of a specific product. From a consumer perspective, it is plausible that such a company-based communication can provoke a feeling of being controlled and leads to backlashes in terms of reactance. A feeling of being controlled by a company is less likely to occur in

the here considered context as can be explained as follows. Focus of the present research are the effects of an emotion-based and a cognition-based ad to recover the harmful effects of negative online product reviews. The advertisements either aim at inducing positive feelings towards the product by means of a slogan (emotion-based) or at informing consumers about product features (cognition-based). No direct attempt to influence consumers' behavior is being made. Due to this major difference in the focus of the above-presented studies, it is therefore not possible to derive assumptions about the extent to which the here considered types of advertisement implemented as a response to negative online product reviews can also provoke negative consumer reactions in terms of reactance. In contrast to previous research where the stimulus itself triggered reactance effects, it is plausible that in the context considered here, it is the situation itself where consumers are confronted with contradictory information from sources that differ in credibility (highly credible negatively framed consumer-generated online product reviews vs. less credible positively framed company-based advertising) that triggers reactance.

One study could be identified in which the effects of negative followed by positive product information are examined on consumer attitudes. Muthukrishnan and Chattopadhyay (2007) show that negative product attitudes can be improved through positive product information and argue furthermore that positive information following negative information about a product can also cause counter reactions leading to attitude changes into an even more negative direction. However, the authors explicitly mention that the attitude changes into a negative direction have not been taken into consideration for the data analysis (Muthukrishnan and Chattopadhyay 2007, p. 339). Unfortunately, the authors do not provide any results for the observed negative effect on attitudes. Furthermore, no information can be found on the perceived credibility of the two information sources used in their study which lets assume that respondents perceived the two information sources as equally credible. The test product was a pen, towards which consumers should have a lower product involvement than towards a relatively complex electronic product which is of interest here. Due to the differences between the study conducted by Muthukrishnan and Chattopadhyay (2007, p. 338-341) and the focus of interest here, the results cannot be transferred. The study still provides valuable insights in that consumers' confrontation with negative and then

positive product information can also lead them to change their attitudes into an even more negative direction. Regarding the present study focus, it seems therefore plausible that advertising following negative online product reviews does not only have positive effects but can also lead to unintended attitude changes within consumers.

1.3.4.3. Studies on the effects of consumers' propensity to show reactance

Previous research on the effects of consumers' PSR does not exist. However, studies could be identified which examine consumers' propensity to show reactance in a more general way. Many studies in this field focus on the development of an appropriate scale to measure consumers' GPR (e.g. Donnell et al. 2001, pp. 683-684; Dowd et al. 1991, p. 543; Hong 1992, p. 513; Hong and Faedda 1996, p. 177; Hong and Page 1989, p. 1325). Another research stream examined the relation between GPR and other person specific variables (e.g. Dowd et al. 1994, pp. 607; Hong et al. 1994, p. 225; Joubert 1990, p. 1148). The mentioned studies will not be presented because they do not allow any insights into the extent to which consumers' GPR influences their reactions to company-based communication. Studies on the effects of GPR on consumer response variables will be presented in the following (Table 2).

Table 2: Studies on effects of consumers' GPR

Study	Objective	GPR measurement	Important numeric results	Interpretation
Dillard and Shen (2005)	Analysis of the effects of GPR in the context of consumers' exposure to persuasive health communication.	Scale by Hong and Page (1989), Hong (1992), Hong and Faedda (1996)	Structural consistency model: significant effect of GPR on the extent to which anger and negative cognitions are triggered ($p < 0,05$).	GPR determines the extent to which consumers' show negative reactions. But even for high GPR consumers, such negative reactions are not always triggered.
Fitzsimons and Lehmann (2004)	Analysis of GPR in the context of product recommendations going into the opposite direction of consumers' initial product preferences.	Scale by Hong (1992), Hong and Faedda (1996)	Chi-Square-Test: Choice of initially preferred product even though other product was recommended: strong GPR (92%) vs. weak GPR (51,85%; $X^2=8,11$; $p < 0,01$).	Reactance can be triggered through a specific situation or consumers' individual GPR.
Kwon and Chung (2010)	Analysis of the effects of GPR in the context of automatic recommendation systems during online shopping.	Scale by Hong (1992), Hong and Faedda (1996)	ANOVA: Attitudes towards the recommended product: strong GPR ($M=4,74$) vs. low GPR ($M=5,12$; $F=8,46$; $p < 0,05$), (7-point scale).	GPR has a significant negative effect on consumers' attitudes towards the product.
Quick and Stephenson (2008)	Analysis of the effects of GPR in the context of consumers' exposure to persuasive health communication.	Scale by Hong and Faedda (1996)	Regression analysis: GPR has a significant effect on the perception of the message as a threat ($\beta=0,09$; $t=1,99$; $p < 0,05$).	For some topics, consumers with strong GPR tend more to show negative reactions than consumers with weak GPR. For other topics, no difference occurs.

Note: ANOVA = Analysis of Variance

The following insights can be gained from the studies presented above. First, the studies demonstrate that consumers with a strong GPR tend to show more negative reactions to a specific stimulus than consumers with a weak GPR. Dillard and Shen (2005, pp. 161-162) argue, however, that such a propensity to show reactance is not necessarily the trigger for negative reactions and that even strong GPR individuals may show reactance in response to some stimuli but not to others. In a similar vein, Quick and Stephenson (2008, pp. 461) show that after some attempts at persuasion, consumers with strong and weak GPR show similar reactions whereas other attempts trigger stronger negative reactions within high than within low GPR consumers. Such an effect could also be demonstrated by Fitzsimons and Lehmann (2004, pp. 90-91)

in the context of product recommendations. They found that when a product recommendation goes against consumers' preferred product option, consumers with strong and weak GPR show reactance and choose the preferred product. This effect is stronger for high than for low GPR individuals. If the preferred option is recommended, no reactance is triggered and the GPR does not influence consumer reactions (Fitzsimons and Lehmann 2004, p. 90-91).

Regarding the present study focus, it can be concluded from previous research that consumers' GPR is not the trigger for possible negative reactions to company-based communication but rather determines the extent to which consumers react negatively when reactance is triggered. With regard to consumers' PSR these findings suggest that advertising that follows negative online product reviews can trigger reactance within high and low PSR consumers. When a state of reactance is aroused, high PSR consumers are likely to show stronger negative reactions than low PSR consumers.

1.3.5. State of the research specific to research project 4

1.3.5.1. Studies on the effects of consumers' persuasion knowledge

The effects of consumers' knowledge about manipulations of online product reviews have not yet been analyzed in previous studies. Therefore, a closer look will be taken on studies where consumers' persuasion knowledge, i.e. consumers' knowledge about companies marketing tactics, has been examined in different contexts. The existing body of research on the effects of persuasion knowledge can be distinguished in two different research directions. On the one hand, studies exist in which the focus is put on the effects of marketing tactics that are perceived as being manipulative. These studies demonstrate that consumers who perceive a marketing tactic as being manipulative show negative reactions in terms of more negative attitudes and reduced behavioral intentions (e.g. Campbell 1995, p. 247; Cotte et al. 2005, p. 365; Hibbert et al. 2007, p. 736; Kirmani and Zhu 2007, p. 691; Wentzel et al. 2010, p. 519). However, the focus of these studies lies on the consumers' perceptions of a specific context situation (Cotte et al. 2005, p. 362) but not on concrete knowledge about manipulative marketing tactics. Such spontaneous perceptions are less relevant for the present

research context which can be explained as follows: in an online context, it is almost impossible for consumers to know if a product review reflects real consumers' experiences or has been manipulated by a company. Without concrete knowledge about companies' manipulations of online product reviews, it can be supposed that consumers are less inclined to expect review manipulations than consumers who are informed about such marketing tactics.

On the other hand, studies can be identified in which the persuasion knowledge was either clearly measured or manipulated through adequate stimulus material. These studies are of interest for the present work and are presented in Table 3. Note that a study conducted by Campbell and Kirmani (2000) that fits very well to the present study focus at first sight will not be taken into consideration because a closer look shows that persuasion knowledge effects cannot be clearly identified. The reason is that the authors did not manipulate or measure consumers' persuasion knowledge but used consumers' mistrust and suspicious thoughts towards a salesperson as indicators for available persuasion knowledge (Campbell and Kirmani 2000, p. 75).

Table 3: Studies on the effects of persuasion knowledge

Study	Objective	Knowledge manipulation/ measurement	Important numeric results	Interpretation
Hardesty et al. (2007)	Analysis of the effects of knowledge about companies pricing strategies on purchase interest.	Respondents evaluated the truthfulness of 17 affirmations about companies' pricing strategies.	T-Test: Consumers with comprehensive knowledge show less interest for a specific price offer (M=4.57) than consumers with poor knowledge (M=5,05; t=1,42; p<0,10), (10-point scale).	Consumers vary considerably in their knowledge about companies pricing strategies and are less receptive to them under comprehensive knowledge.
Wei et al. (2008)	Analysis of the effects of knowledge about brand placements in a radio show on the attitude towards the brand.	Experimental group was informed, that brand paid for being mentioned in the radio show whereas control group was not informed.	ANCOVA: Comprehensive knowledge group had more negative attitude towards the brand (M=4,01) that group with no knowledge (M=6,22; F=17,73; p<0,001), (9-point scale).	Consumers' knowledge that brands pay for being mentioned in a radio show can have negative effects on their attitudes towards the advertised brand.
Yoo (2009)	Analysis of the effects of knowledge that some online search engine results are hidden advertising links on consumers' intention to click on the link.	Experimental group was informed about such online advertising tactics whereas control group was not informed.	ANCOVA: Knowledge group clicked significantly less often on link (M=5,17) than group with no knowledge (M=7,04; F=17,76; p<0,01).	Consumers who are informed about companies' hidden online advertising tactics show negative reactions.

Note: ANCOVA = Analysis of Covariance

The findings of the above-presented studies show that consumers' knowledge about companies' marketing tactics can lead them to be less influenced by such tactics. Furthermore, persuasion knowledge can have a negative effect on consumers' attitude towards a brand or product.

An important difference between existing research on persuasion knowledge and the present research focus is, however, that respondents in previous studies were directly confronted with a marketing tactic about which they were more or less knowledgeable. Knowledgeable consumers were thus able to clearly identify the tactic and form an attitude on this basis. In the context of online product reviews, it is not clear whether they are written by a real consumer or manipulated by a company. Even if the consumer has comprehensive knowledge about manipulations of online product reviews, a company persuasion tactic cannot be clearly identified and it is thus more

difficult to form an attitude. The effects of knowledge about review manipulations can therefore not be directly deduced from previous research. In addition, previous research focused on marketing tactics with manipulative but not fraudulent intent. It is thus possible that effects of knowledge about fake online product reviews are even stronger than the knowledge effects observed in previous studies.

1.3.5.2. Studies on the effects of source credibility

Various studies in the field of offline- and online-communication show that the credibility of the source has an important impact on consumers' acceptance of a persuasive communication (Cheung et al. 2009, p. 25 and 27) and thus on their attitudes and behavioral intentions (e.g. Andrews and Shimp 1990, pp. 209-210; Buda and Zhang 2000, pp. 236-237; Hovland and Weiss 1951/52, p. 642; Jain and Posavac 2001, pp. 174; Johnson and Izzett 1972, p. 84; Petty et al. 1981, p. 851; Sternthal et al. 1978, pp. 258-259; Tormala and Petty 2004, p. 438). In majority, these studies operationalize credibility through expert knowledge (e.g. Buda and Zhang 2000, p. 235; Dholakia and Sternthal 1977, p. 226; Gotlieb and Sarel 1991, p. 41; Hovland and Weiss 1951/52, p. 637; Jain and Posavac 2001, p. 172; Johnson and Izzett 1972, p. 83; Petty et al. 1981, p. 850; Sternthal et al. 1978, p. 254; Tormala and Petty 2004, p. 431) or source attractiveness (e.g. Andrews and Shimp 1990, p. 201). However, these studies are not relevant for the present study objective which can be explained as follows. Study focus of this research is the question whether a company that is victim of fake online product reviews should inform consumers about the tactics from competitor companies. In that context, the question arises whether it is more advantageous for a company to actively inform consumers through a company news release or to let them be informed through an independent source such as a newspaper. Thus, source credibility determined through a present or absent self-interest in the communication topic is relevant for the present study. Therefore, only studies in which source credibility was manipulated through a more or less strong bias or self-interest will be presented.

Table 4: Studies on the effects of source credibility

Study	Objective	Source credibility manipulation	Important numeric results	Interpretation
Wiener and Mowen (1986)*	Analysis of the effects of the credibility of the affirmations of a car mechanic on consumers' attitude towards the car.	Description of the car mechanic as a shareholder of the car business (low credibility through high self-interest) or as being independent of the car business (high credibility through low self-interest).	ANOVA: In the low credibility condition the car was perceived as being of lower quality (M=3.63) than in the high credibility condition (M=4.19; F=5.19; p<0.05). (7-point scale)	Consumers are less influenced by affirmations made from a source with high self-interest than from a source with low self interest in the communication topic.
Chaiken and Maheswaran (1994)	Analysis of the effects of the credibility of a source providing information about an answering machine on consumers' attitude towards the product.	Information that product description comes from an ad for a discount store (low credibility through high self-interest) or from a magazine specialized in product tests (high credibility through low self-interest).	ANOVA: In the low credibility condition the product was evaluated as more negatively than in the high credibility condition (F=33.94; p<0.001; mean values not provided).	Source credibility can have an influence in the processing of persuasive communication.
Artz and Tybout (1999)	Analysis of the effects of the credibility of a source supporting the purchase of a print spooler on the attitude towards the product.	Information that support for the purchase comes from a professor who has developed the machine and receives royalties (low credibility due to high self-interest) or a professor who has only tested the machine (high credibility due to low self-interest).	ANOVA: Product was evaluated more negatively when credibility was low (M=5,07) than when credibility was high (M=5.44; F=5.75; p<0.02). (7-point scale)	An information source with high self-interest leads to consumer skepticism which makes them suppose a manipulative tactic and are less influences from the source.
Tormala et al. (2007)	Analysis of the effects of the credibility of a source advocating the positive effects of detergent on the attitude towards the product.	Information that communication comes from the detergent producer (low credibility through high self-interest) or an organism supporting consumers in their purchase decisions (high credibility through low self-interest).	ANOVA: Product was evaluated more negatively when information came from low credibility source (M=5.17) than from a high credibility source (M=6.14; F=9.69 p<0.004). (9-point scale)	Even in situations with intensive information processing a persuasive communication coming from a highly credible source leads to a more positive attitude towards the product.

Note: * Wiener et al. (1990) conducted a very similar study that was published in another journal. As the results of both studies are comparable, only the pilot study is presented; ANOVA = Analysis of Variance

The results of the presented studies show, that consumers are more influenced in their attitudes by persuasive communication coming from a highly credible source than from a source which is less credible due to its self-interest in the communication topic. Moreover, source credibility is not only a cue serving as a basis to form an attitude in

low involvement contexts but also has significant effects in situations that imply intensive information processing. Thus, the previous research suggests that source credibility plays an important role in context considered here. It is plausible that a company that informs consumers about manipulations of online product reviews by competitor companies could be perceived as being biased and thus as poorly credible. Consumers could therefore be less influenced by the information than when it comes from an independent source that has no self-interest in the communication and is thus perceived as being more credible.

1.4. Research gaps, questions, objectives, and contributions

The research gaps identified in previous research as well as the derived research questions and objectives were complex and manifold. They will be presented in the following together with the theoretical and practical contributions of the four separate research projects on effects of negative online product reviews.

The literature review in Chapter 1.3 showed that negative online product reviews can have significant harmful effects on attitudes. However, a major research gap that could be identified is that previous research has neglected to examine the effects of such reviews on consumer-based brand equity which is a higher level-concept that plays an important role in marketing. Thus, the first research question that emerged from the here considered context is whether and to what extent negative online product reviews have negative effects on consumer-based brand equity and thus lead to brand equity dilution. An empirical study was conducted with the objective of shedding more light on the potentially harmful effects of negative online product reviews. This project makes a significant academic contribution by extending the existing body of research and by developing a new theoretical framework through merging studies on online WOM communication with previous research on brand equity dilution. In addition to addressing researchers, this paper addresses marketers by providing empirical support for the risk that negative online product reviews constitute for a brand's equity thus highlighting the importance for companies to carry out efficient review monitoring.

As the literature review of Chapter 1.3 has shown that previous research on the link

between negative online product reviews and the risk of brand equity dilution is inexistent, project 2 was conceptualized to gain more detailed insights into the underlying mechanisms. First, the question emerged whether the detrimental effects of negative online product reviews on consumer-based brand equity can be reproduced using a larger sample. The objective of project 2 was therefore to prove the external robustness of the findings of project 1. Furthermore, research project 2 addressed the question whether reviews have different effects on consumer-based brand equity depending on their quality. Specifically, the project aimed at testing the effects of reviews that provide objective information about product features and can be characterized as high-quality reviews compared to reviews that are rather vacuous, written in an emotional style and qualify as low-quality reviews. Another objective of this project was to examine the mediating role of perceived review credibility in the relation between review quality and brand value perceptions that are a pre-stage of brand equity. This project makes an academic contribution by responding to suggestions of previous research to conduct more replication studies in marketing (Evanschitzky et al. 2007, p. 413). Furthermore, project 2 contributes to the existing body of research by gaining a deeper understanding of the harmful effects of online product reviews for companies. New empirical results are provided on the relation between the quality of negative online product reviews and consumer-based brand equity as well as the mediating role of perceived review credibility. From a marketing perspective, the results provide a basis for marketers who have to know which type of reviews they should pay particular attention to due to their strongly negative effects. The findings underline the importance for companies to particularly observe the amount of negative reviews about their products that can be defined as high in quality because of their strong detrimental impact on a brand's equity.

A further insight of the literature review of Chapter 1.3 was that no earlier studies have examined the effects of company-based communication strategies as a response to negative online product reviews. However, previous research in other fields indicates that consumers do not only show the intended positive reactions to company-based communication strategies but can also show negative reactions in terms of reactance. Research project 3 was thus conducted to fill a considerable gap in previous research by examining possible advertising strategies that companies could implement to

recover the detrimental effects of negative online product reviews. In that context, the question arose as to what extent a cognition-based versus an emotion-based product advertisement is more suitable to recover consumers' negative attitudes that result from their reading of negative online reviews about the product. Furthermore, research project 3 aimed at shedding more light on the role of consumers' PSR which has not yet been analyzed in previous research. Research project 3 contributes valuable information to the existing body of research on effects of online product reviews. First, the results of two empirical studies demonstrate which type of advertising is more effective in recovering the detrimental effects of negative online reviews that consumers read on opinion platforms. Furthermore, the results of project 3 show that advertising can also provoke unintended effects in terms of reactance and that such effects are intensified when an emotion-based ad (compared to a cognition-based ad) is used. New findings in this field of research are also provided on consumers' PSR which was found to aggravate consumers' negative reactions in response to advertising when reactance is triggered. Regarding the practical contribution, the findings provide marketers with knowledge about conditions under which advertising does not have the intended effects on consumers, thus allowing them to adapt their communication strategy accordingly.

Despite the fact that more and more companies carry out targeted review manipulations, previous research has not yet examined possible effects of consumers' knowledge about such dishonest marketing tactics. A question that arose with regard to this context was whether, from a long-term view, online product reviews will remain a powerful source of consumer product information or whether consumers are less influenced by reviews because they are aware that they can be manipulated. Thus, for research project 4 it stood to reason to examine whether consumers generally differ in their knowledge about review manipulations and to test the effects of online product reviews depending on such knowledge. Furthermore, a company confronted with fake negative reviews about their products could be tempted to actively inform consumers about review manipulations. However, the effects of such a strategy are unknown and led to the question whether it is beneficial. Therefore, the second objective of research project 4 was to examine the effects of the credibility of the source, in terms of self-interest in the communication topic, that provides consumers with the knowledge that

reviews can be manipulated. Research project 4 contributes new insights to the existing body of research by presenting a new way of looking at possible effects of online product reviews through an integration of the concept of persuasion knowledge. More precisely, project 4 provides a deeper understanding of under which conditions the impact of online product reviews persists or decreases. Furthermore, marketers learn under which conditions it can be recommended for a company to actively inform consumers about review manipulations.

The following table provides an overview of the research questions that emerged given the growing importance of consumer-generated online product reviews.

Table 5: Overview of research questions

Research project	Research questions
1	To what extent is a brand's consumer-based equity negatively affected when consumers read negative online reviews about one of its products?
2	Can the negative effect of negative online product reviews on consumer-based brand equity be reproduced using a larger sample?
	Are consumers more influenced by negative high-quality online product reviews than by negative low-quality online product reviews?
3	Does the perceived credibility of negative online product reviews mediate the relation between review quality and brand value perceptions?
	Is emotion-based or cognition-based advertising more suitable to recover consumers' negative attitudes they have formed after encountering negative online product reviews?
	Do some consumers who have read negative online reviews about a specific product and subsequently see an advertising for that product also show reactance and change their attitudes into a more negative direction? If yes, does emotion- or cognition-based advertising lead to stronger attitude changes into a negative direction?
4	Do high PSR consumers show stronger attitude changes into a negative direction in response to advertising that follows negative online product reviews than low PSR consumers?
	Are the effects of online product reviews on consumers' attitudes weaker if consumers know that such reviews can be manipulated?
	Should a company actively inform consumers about occurring review manipulations or should it let such information be provided through a highly credible source with no self-interest in the topic?

As explained in Chapter 1.2 the research questions are examined at the example of highly involving electronic products towards which consumers perceive a high purchase risk and thus seek for online product reviews to read other consumers' opinions about this product.

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2. Brand equity dilution through negative online word-of-mouth communication¹

2.1. Introduction

Word-of-mouth (WOM) communication is generally acknowledged to play a considerable role in influencing and forming consumer attitudes and behavioral intentions (e.g., Chatterjee 2001; Chevalier and Mayzlin 2006; Herr et al. 1991; Kiecker and Cowles 2001; Sen and Lerman 2007; Smith and Vogt 1995; Weinberger and Dillon 1980; Xia and Bechwati 2008). Research has shown that WOM communication is more influential than communication through other sources such as editorial recommendations or advertisements (e.g., Bickart and Schindler 2001; Smith et al. 2005; Trusov et al. 2009) because it is perceived to provide comparatively reliable information (Gruen et al. 2006). Consequently, this type of communication is considered as having a great persuasiveness through higher perceived credibility and trustworthiness (e.g., Chatterjee 2001; Godes and Mayzlin 2004; Mayzlin 2006).

Whereas WOM communication initially referred to the idea of person-to-person conversation between consumers about a product (Chatterjee 2001; Sen and Lerman 2007), the worldwide spread of the Internet brought up a less personal but more ubiquitous form of WOM communication, the so called online WOM communication (e.g., Brown et al. 2007; Chatterjee 2001; Davis and Khazanchi 2008; Godes and Mayzlin 2004; Kiecker and Cowles 2001; Xia and Bechwati 2008). This new type of WOM communication has become an important venue for consumer opinions (Bickart and Schindler 2001; Godes and Mayzlin 2004; Hennig-Thurau et al. 2004; Mayzlin 2006) and it is assumed to be even more effective than WOM communication in the offline world due to its greater accessibility and high reach (Chatterjee 2001). Product reviews that consumers post on different websites constitute one of the most important forms of online WOM communication (Schindler and Bickart 2005; Sen and Lerman

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2007), and for consumers it is increasingly common to look for online product reviews when gathering pre-purchase product information (Adjei et al. 2009; Zhu and Zhang 2010) and forming purchase intentions (Zhang and Tran 2009). Based on the argument that especially vividly presented WOM communication has a strong impact on product judgments (Herr et al. 1991), we argue that product reviews that are posted in such a vivid and interactive medium as the Internet might have strong effects on consumer judgments.

As both positive and negative product reviews can be found on Internet platforms, it is important to differentiate between effects of positive versus negative WOM communication. Whereas positive online product reviews that contain favorable experiences with particular products and buying recommendations for these products are beneficial from the company perspective, negative product reviews that report very disappointing experiences about particular products (Luo 2009) can be very harmful to companies. Thus, it is especially important to examine effects of negative product reviews. The following arguments support this assumption. Consumers who visit online opinion platforms are rather likely to be faced with negative product reviews because dissatisfied people are much more interested in sharing their negative experiences with as many people as possible than satisfied people are interested in talking or writing about positive experiences (Chatterjee 2001). Furthermore, consumers tend to specifically look for negative reviews because negative information is considered as being more diagnostic and informative than positive or neutral information and thus is weighted more heavily in judgments than is positive information (Herr et al. 1991). Thus, negative compared to positive online WOM communication is not only harmful for companies, it even has stronger effects on consumer response variables (Park and Lee 2009). Therefore, the focus of this paper will be on effects of negative product reviews.

In our study, we consider the situation where consumers have the intention to purchase a specific product and visit online platforms that display product reviews to learn about other consumers' opinions on the product they are interested in before making the final purchase decision. We only examine product reviews that are posted on online platforms, which are independent of producers or retailers because this type of platform is the most widely used form of online WOM communication (Hennig-Thurau et al.

2004). In addition, information provided on such independent websites has stronger effects on consumer response variables than information provided on corporate websites (Bickart and Schindler 2001). Thus, we argue that product reviews published on independent consumer opinion platforms have a stronger impact on consumers than product reviews that are published on retailer or producer websites because the content of the first type of reviews cannot be controlled by the retailer or producer.

In the next step, it is important to introduce the target variable with regard to which we examine effects of negative online product reviews. The considered target variable is consumer-based brand equity. Brand equity is the value added to a product or service by its associations with a brand name, design, and/or symbol which enhances the value of a product beyond its functional purpose and differentiates well-known from less known brands (e.g., Farquhar 1989; Keller 1993). More specifically, consumer-based brand equity corresponds to consumers' perceptions of a product's additional value that is generated by the brand name (Park and Srinivasan 1994) and is based on associations with the brand which are activated in response to the brand name (Krishnan 1996). These associations are composed of perceived brand attributes and brand benefits such as product quality (Keller and Lehmann 2006; Krishnan 1996) and are gathered from a variety of brand information sources such as WOM communication (Krishnan 1996).

We chose consumer-based brand equity as response variable because brand equity is one of the most important marketing concepts in both research and practice (Srinivasan et al. 2005). From a research perspective, brand equity is an important construct to study because it is associated with key benefits for both firms as well as consumers (Farquhar 1989; Keller and Lehmann 2006). Especially due to growing competition between companies, the value of a brand has become more and more the focus of interest (Aaker 1992; Agarwal and Rao 1996; Keller and Lehman 2006). From a practical perspective, it is interesting to get further insights in consumer-based brand equity because marketing managers expend significant resources to build and maintain brand equity (Keller and Lehmann 2006). Especially with regard to effects of negative online product reviews, it is interesting to analyze effects on brand equity in terms of brand equity dilution because previous research suggests that a dynamic and interactive medium such as the Internet can challenge even initially stable brand

positions (Chiou and Cheng 2003).

Thus, the objective of the present research is to develop an understanding of the impact of negative online product reviews on consumer-based brand equity that results in brand equity dilution, and to test such effects in a new empirical study. Our paper adds to the existing body of research because no studies on the proposed link between negative online product reviews and the dilution of consumer-based brand equity exist. While some researchers have proposed models for the impact of online product reviews on attitudes and behavioral intentions, consumer-based brand equity has not yet been considered as a focal construct. In more detail, this paper makes a contribution by building up a new theoretical framework through combining research on WOM communication effects with previous studies on brand equity dilution. Furthermore, by identifying brand equity dilution through a before-after measurement in our study, we fill a lack of research with regard to the measurement of effects of negative online product reviews. Several studies that analyzed effects of negative online WOM communication failed to use a before-after measurement of the dependent variable which means that the real effect on consumer response variables cannot be captured.

In addition to addressing researchers, our paper addresses marketers by offering insights into possible negative consequences of consumers' online product reviews for companies. Moreover, our research is also relevant for retailers because negative online reviews on specific products might also have negative effects on the image of a retailer who is offering these products. Furthermore, a look at online platforms shows that online reviews are not only on products but also on retailer chains. Thus, the retailers' image might also be directly affected.

2.2. Empirical background

As no studies exist on the link between online product reviews and brand equity, we will provide separate literature reviews of the research streams on brand equity and effects of online product reviews.

2.2.1. Previous research on brand equity dilution

Antecedents of consumer-based brand equity dilution have basically been examined in three thematic contexts. In the field of research on brand extensions, many studies exist on dilution of consumer-based brand equity. Due to the large number of studies, we only give an overview of the studies that are most relevant with regard to dilution of consumer-based brand equity. The rationale behind the use of brand extension strategies is the notion that brand associations and attitudes are transferred from a well-established core brand to a new extension product (Aaker and Keller 1990). Loken and Roedder John (1993), Milberg et al. (1997), and Roedder John et al. (1998) examined situations in which brand extensions are more or less likely to dilute favorable attribute beliefs consumers have learned to associate with the family brand name. The results of their studies indicate that brand equity dilution effects occur when brand extension attributes are inconsistent with family brand beliefs.

Another thematic area is retailing. To our knowledge, only one study exists in this area. Buchannan et al. (1999) examined whether the consumer-based equity of an established brand can be influenced by context, in particular, by the retailer's presentation of the brand among competitor brands. The authors found that context cues such as the retailer's display structure can destroy perceived brand equity

A third thematic field refers to product-harm crises. Dawar and Pillutla (2000) analyzed the impact of a company's response in a crisis situation (e.g., caused by harmful substances in products, e.g., glass fragments in instant coffee canisters, rusted food cans) on consumer-based brand equity. The results of their studies show that a company's crisis situation can cause a significant loss of consumer-based brand equity.

2.2.2. Previous research on the effects of online WOM communication

Below, we report studies that focus on dependent variables that are closely related to the concept of consumer-based equity. Chatterjee (2001) examined the effects of negative reviews on online retailers on the evaluation of the retailer and purchase intentions with regard to this retailer. The findings indicate that negative consumer reviews basically have negative effects on perceived retailer reliability and purchase intentions and that these effects are even more negative in the case of a less familiar retailer than in the case of a very familiar retailer.

Chevalier and Mayzlin (2006) examined effects of online product reviews on relative sales of two online book shops based on publicly available data from two leading online booksellers. The results of their study show that such reviews significantly affect other consumers' purchase behavior.

Sen and Lerman (2007) investigated, among other effects, effects of online consumer reviews on consumer attitudes. They basically found that the valence of the reviews (positive vs. negative) significantly affected consumers' attitude towards the reviewed product.

Xia and Bechwati (2008) analyzed under which conditions online product reviews influence consumers' purchase intentions. The major finding of their study was the observation that consumers evaluated an online review as more trustworthy and useful when perceiving an agreement between the review and their own opinion which in turn led to higher purchase intentions.

2.2.3. Conclusion of the literature reviews

The studies on brand equity summarized above provided the notion that different types of context cues can cause brand equity dilution. The overview of studies in the field of effects of online WOM communication additionally led to the insight that negative online product reviews can have detrimental effects on variables such as attitudes or purchase intentions. Thus, it stands to reason to bring together both streams of research and to examine effects of negative online product reviews on consumer-based brand equity. As empirical research on this link does not exist, we will

subsequently develop a theoretical framework that provides an explanatory basis for the assumed effect and test this effect in a new empirical study.

2.3. Theoretical framework

2.3.1. The mechanism underlying online WOM communication

In the purchase decision process, consumers often use other consumers' product evaluations as a source of information about the product, its quality etc. (e.g., Burnkrant and Cousineau 1975; Pincus and Waters 1977; Venkatesan, 1966; etc.). When considering other people's evaluations, consumers try to explain the reasons that led the other consumers to their judgments. Such a tendency can be explained by the fact that, according to attribution theory, people have a basic need to predict and control the environment, and understanding the causes of behaviors or events enables them to do so (Heider 1958). People's interpretations of causes of behavior have effects on their attitudes and their own behavior (Kelley and Michela 1980). In addition, when people try to find reasons for a certain behavior of other people, they think about whether the locus of causality is internal (dispositional) or external (environmental) to the person of interest (Kelley and Michela 1980). The type of attribution (internal vs. external) depends on the degree to which other people agree on a communication message (Kelley 1967; Laczniak et al. 2001). Previous research has shown that information about a brand that is characterized by a strong consensus across information sources elicits brand attributions and not attributions to the communicator (Laczniak et al. 2001).

These arguments can be transferred to the context considered here as follows. When looking for product reviews on online platforms, consumers will find numerous pieces of information. In the case of low perceived consensus (a balanced number of positive and negative reviews) consumers are believed to think that the authors of negative reviews are unable to use or evaluate the product. However, in the case of being faced with a large number of negative product reviews, consumers are likely to perceive a high consensus (Chiou and Cheng 2003) and thus to make negative inferences about the brand which leads to more negative brand evaluations (Laczniak et al. 2001).

The above presented arguments that explain the mechanism underlying the effects of online WOM communication additionally highlight an important difference between traditional and online WOM communication. As traditional WOM communication is characterized by peer-to-peer information coming from one person or only a few people (Chatterjee 2001; Sen and Lerman 2007), consumers are not able to establish clear consensus perceptions. In other words, in the case of traditional WOM communication it is less likely that the peer-to-peer information is transferred to the product in such a straight way as it is done in the case of online WOM communication. Consequently, negative online WOM communication can be much more harmful and thus should be studied in detail.

2.3.2. Introducing the target variable: the concepts of brand equity and brand equity dilution

A literature review shows that brand equity can be looked at in mainly two different ways. A first approach is to consider brand equity as the monetary value of a company's intangible assets that are associated with the company's brands and evaluated in a financial sense. A second way is to refer to it as a synonym for consumers' brand beliefs, attitudes and behavioral intentions (e.g., Ailawadi et al. 2003; Farquhar 1989; Keller and Lehmann 2006). A common characteristic of the two approaches is that they somehow comprise the value that the brand delivers to consumers (Biel 1992; Cobb-Walgren et al. 1995; Farquhar 1989). However, financial-market-based brand equity operationalizations require firm data that are hardly publicly available (Rego et al. 2009). Thus, for our research, we follow the recommendations of Biel (1992) and adopt a consumer-based perspective. Thus, we are interested in consumers' individual perceptions of brand equity. Consumer-based brand equity describes the differential effect brand knowledge has on consumers' value perceptions of brands that are comparable with regard to their major attributes (Keller 1993).

Looking at the concept of consumer-based brand equity in more detail leads to the question of how a brand's value can be conceptualized. According to the existing brand equity literature, consumer-based brand value perceptions contain aspects such as brand associations, attitudes, and perceived quality (Aaker 1991; Farquhar 1989;

Keller 1993; Silverman et al. 1999; Washburn and Plank 2002) as well as aspects of consumer behavior such as purchase intentions and willingness to pay (Agarwal and Rao 1996; Cobb-Walgren et al. 1995; Faircloth et al. 2001; Yoo et al. 2000). Several authors suggest conceptualizing brand value perceptions in the context of the brand equity concept as a combination of both attitudinal and behavioral factors (Agarwal and Rao 1996; Dawar and Pillutla 2000; Yoo and Donthu 2001). Thus, we will adopt this approach for our empirical study.

The concept of brand equity dilution reflects the idea that constructive processing of information can result in a revision of brand evaluations (Buchanan et al. 1999; Loken and Roedder John 1993; Roedder John et al. 1998) through the weakening of important brand value perceptions. Such weakening effects can result in lower purchase intention for a brand (Pullig et al. 2006b). Thus, in the context considered here, we refer to brand equity dilution as a revision of consumer-based brand value perceptions that differ depending on different levels of brand knowledge.

2.3.3. Explaining effects of negative online product reviews on consumer-based brand equity in terms of brand equity dilution

The studies on brand equity presented above have shown that negative context cues can cause brand equity dilution effects. Therefore, we are interested in theoretical approaches that are able to explain the rationale behind effects of context cues such as negative online product reviews consumers are faced with when looking up other consumers' opinions on a product they are planning to purchase.

A theoretical approach that can be used to explain effects of negative online product reviews is the so-called search and alignment theory that has been developed to explain effects of counterattitudinal information in the context of news reports, WOM communication, or competitor messages on brand attitudes (Pham and Muthukrishnan 2002) and that has also been applied to explain effects of negative brand publicity such as product failures and child labor abuse (Pullig et al. 2006a). We can apply this theoretical approach that was developed with regard to brand attitudes to the context considered here because our dependent variable consumer-based brand equity also

comprises brand attitudes as one aspect among several dimensions. According to search and alignment theory, consumers who initially have positive attribute-specific product information and then are faced with negative attribute-specific product information that challenges the initial impression, tend to revise this impression into the direction of the challenging information.

We apply this argument to our research context as follows. The initially positive attribute-specific product information corresponds to initially positive brand value perceptions that are due to the fact that consumers who are interested in buying a particular product have formed their intention to purchase the product on the basis of an initially positive evaluation of relevant product attributes. Furthermore, the negative information provided in online product reviews can be interpreted in terms of the negative attribute-specific product information because the authors of such reviews often report their experiences with a particular product in a very detailed way. Processing negative product reviews means dealing with attribute-specific information that is contrary to the initial brand value perceptions. Consequently, consumers are believed to revise their initial brand value perceptions into the direction of the negative product reviews, which, on the consumer-based brand equity level, leads to brand equity dilution. The above presented arguments lead to our research hypothesis:

Hypothesis: Negative online product reviews have detrimental effects on consumer-based brand equity which occur in terms of a brand equity dilution.

The assumed link between negative online product reviews and consumer-based brand equity has not been examined empirically before and will thus be analyzed in the empirical study presented subsequently.

2.4. Empirical study

2.4.1. Test products

As test products, we chose products that would be familiar to the respondents, that are frequently covered by online reviews and that are high-involvement products because especially high-involvement products are frequently subject to WOM communication (Ha 2002). This phenomenon can be explained by the fact that only in the case of high involvement, consumers are willing to deal with detailed product-related information and thus are motivated to both write and look up product reviews. We decided to use two different test products (notebook, digital camera) to cover two different product categories.

2.4.2. Test reviews

In a first step, we looked at several online opinion platforms to get an impression of the typical content of product reviews on such platforms. We found that there are basically two types of reviews. High-quality reviews are in tendency more logical and persuasive and contain attribute-specific information, whereas low-quality reviews tend to be more emotional, subjective, and vacuous, do not offer factual information, and simply provide a recommendation. In addition, we observed that the before mentioned quality criteria usually are highly correlated with the review quality ratings provided by review readers as well as with the number of hits per review. As consumers obviously tend to look up highly rated and often read reviews, we decided to use only high-quality reviews in our study. A look at several online opinion platforms provided the additional notion that such high-quality reviews usually have an average length of about 350 words.

2.4.3. Pretests

Before conducting the main study, we carried out several pretests. A first pretest aimed to identify the average number of online product reviews people read on online consumer opinion platforms before making a purchase decision and was carried out in a university computer room. The 20 test participants were asked to imagine that they

intended to buy a specific product and then received the instruction to spend as much time as they would need in a real situation on a specific opinion platform (a real website that displayed such typical reviews with a length of about 350 words) to read as many reviews on this product as they thought to be appropriate. Afterwards, people were asked to indicate the number of product reviews they had read. The results show that on average, people read 2.6 reviews. Therefore, we decided to use three online product reviews as test stimuli for the main study.

The objective of the second pretest was to find product reviews that were indeed perceived as negatively valenced reviews. In order to do so, we took 12 different and negatively valenced product reviews (six reviews for each of the two test products) from a real opinion platform. 25 respondents were asked to read the 12 reviews and to rate the negativity of each review on a seven-point scale by using the item “the author has a very negative opinion of this product” (scale: 1 = totally disagree, ..., 7 = totally agree). The resulting mean values (computer notebook: 3.92, 4.48, 5.24, 5.76, 6.16, 6.44; digital camera: 5.04, 5.52, 5.72, 6.04, 6.68, 6.88) were used to choose the three most negative reviews for each product. By selecting the most negative reviews we wanted to make sure that, in the main study, all respondents would consistently perceive the reviews as negatively valenced.

The purpose of the third pretest was to identify brands about which consumers have more or less comprehensive brand knowledge. For each test product, we examined six existing brand names that were more or less known in the product category. Note that we did not choose brands with an a priori negative image because we were interested in effects of negative online product reviews on brands with a comparatively positive image. We measured brand knowledge by using several items that addressed the most important aspects of the brand knowledge concept. 20 respondents evaluated the computer notebook brands and another 20 respondents rated the digital camera brands on seven-point rating scales. The tested brand names and the mean values for brand knowledge that resulted after the aggregation of the single items to an overall value for brand knowledge are shown in Table 6.

Table 6: Results of pretest on brand knowledge

Computer notebook (n = 20)	Axxiv 1.05	Packard Bell 3.15	Lenovo 3.60	Acer 6.45	Sony 6.65	Dell 6.80	$t = 55.02^*$ ($p < 0.000$)
Digital camera (n = 20)	Sigma 1.95	Praktica 2.00	Minox 2.05	Olympus 4.80	Nikon 5.15	Canon 6.70	$t = 111.30^*$ ($p < 0.000$)

* *t*-statistic for the difference between the highest and the lowest mean value

We decided to select the brand names that were characterized by the lowest and the highest brand knowledge in the respective product category. Thus, based on the results, we chose the brand names Axxiv and Dell for computer notebooks as well as Sigma and Canon for digital cameras.

2.4.4. Measures

In order to measure the brand value perceptions that are needed to determine consumer-based brand equity, we used items shown in Table 7. The items that cover both attitudinal and behavioral aspects were chosen in accordance with literature that fits to the context considered here (Agarwal and Rao 1996; Dawar and Pillutlar 2000; Yoo et al. 2000).

Table 7: Measures of brand value perceptions

Item	Coefficient alpha (measurement before WOM)	Coefficient alpha (measurement after WOM)
The [product] seems to be of high quality.		
I think that the [product] is reliable.		
I believe that the [product] is a high performance product.		
I like this [product].		
I am interested in this [product].	0.94	0.96
I can imagine buying this [product].		
I would recommend this [product] to my friends.		
I would prefer this [product] over others in the same product category.		

Note that we used seven-point rating scales ranging from 1 = totally disagree to 7 = totally agree.

The high coefficient alpha values shown in Table 7 indicate that the chosen items are appropriate to measure the concept of brand value perceptions. As the list of items that were used to measure this concept is comparatively long, we additionally conducted two varimax-rotated factor analyses that proved that all variables can be clearly assigned to the same factor.

Furthermore, we measured the respondents' perceptions of general persuasiveness and credibility of online product reviews in order to examine whether the different experimental groups are comparable with regard to these variables. Moreover, we measured the person-specific variable "susceptibility to online product reviews" to show that brand equity dilution effects are independent of such person-specific variables using items that were adapted from indicators that Bearden et al. (1989) proposed for the measurement of susceptibility to interpersonal influence. The items used and the corresponding alpha values/bivariate correlations are shown in Table 8.

Table 8: Measures of general persuasiveness, credibility and susceptibility.

Perceptions of ...	Items	Bivariate correlations
General persuasiveness	Online product reviews have an impact on my purchase decisions.	0.55
	Before making important purchase decisions, I go to product review websites to learn about other consumers' opinions.	
General credibility	I think that online product reviews are credible.	0.82
	I trust product reviews provided by other consumers.	
Susceptibility to online product reviews	I often read other consumers' online product reviews to know what products/brands make good impressions on others.	0.92
	To make sure I buy the right product/brand, I often read other consumers' online product reviews.	
	I often consult other consumers' online product reviews to help choose the right product/brand.	
	I frequently gather information from online consumer product reviews before I buy a certain product/brand.	
Note that we used seven-point rating scales ranging from 1 = totally disagree to 7 = totally agree		

As the coefficient alpha values and the bivariate correlations were significant and sufficiently high, we calculated the overall variable values as mean values of the respective items per variables and used these values for the subsequent analyses.

We additionally measured brand knowledge to be able to do a manipulation check. As brand knowledge was also subject to a pretest, we measured it by the single item "Please indicate your knowledge with regard to the brand [...]" based on a dichotomous scale ("poor knowledge" vs. "comprehensive knowledge") in the main study. We decided to use this simplified measure to limit questionnaire length and complexity.

2.4.5. Sample and procedure of the main study

216 people participated in the study (thus 54 people per experimental group). The sample consisted of 57 % women and 43 % men who were familiar with online opinion platforms. The age of the participants ranged from 19 to 60, the average age was 28.13 years. We chose only participants who regularly use the Internet because only consumers with a certain degree of Internet affinity and experience are assumed to

look for online product reviews.

The respondents were either faced with the comprehensive knowledge brand or with the poor knowledge brand and either evaluated a computer notebook or a digital camera. The further procedure was as follows. The participants were instructed to imagine that they were planning to buy a product in the considered product category in the near future. Then, they were provided with a picture and a short technical description of the test product. Afterwards, we measured brand knowledge and a-priori brand value perceptions. Subsequently, the respondents were presented with the three product reviews that were identified in the pretest. We varied the order of the reviews from respondent to respondent to counterbalance possible order effects. Note that provided product information and product reviews were identical across brand conditions to avoid bias. Thus, the respondents in the poor brand knowledge condition saw exactly the same product information and reviews as the respondents in the comprehensive knowledge condition; only the brand names were different. After having read the product reviews, the participants were asked to answer the brand value perception scales for a second time. In a final step, the respondents were asked to evaluate persuasiveness and credibility of online product reviews in general as well as their susceptibility to online product reviews, and to indicate their age and gender.

2.4.6. Results of the main study

In a first step, we prove that the experimental groups are structurally equal with regard to perceptions of two review-specific aspects, general persuasiveness and credibility of online product reviews. An analysis of variance shows that the four groups that result from the study design described above do neither differ with regard to perceptions of persuasiveness ($F = 1.05, p > 0.10$) nor with regard to perceptions of credibility ($F = 1.17, p > 0.10$).

In the next step, we present the results of the manipulation check for brand knowledge. As both the brand knowledge manipulation and the brand knowledge measurement are dichotomous, we used a chi-square test. 96% of the respondents indicated poor knowledge about the brand that initially was chosen as a poor knowledge brand and

97% of the respondents agreed to have comprehensive knowledge about the brand that was intended to be the comprehensive knowledge brand ($X^2 = 188.92, p < 0.001$). Thus, the brand knowledge manipulation was successful. Consequently, we used the manipulated brand knowledge variable for the further analyses.

We now present the main results of the study that aimed to examine the concept of brand equity in numerical values, which is a completely new approach in the context of effects of negative online product reviews.

Based on the theoretical conceptualization of consumer-based brand equity, brand equity corresponds to the distance between a comprehensive-knowledge brand and a poor-knowledge brand. In order to calculate values for this distance that represents brand equity, we follow the recommendations of Smith and Lusch (1976) to calculate distances between brand positions as differences. Thus, we first calculated mean values of brand value perceptions before and after the contact with negative online product reviews, then the differences between comprehensive and poor brand knowledge, and finally the value of brand equity dilution as the difference of brand equity before and brand equity after WOM communication. In order to judge whether the brand equity values are based on significant mean value differences and to evaluate brand equity dilution, we calculated independent samples t-test statistics. The results are summarized in Table 9.

Table 9: Effects of negative online product reviews on brand equity.

	VP		E (VP _{Kc} – VP _{Kp})	Test statistics
	K _c	K _p		
Before WOM	5.20	3.68	1.52	$t = 10.28 (p < .001)$
After WOM	2.98	1.87	1.11	$t = 7.02 (p < .001)$
Difference (before - after)	2.22	1.81	.41	$t = 2.23 (p < .05)$

Note: VP = brand value perceptions, E = brand equity

K_c = comprehensive brand knowledge, K_p = poor brand knowledge

The results presented in Table 9 show that the contact with negative online product reviews causes a significant brand equity dilution (0.41). This result that provides support for our research hypothesis clearly shows the destructiveness of negative online WOM communication with respect to consumer-based brand equity, which should not be neglected by marketers.

The fact that the brand equity dilution exists implies that the deterioration of brand value perceptions is stronger in the case of comprehensive brand knowledge than in the case of poor brand knowledge. Thus, after the contact with negative online product reviews, the distance of brand value perceptions between the comprehensive knowledge brand and the poor knowledge brand is smaller than before. Thinking of findings in the field of research on effects of traditional WOM communication that have shown that effects of WOM communication are weaker on comprehensive-knowledge brands than on poor-knowledge brands, our finding might be surprising. However, an important difference between traditional and online WOM communication is that in the case of traditional WOM communication, only one piece of information is transmitted at one point in time whereas online WOM communication is much more voluminous in quantity and available for an indefinite period of time (Chatterjee 2001; Hennig-Thurau et al. 2004) and thus, the consensus effect only exists or is at least stronger in the case of online WOM communication. These aspects provide explanations for the observation of such a strong and destructive effect of negative online product reviews in our study.

One might criticize that our clear effect of brand equity dilution results from the fact that we chose examples of brands that differ extreme with regard to brand knowledge. However, we argue that choosing extreme examples with regard to brand knowledge is not a shortcoming of the study, but rather reveals the interesting finding that the danger of brand equity dilution increases with increasing brand equity.

In addition, one might argue that the brand equity dilution effects can differ depending on person-specific factors. An important person-specific variable that might play a role in the context considered here and that has already been examined in the context of WOM communication is an individual's susceptibility to such communication. To our knowledge, no studies on effects of susceptibility to online product reviews exist. Research in the field of offline WOM communication provides the notion that effects of WOM communication in product judgments do not depend on the individual's susceptibility to interpersonal influence (Bone 1995). Thus, offline WOM communication effects exist independently of this person-specific variable.

With regard to our study, we argue that online WOM communication has much stronger

effects than offline WOM communication and thus, effects of negative online product reviews should exist even more clearly and independently of such a person-specific variable. We present the results on an additional analysis to show that the brand equity dilution effect holds regardless of person-specific aspects. We split up our sample into two groups, one of them consisting of people who are more susceptible to online product reviews (based on the measures shown in Table 10, aggregated and transformed into a binary variable on the basis of a median split). The results of the additional analysis are shown in Table 10.

Table 10: Brand equity dilution differentiated according to individual susceptibility

	Little susceptible (n=114)				Highly susceptible (n=102)			
	VP		E ($VP_{K_c} - VP_{K_p}$)	Test statistics	VP		E ($VP_{K_c} - VP_{K_p}$)	Test statistics
	K_c	K_p			K_c	K_p		
Before WOM	5.09	3.63	1.46	$t = 6.91$ ($p < 0.001$)	5.32	3.74	1.58	$t = 7.65$ ($p < 0.001$)
After WOM	3.07	1.95	1.12	$t = 4.90$ ($p < 0.001$)	2.89	1.78	1.11	$t = 5.07$ ($p < 0.001$)
Difference (before - after)	2.02	1.68	0.34	$t = 1.35$ ($p < 0.10$)	2.43	1.96	0.47	$t = 1.74$ ($p < 0.05$)

Note: VP = brand value perceptions, E = brand equity, K_c = comprehensive brand knowledge, K_p = poor brand knowledge

The results in Table 10 that are based on the differentiation according to personal susceptibility show the same pattern as the results that we reported for the hypothesis testing. In addition, a statistical comparison of the two values for brand equity dilution (little susceptibility: 0.34; high susceptibility: 0.47) show that these values do not differ significantly ($t_{0.47-0.34} = 0.50$, $p > 0.10$). Thus, the extent of brand equity dilution even exists for people with a lower susceptibility to online product reviews. In other words, the identified effect is stable and remains harmful across the values of the considered person-specific variable.

2.5. Conclusion

The starting point of this paper was the observation that opinion platforms where consumers can publish their product reviews become increasingly popular, from both the reviewer's and the reader's perspective. Moreover, both practical experience and previous research suggested that in an online WOM context, consumers are especially interested in writing and reading negative product reviews. Consequently, from a marketer's perspective, the question arose which effects especially negative reviews might have on response variables that are relevant in marketing. A response variable that plays an important role in marketing but has not been considered in the context of effects of online WOM communication yet, is consumer-based brand equity. Therefore, it stood to reason to extend the existing body of research in the field of effects of online WOM communication by introducing the concept of dilution of consumer-based brand equity in this context and examining possible effects of negative product reviews.

The findings of our empirical study show that negative online product reviews have considerable detrimental effects on consumer-based brand equity and thus lead to a significant brand equity dilution. Closely related with this finding, we found that even brands with regard to which consumers have a considerable brand knowledge are not immune from such detrimental effects. In addition, we showed that these effects exist independently of a person-specific variable such as the susceptibility to online product reviews.

Our results have several important implications. Companies with high equity brands should not rely on the benefits of a high brand equity such as customer loyalty that can be found in the literature (Aaker 1991; Agarwal and Rao 1996; Keller and Lemann 2006). Instead, even such companies should be aware of the risks of negative online WOM communication because, as our results show, even high brand equity can be significantly diluted by negative online product reviews and because such detrimental effects will become even more important with increasing improvement and spread of network technology. In addition, the accessibility, reach, and transparency of the Internet allow marketers and retailers to continuously monitor the online WOM communication about their brands (Kozinets et al. 2010). We recommend to continuously track the number of negative product reviews on the most important

opinion platforms in combination with the number of hits per review. Out of these two types of information, marketers can estimate the likelihood that potential customers will be faced with a comparatively large number of reliable negative online product reviews. If this likelihood is comparatively high, marketers or retailers should implement appropriate compensation strategies. They could, for example, develop appropriate communication tools to make consumers more knowledgeable about specific brand or retailer characteristics and try to change some of the negative associations that consumers have about the brand or the retailer through online reviews.

Beyond that, the finding that negative online WOM communication can cause a significant brand equity dilution is particularly important for retail settings. Through mobile Internet, which is becoming increasingly popular, consumers can read online reviews for the product they are interested in directly at the point of purchase which might have strong effects on their purchase decisions. Therefore, retailers could initiate point of sale activities in the form of product trials with the objective to compensate negative effects on online WOM communication by enabling consumers to form their own impressions.

In order to better understand the underlying mechanisms of brand equity dilution through, further research could examine possible moderating effects of variables that can be derived from previous research. For example, effects of online WOM communication on consumer-based brand equity could be different depending on the type of product being reviewed or on the relation of positive and negative reviews that can be found. Furthermore, it would be interesting to analyze the effects of negative online product reviews on brand equity for more brands and in other product categories such as financial services because negative WOM communication may have a particularly important influence on consumers' perceptions of services that have high credence qualities (Sweeney et al. 2008).

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3. The Role of perceived review credibility in the context of brand equity dilution through negative product reviews on the Internet²

3.1. Introduction

A look at the historical development of the Internet as a source of product-specific information shows that, in a first phase, product-specific information was mainly provided by producers and retailers whereas a more recent phase is characterized by the trend that consumer-based product information in terms of product reviews, as a specific type of online word-of-mouth (WOM) communication, can be increasingly found in addition to company-based information. In the light of this trend, the finding that consumers are more susceptible to WOM communication than to company-based product information (Bickart and Schindler 2001; Herr et al. 1991; Smith et al. 2005; Trusov et al. 2009) leads to the assumption that consumer-based online product reviews have a comparatively strong impact on consumer behavior (Chatterjee 2001; Chevalier and Mayzlin 2006; Kiecker and Cowles 2001; Sen and Lerman 2007; Xia and Bechwati 2008). In addition, companies only spread positively valenced information, whereas consumers especially tend to share negative experiences with as many people as possible (Chatterjee 2001) and to look for negative product reviews because negative information is considered as more diagnostic than positive or neutral information and thus is weighted more heavily in judgments (Herr et al. 1991). Consequently, from a company's perspective, negatively valenced online product reviews are very harmful. Regarding the persuasiveness of online product reviews, it is important to consider that, over time, consumers have become more skeptical about consumer generated information that is provided on the Internet. This skepticism is due to news publications about Internet abuses (McKnight and Kacmar 2006), due to the fact that people who provide information on the Internet are anonymous, that such

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information is unfiltered (Cheung et al. 2009), as well as to the fact that marketers use the anonymity of the Internet to disguise their promotions as consumer recommendations or to pay people for writing negative online reviews about competitor products.

Consequently, it is interesting to analyze whether effects of negatively valenced online product reviews generally exist or whether such effects depend on factors such as review quality and subjectively perceived review credibility. According to Park et al. (2007), we refer to review quality as the relevance, understandability, sufficiency, objectivity, and persuasiveness of a review's content. Thus, high-quality reviews provide matter-of-fact information about product characteristics, whereas low-quality reviews are emotional, subjective and do not provide factual information. Perceived review quality is derived from the concept of source credibility which represents the extent to which a person who is processing the information provided by the source evaluates the source as being knowledgeable, qualified, experienced, trustworthy, and able to provide unbiased, objective information (Belch and Belch 2001).

In this paper, we consider the situation where consumers have the intention to purchase a specific product and visit opinion platforms to learn about other consumers' evaluations of this product before making the final purchase decision. We only consider negatively valenced online product reviews that are posted on opinion platforms, which are independent of producers or retailers because this platform type is the most widely used form of online WOM communication (Hennig-Thurau et al. 2004). The target variable with regard to which we examine effects of online product reviews is consumer-based brand equity. Consumer-based brand equity corresponds to consumers' perceptions of a product's additional value that is generated by the brand name (Park and Srinivasan 1994) and is based on associations with the brand which are activated in response to the brand name (Krishnan 1996). These associations are composed of perceived brand attributes and brand benefits such as product quality (Keller and Lehmann 2006; Krishnan 1996). Since the late 1980s, brand equity has been one of the most important marketing concepts in both research and practice (Srinivasan et al. 2005). Thus, the objectives of our research are to examine the effects of negative online product reviews on consumer-based brand equity in terms of brand equity dilution depending on review quality and to analyze the mediating role of

perceived review credibility in the relation between review quality and brand value perceptions that are a pre-stage of brand equity. This paper adds to the existing body of research because studies on the link between negative online WOM communication and the dilution of consumer-based brand equity are scarce. Moreover, no study has examined in detail the role of perceived review credibility in the relation between review quality and consumer-based brand equity. In addition to addressing researchers, our paper addresses marketers by showing that online product reviews can have negative consequences for companies and by offering insights into the processes that underlie these effects.

3.2. Empirical and theoretical background

3.2.1. Previous research on review quality and the role of perceived review credibility

The concepts of message quality and perceived credibility are subject to several studies on offline and online communication (Dholakia and Sternthal 1977; Heesacker et al. 1983; Hovland and Weiss 1951-52; Jain and Posavac 2001; Nan 2009; Sternthal et al. 1978). However, as information processing in online environments differs considerably from offline information processing, we do not consider these studies in more detail.

In the field of online communication, only three studies cover review quality and/or perceived review credibility. Although none of these studies exactly examines the effects we are interested in, we will shortly summarize them because they still provide interesting aspects with regard to our study purpose. In a basic study, Park et al. (2007) investigated whether the quality of online product reviews can affect consumers' purchase intentions and found that this effect is significant. Note that this study did not include perceived review credibility and only examined effects of positive online product reviews. However, the findings of this study provide the notion that the quality of online product reviews plays an important role with regard to typical marketing response variables.

In another study, McKnight and Kacmar (2006) analyzed the role of perceived

information credibility at the example of a legal advice website for consumers. Their results show that perceived information credibility significantly mediates the relation between factors such as individual characteristics, technology affinity as well as the initial impression of the website, and the willingness to follow the provided legal recommendations. Note that this study did not test effects of consumer-based information, but effects of legal recommendations provided by experts and that this study does not cover negatively valenced information. However, the findings of this study are interesting with regard to our study purpose because they show the mediator effect of perceived credibility in the context of processing information that is provided on the Internet.

A study of Cheung et al. (2009) has most in common with our research purpose. They examined the mediating role of perceived credibility in the relation between the argument strength of positively and negatively valenced online consumer recommendations and the intention to adopt the recommendation. They found that argument strength has a positive effect on perceived credibility which in turn positively influences the intention to adopt the recommendation. Starting from these findings, it is interesting to examine the mediating role of perceived credibility in the relation between review quality and more concrete consumer response variables such as brand value perceptions.

3.2.2. Theoretical background of effects of online product reviews on consumer-based brand equity and the role of review quality and perceived review credibility

In a first step, we will shortly discuss the concepts of brand equity and brand equity dilution. We refer to brand equity as a synonym for consumers' brand beliefs, attitudes and behavioral intentions (Ailawadi et al. 2003; Farquhar 1989; Keller and Lehmann 2006). According to Keller (1993), consumer-based brand equity describes the differential effect brand knowledge has on consumers' value perceptions of brands that are comparable with regard to their major attributes. Consumer-based brand value perceptions as a pre-stage of brand equity comprise aspects such as brand associations, perceived quality (Aaker 1991; Farquhar 1989; Keller 1993; Silverman et

al. 1999; Washburn and Plank 2002) and aspects of consumer behavior such as purchase intentions and willingness to pay (Agarwal and Rao 1996; Faircloth et al. 2001; Yoo et al. 2000). The concept of brand equity dilution reflects the idea that information processing can result in a revision of brand evaluations (Buchanan et al. 1999; Loken and Roedder John 1993; Roedder John et al. 1998) through the weakening of important brand value perceptions. Such effects can result in lower purchase intentions (Pullig et al. 2006). Thus, in the context considered here, we refer to brand equity dilution as a revision of consumer-based brand value perceptions that differ across brand knowledge.

Note that brand equity and thus also brand equity dilution can only be examined on an aggregate level if brand knowledge is a between-subjects factor. Consequently, the below derived research hypotheses will contain brand equity as dependent variable if an analysis on an aggregate level is sufficient and brand value perceptions which constitute a pre-stage of brand equity as dependent variable if a more detailed analysis is needed.

In the following, we will first explain theoretically why online product reviews can have considerable strong effects on consumer-based brand equity. Afterwards, we will provide a theoretical explanation for the mediating role of perceived review credibility in the considered context.

In order to build up a theoretical framework for effects of negative online product reviews on brand equity we draw on previous studies on brand equity dilution in different fields of research such as brand extensions (Loken and Roedder John 1993; Milberg et al. 1997; Roedder John et al. 1998), retailing (Buchanan et al. 1999), and product-harm crises (Dawar and Pillutla 2000). A theoretical approach that can be found in this type of literature and that can be used to explain effects of negative online product reviews is the so-called search and alignment theory. According to this approach, consumers who initially have positive attribute-specific product information and then are faced with negative attribute-specific product information that challenges the initial impression, tend to revise this impression into the direction of the challenging information.

In our case, the initially positive attribute-specific product information translates into

initially positive brand value perceptions that are due to the fact that consumers who are interested in buying a particular product have formed their intention to purchase the product on the basis of an initially positive evaluation of relevant product attributes. Furthermore, the negative information provided in online product reviews can be interpreted in terms of the negative attribute-specific product information because the authors of such reviews often report their experiences with a particular product in a very detailed way. Consequently, we explain effects of negative online product reviews on brand equity in terms of brand equity dilution as follows. Consumers who are faced with such online product reviews weight negative reviews more heavily than possibly also found positive ones. Processing negative online product reviews further means dealing with attribute-specific product information that is contrary to the initial brand value perceptions. Consequently, consumers are likely to revise their initial brand value perceptions into the direction of the negative online product reviews, which leads to brand equity dilution. The presented arguments lead to our first and basic research hypothesis:

H1: Negative online product reviews have detrimental effects on consumer-based brand equity which occur in terms of brand equity dilution.

With regard to effects of review quality on consumer-based brand equity, we draw on literature in the field of effects of strong versus weak arguments. According to Petty and Cacioppo (1983), strong arguments provided in a message represent high message quality and lead to a stronger attitude change into the direction of the message than do weak arguments that correspond to low message quality. Consequently, we argue in our second hypothesis:

H2: High-quality reviews have stronger effects on consumer-based brand equity in terms of brand equity dilution than have low-quality reviews.

The literature provides the following arguments with regard to the role of source credibility in the context of information processing. First, in computer-mediated communication, it is difficult to evaluate attributes such as attractiveness and physical appearance of the information source (Cheung et al. 2009) and thus, cues such as content credibility play a considerable role. Second, the cognitive response hypothesis (Greenwald 1968) proposes that when an issue is personally involving or relevant,

people are more motivated to think about the information provided by a highly than by a less credible source. Moreover, attitudes are rather determined by argument quality if a message is presented by a highly credible source (Heesacker et al. 1983).

In the context considered here, we focus on high-involvement products because especially in high involvement contexts, people are motivated to consult opinion platforms before making their purchase decisions. Thus, the arguments provided by the cognitive response hypothesis can be transferred to the context considered here as follows. The quality of negative online product reviews has an effect on perceived review credibility which in turn has effects on consumer-based brand equity. The latter effect can be explained by the fact that consumers are more motivated to think about the information provided in the online product review and to modify their brand value perceptions into the direction of the evaluation provided in the review if this review seems to be credible. These arguments lead to our third research hypothesis:

H3: Perceived credibility of a negatively valenced online product review mediates the relation between review quality and consumer-based brand value perceptions.

3.3. Empirical study

3.3.1. Test products

We decided to use different test products to cover several product categories and to control for possible product type effects. Thus, we used one utilitarian (computer notebook), one hedonic (digital camera), and one hybrid product (a product with both utilitarian and hedonic features: multimedia mobile phone). We chose high-involvement products that were familiar to the respondents because especially such products are frequently subject to WOM communication (Ha 2002). This phenomenon can be explained by the fact that only in the case of high involvement, consumers are willing to process detailed product-related information and thus are motivated to write and look up online product reviews.

3.3.2. Pretests

We conducted a first pretest to identify the average number of online product reviews people read on opinion platforms before making a purchase decision. In a university computer room, 20 test participants were asked to imagine that they intended to buy a specific product and then received the instruction to spend as much time as they would need in a real situation on an opinion platform to read as many reviews on this product as they thought to be appropriate. Afterwards, people were asked to indicate the number of online product reviews they had read. The results show that on average, people read 2.6 reviews. Thus, we decided to use three reviews as test stimuli for the main study.

We conducted a second pretest to find high- and low-quality product reviews. In a first step, we looked at several opinion platforms to get an impression of the average length and the typical content of high- and low-quality product reviews on such platforms. We found that high-quality reviews usually have a length of about 350 words and contain attribute-specific information, whereas low-quality reviews have about half the length of high-quality reviews and rather express emotions. We then selected six negatively valenced online product reviews for each product (three reviews that we a-priori judged to be of high quality and three other reviews that we considered as low quality reviews) from a real opinion platform. In order to select the online product reviews, we used the criteria indicated by Belch and Belch (2001) and additionally considered the review quality ratings provided on the platform. The high-quality reviews we chose were more logical and persuasive and gave reasons based on specific facts about the product whereas the low-quality reviews we chose were emotional, subjective, did not offer any factual information, and simply provided a recommendation.

Thirty respondents participated in the pretest on perceived review quality. Each respondent rated the six online reviews for one of the products on the basis of five items that measured review quality (e.g., helpful/informative review, precise information, reviewer has a comprehensive knowledge etc.) on seven-point scales. The five single items were aggregated to an overall value for perceived review quality. The resulting mean values are shown in Table 11.

Table 11: Results of the pretest on perceived review quality

Review w	A-priori assigned review quality	Perceived review quality		
		computer notebook	digital camera	mobile phone
1	low	1.42	1.78	1.58
2		2.08	2.34	2.20
3		1.52	1.68	1.54
4	high	5.16	4.64	4.62
5		5.40	5.62	5.50
6		5.86	5.84	5.96

A post-hoc analysis showed that the mean value differences among the online product reviews that were a-priori chosen as low-/high-quality reviews were not significant whereas the mean values of the low-quality reviews and the high-quality reviews differed significantly.

A third pretest was needed to prove that the chosen online product reviews were indeed judged as negatively valenced reviews. Thus, we asked another 30 people to participate in the negativity pretest. Each participant was asked to read the six reviews for one of the three test products (10 participants per test product) and to evaluate the negativity of each review using the item “the author has a very negative opinion of this product” (scale: 1 = “do not at all agree” to 7 = “totally agree”). The resulting mean values that are summarized in Table 12 are significantly higher than the scale midpoint (one sample t-tests) and thus the online product reviews are perceived as being clearly negatively valenced.

Table 12: Results of the pretest on perceived review negativity

Review	Review quality	Perceived review negativity		
		computer notebook	digital camera	mobile phone
1	low	6.10 ($t = 6.03, p < .001$)	6.20 ($t = 8.82, p < .001$)	6.30 ($t = 10.78, p < .001$)
2		6.40 ($t = 1.85, p < .001$)	6.30 ($t = 7.67, p < .001$)	5.60 ($t = 7.24, p < .001$)
3		5.70 ($t = 5.08, p < .01$)	5.80 ($t = 6.19, p < .001$)	6.40 ($t = 10.85, p < .001$)
4	high	5.90 ($t = 6.86, p < .001$)	6.60 ($t = 15.92, p < .001$)	6.50 ($t = 15.00, p < .001$)
5		6.00 ($t = 9.49, p < .001$)	6.40 ($t = 10.85, p < .001$)	5.90 ($t = 6.04, p < .001$)
6		6.30 ($t = 10.78, p < .001$)	6.00 ($t = 13.42, p < .001$)	5.70 ($t = 7.97, p < .001$)

The purpose of the fourth pretest was to identify brands about which consumers have

more or less comprehensive brand knowledge. For each of the tested products (computer notebook, digital camera, mobile phone), we examined five existing brand names that were more or less known in the product category. We measured brand knowledge using several items that addressed the most important aspects of the brand knowledge concept. Each of the 45 participants of this pretest evaluated either the computer notebook brands, the digital camera brands, or the mobile phone brands on seven-point rating scales. The tested brand names and the mean values that resulted from the aggregation of the single items to an overall value for brand knowledge are shown in Table 13.

Table 13: Results of the pretest on brand knowledge

Computer notebook (<i>n</i> = 15)	Axxiv 1.07	Packard Bell 3.00	Acer 4.47	Sony 6.60	Dell 6.73
Digital camera (<i>n</i> = 15)	Sigma 1.93	Praktica 2.13	Olympus 4.80	Nikon 5.27	Canon 6.73
Mobile phone (<i>n</i> = 15)	Glofiish 1.13	LG 2.47	Samsung 4.67	Sony 6.13	Nokia 6.87

We decided to select the brand names that were characterized by the lowest and the highest brand knowledge in the respective product category and thus chose the brand names Axxiv/Dell for computer notebooks, Sigma/Canon for digital cameras, and Glofiish/Nokia for mobile phones.

3.3.3. Experimental design and measures

Our main study was based on a 2 (low/high review quality) x 2 (poor/comprehensive brand knowledge) x 3 (product type: utilitarian/hedonic/hybrid) between-subjects design. By testing utilitarian, hedonic and hybrid products in the study, we controlled for possible effects of product type.

In order to measure brand value perceptions as a pre-stage of consumer-based brand equity, we used the items shown in Table 14 that we chose in accordance with existing literature (Aaker 1991; Agarwal and Rao 1996; Dawar and Pillutlar 2000; Keller 1993).

Table 14: Measures of brand value perceptions

Item	Coefficient alpha (measurement before WOM)	Coefficient alpha (measurement after WOM)
The [product] seems to be of high quality.		
I think that the [product] is reliable.		
I believe that the [product] is a high performance product.		
I like this [product].		
I am interested in this [product].	0.93	0.97
I can imagine buying this [product].		
I would recommend this [product] to my friends.		
I would prefer this [product] over others in this product category.		
Note that we used seven-point rating scales ranging from 1 = totally disagree to 7 = totally agree		

Furthermore, we measured perceptions of review credibility using four items (“I believe that the product reviews reflect the true experiences of these consumers”, “the authors of these reviews are trustworthy”, “these reviews are credible”, and “if I had the intention to buy a product in this category, I would consider these reviews when making a purchase decision”) according to the recommendations of Cheung et al. (2009) and got a coefficient alpha of 0.89. The high coefficient alpha values for brand value perceptions and perceived review credibility indicate that the chosen items are appropriate to reliably measure the concepts they were intended to measure.

Furthermore, we measured the respondents’ perceptions of the general persuasiveness of online product reviews in order to examine whether the different experimental groups are comparable with regard to this variable. In order to do so, we used two items (“online product reviews have an impact on my purchase decisions”, “before making important purchase decisions, I go to product review websites to learn about other consumers’ opinions”, 7-point rating scales), for which we identified a bivariate correlation of 0.56. As this correlation is significant and sufficiently high, we calculated the overall variable value as the mean value of the two items.

In addition, we measured the perceived quality of the three presented online product reviews and brand knowledge in order to be able to do manipulation checks. We used the item “the reviews are helpful” (7-point scale) to check for review quality and the item “Please indicate your knowledge with regard to the brand [...]” based on a

dichotomous scale (“poor knowledge” vs. “comprehensive knowledge”) to check for brand knowledge. As perceived review quality and brand knowledge have already been subject to pretests, we decided to use these simplified measures to limit questionnaire length.

3.3.4. Sample and procedure

Six hundred people participated in the main study (thus 50 people per experimental group). The sample consisted of 55% women and 45% men who were familiar with opinion platforms. The age of the participants ranged from 14 to 60 years, the average age was 25.8 years.

The procedure was as follows. The participants were instructed to imagine that they were planning to buy a product in the respective product category in the near future. Then, they were provided with a picture and a short description of the test product. Afterwards, we measured brand knowledge and a-priori brand value perceptions. Subsequently, the respondents were presented with three negative online product reviews. We varied the order of these reviews from respondent to respondent to counterbalance possible order effects. After having read the online product reviews, the participants were asked to answer the brand value perception scales for a second time. Then, the respondents had to indicate their perceptions of review credibility and to judge review quality. In a final step, the respondents were asked to indicate their perceptions of the general persuasiveness of online product reviews and to provide information about their age and gender.

3.3.5. Data analysis and results

Before presenting the main results of the first study, we prove that the experimental groups are comparable with regard to perceptions of general persuasiveness of online product reviews. An analysis of variance shows that the twelve groups that result from the experimental design described above do not differ with regard to perceptions of persuasiveness ($F = 0.53, p > 0.10$).

In the next step, we present the results of the manipulation checks for brand knowledge and perceived review quality. As both the brand knowledge manipulation and the brand knowledge measurement are dichotomous, we use a chi-square test. Ninety-four percent of the respondents indicated poor knowledge about the brand that initially was chosen as a poor knowledge brand and 93% of the respondents agreed to have comprehensive knowledge about the brand that was intended to be the comprehensive knowledge brand ($X^2 = 450.75, p < 0.001$). Consequently, for the further analyses, we used the manipulated brand knowledge variable.

As perceived review quality was measured as a metric variable, we conducted an independent samples *t*-test with the manipulated review quality as independent variable and the perceived review quality as dependent variable. The results show that the reviews that were used as low-quality reviews were judged as significantly less helpful ($M = 3.86$) than the reviews that were used as high-quality reviews ($M = 5.55, t = 12.90, p < 0.001$). Therefore, the manipulated review quality variable was used for further analyses.

We now present the results of the main study that aimed to identify the numerical value of brand equity dilution depending on review quality and to examine the mediator effect of perceived review credibility in the relation between review quality and change in brand value perceptions as a pre-stage of brand equity. Based on the theoretical conceptualization, brand equity corresponds to the distance between a comprehensive-knowledge brand and a poor-knowledge brand. The value for this distance that represents brand equity is calculated as a difference by following the recommendations of Smith and Lusch (1976). Thus, we first calculated mean values of brand value perceptions before and after the contact with negative online product reviews, then the differences between comprehensive and poor brand knowledge, and finally the value of brand equity dilution as the difference of brand equity before and brand equity after the contact with the negative online product reviews. These calculations are done separately for low and high review quality. In order to judge whether the brand equity values are based on significant mean value differences and to evaluate brand equity dilution, we calculated independent samples *t*-test statistics. The results are shown in Table 15.

Table 15: Brand equity dilution in the case of low and high review quality

	Low review quality (<i>n</i> = 300)				High review quality (<i>n</i> = 300)			
	VP		E (VP _{Kc} - VP _{Kp})	test statistics	VP		E (VP _{Kc} - VP _{Kp})	test statistics
	K _c	K _p			K _c	K _p		
Before WOM	4.99	3.99	1.00	<i>t</i> = 7.64 (<i>p</i> < .001)	5.10	3.95	1.15	<i>t</i> = 8.99 (<i>p</i> < .001)
After WOM	3.12	2.54	0.58	<i>t</i> = 4.02 (<i>p</i> < .001)	2.96	2.59	0.37	<i>t</i> = 2.53 (<i>p</i> < .05)
Difference (before - after)	1.87	1.45	0.42	<i>t</i> = 2.52 (<i>p</i> < .05)	2.14	1.36	0.78	<i>t</i> = 4.83 (<i>p</i> < .001)

Note: VP = brand value perceptions, E = brand equity, K_c/K_p = comprehensive/poor brand knowledge

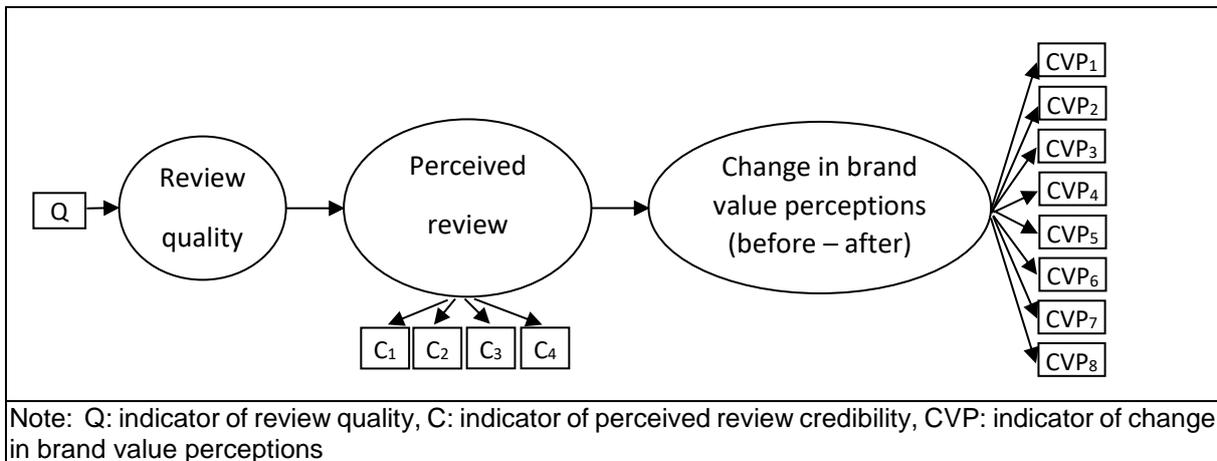
The results presented in Table 15 show that the contact with negative online product reviews causes a significant brand equity dilution (low review quality: 0.42, high review quality: 0.78). This result that provides support for H1 shows the destructiveness of negative online product reviews with respect to consumer-based brand equity. The fact that brand equity dilution occurs implies that the deterioration of brand value perceptions is stronger in the case of comprehensive brand knowledge than in the case of poor brand knowledge. Thus, after the contact with negative online product reviews, the distance of brand value perceptions between the comprehensive knowledge brand and the poor knowledge brand is smaller than before. Thinking of findings of research on effects of traditional WOM communication that have shown that effects of WOM communication are weaker for comprehensive-knowledge brands than for poor-knowledge brands (Bone 1995; Sundaram and Webster 1999), our finding might be surprising. However, an important difference between traditional and online WOM communication that provides an explanation for such a destructive effect of negatively valenced online product reviews even in the case of comprehensive brand knowledge is that in the case of traditional WOM communication, only one piece of information is transmitted at one point in time whereas online WOM communication is much more voluminous in quantity and available for an indefinite period of time (Chatterjee 2001; Hennig-Thurau et al. 2004).

The differentiation between low and high review quality further shows that brand equity dilution is significantly stronger in the case of high review quality ($t_{0.78-0.42} = 2.33, p < 0.05$). Thus, the results provide support for H2 and show that the danger of brand

equity dilution as a consequence of the contact with negative online product reviews is much higher in the case of high quality reviews than in the case of low quality reviews.

In the second step of our analysis, we examine the mediator effect of perceived review credibility in the relation between review quality and change in brand value perceptions. We do not use brand equity as dependent variable for this analysis because numerical values for brand equity can only be calculated on an aggregate data level whereas we need data on the individual level to be able to accurately examine the mediator effect of perceived review credibility. Choosing brand value perceptions as a pre-stage concept to brand equity should not pose a problem because in the first step of our analysis, we have shown that brand equity is calculated on the basis of brand value perceptions and thus both concepts are closely related. We used the SmartPLS procedure to determine the role of perceived review credibility in the relation between review quality and change in brand value perceptions. We estimated the model shown in Figure 1.

Figure 1: PLS model



The estimated path coefficients and the associated t-values as well as the factor loadings are summarized in Table 16.

Table 16: Results of the PLS analysis

Effect	Path coefficient	T-value
review quality → perceived review credibility	0.42	4.77
perceived review credibility → change in brand value perceptions	0.34	3.93
	Factor loading	T-value
perceived review credibility → C ₁	0.81	18.64
perceived review credibility → C ₂	0.91	40.17
perceived review credibility → C ₃	0.91	44.67
perceived review credibility → C ₄	0.82	19.32
change in brand value perceptions → CVP ₁	0.80	15.51
change in brand value perceptions → CVP ₂	0.82	18.78
change in brand value perceptions → CVP ₃	0.82	17.64
change in brand value perceptions → CVP ₄	0.82	21.17
change in brand value perceptions → CVP ₅	0.84	19.90
change in brand value perceptions → CVP ₆	0.86	24.88
change in brand value perceptions → CVP ₇	0.86	27.18
change in brand value perceptions → CVP ₈	0.81	17.43

Note: Q: indicator of review quality, C: indicator of perceived review credibility, CVP: indicator of change in brand value perceptions

The significantly high factor loadings show that the chosen single items are appropriate to measure the model constructs. Furthermore, the estimated path coefficients are significant with plausible signs and thus provide support for the assumed relations. In more detail, the path coefficients indicate that a higher review quality leads to more positive perceptions of review credibility which in turn lead to a larger difference between brand value perceptions before and after the contact with negative online product reviews. Consequently, the data provide support for the assumed mediator effect of perceived review credibility and thus for the assumption of H3. As the differences have been calculated as $\text{brand value perceptions}_{\text{before}} - \text{brand value perceptions}_{\text{after}}$, a larger difference means a stronger detrimental effect of negative online product reviews on brand value perceptions. Thus, the analysis has shown that perceptions of review credibility play an important role in the context of effects of negative online product reviews on brand value perceptions.

3.4. Conclusion

The starting point of this paper has been the observation that opinion platforms where consumers publish their product reviews become increasingly popular, from both the reviewers' and the readers' perspective. Moreover, both practical experience and previous research let assume that consumers are especially interested in writing and reading negative online product reviews. Additional important observations have been that such reviews vary considerably in quality and that consumers show an increasing skepticism toward online product reviews. Consequently, from a marketer's perspective, the questions arose which effects especially negatively valenced online product reviews might have on consumer-based brand equity, whether these effects exist for all negative product reviews or depend on review quality, and which processes underlie these effects. Therefore, it stood to reason to extend the existing body of research in the field of effects of online WOM communication which only consists of a small number of studies by introducing the concept of dilution of consumer-based brand equity as dependent variable, by examining possible effects of negative product reviews depending on review quality, and by shedding light on the processes that underlie these effects.

The findings of the empirical study show that negative online product reviews have considerable detrimental effects on consumer-based brand equity and that these effects increase with higher review quality. A more detailed analysis of the role of perceived review credibility shows that this variable mediates the relation between review quality and brand value perceptions that are a pre-stage of consumer-based brand equity. Consequently, marketers should start considering such negative consequences that they might have neglected up to now when planning their communication strategies. Thus, marketers should continuously monitor the relation of high- and low-quality reviews on their brands that can be found on the most important opinion platforms. In addition, most of the leading opinion platforms provide information about the number of hits per review. Out of these two types of information, marketers can estimate the likelihood that potential customers will be faced with a comparatively large number of negatively valenced high-quality reviews. If this likelihood is considerably high, they should try hard to develop appropriate coping strategies.

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4. Can advertising compensate the detrimental effects of negative online product reviews?³

4.1. Introduction

In highly involving purchase situations, consumers often rely on other consumers' opinions. Product reviews that consumers publish on independent opinion portals represent one of the most widely used forms of such word-of-mouth (WOM) communication (Chen and Xie 2008; Hennig-Thurau et al. 2004; Schindler and Bickart 2004).

While *positive* reviews support a company's marketing efforts, *negative* reviews can have strong detrimental effects on consumers' attitudes (Chiou and Cheng 2003). Specifically cognition-based negative reviews that contain rational, objective arguments are more persuasive than reviews written in an emotional and subjective style and thus are very harmful to companies (Park et al. 2007). Given such negative effects, the question arises as to how companies can recover consumers' negative attitudes. However, previous research has focused more on analyzing the antecedents and consequences of online word-of-mouth communication (e.g. Chakravarty et al. 2010; Dellarocas et al. 2007; Hennig-Thurau and Walsh 2003/04; Sen and Lerman 2007; Sun et al. 2006) than on examining the effects of communication strategies that companies could use. A possible approach could be to react with advertising, a strategy often used by companies when faced with negative publicity (Ahluwalia et al. 2000). Such advertising could, for example, be either cognition-based or emotion-based. We focus on these two types of advertising because they are commonly found in research (e.g. Ruiz and Sicilia 2004; Van Den Putte 2009) and practice. A cognition-based ad provides concrete information about product attributes and benefits (Dubé et al. 1996; Pang et al. 2009; Ruiz and Sicilia 2004; Van den Putte 2009). In the context

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considered here, a cognition-based ad could, for example, positively highlight the product attributes that are criticized in the negative product reviews. An emotion-based ad, as referred to in this article, is based on a slogan (Laran et al. 2011) that evokes a positive experience during product use and thus induces positive feelings towards the advertised product (Geuens et al. 2011; Moore and Harris 1996; Van Den Putte 2009). Please note that the use of the term “emotion-based ad” in the following does not mean a humorous or fear-inducing ad, which represents specific types of emotion-based ads. Even though the effects of cognition-based and emotion-based advertising have been examined in previous studies, the present body of research does not allow any assumptions on the effectiveness of these two types of ad to recover consumers’ unfavorable attitudes which result from reading negative online product reviews. Thus, the purpose of the studies presented below is to examine the effects of negative online product reviews and to test whether and how cognition-based versus emotion-based advertising is able to recover consumers’ attitudes which are negative due to contact with such negative reviews. The focus on negative reviews can be explained as follows. Previous research provides the notion that negative reviews have stronger effects than positive ones (Chakravarty et al. 2010; Chevalier and Mayzlin 2006; Chiou and Cheng 2003). The phenomenon that negative information is weighted more heavily than positive information is commonly referred to as the negativity effect (Ahluwalia 2002; Herr et al. 1991). An explanation for such an effect is that consumers consider negative information as more diagnostic than positive information (Ahluwalia 2002). Negative information is considered more diagnostic because it helps to assign objects of evaluation to a negative evaluation category more easily than positive information does with regard to a positive evaluation category (Herr et al. 1991). This can be explained by the fact that positive attributes can characterize high, average or low quality products, whereas strongly negative attributes are often only associated with low quality products (Chiou and Cheng 2003; Herr et al. 1991). Consequently, negative reviews have stronger detrimental effects on brand attitudes and purchase intentions than positive reviews have beneficial effects (Chakravarty et al. 2010; Chiou and Cheng 2003; Huang and Chen 2006). These negative effects increase with a growing number of negative reviews (Lee et al. 2008). Thus, it is of particular interest to consider the situation in which a consumer encounters several negative online

reviews about a specific product.

This paper contributes to the existing body of research by demonstrating how and to what extent the detrimental effects of negative cognition-based reviews can be weakened or even compensated through appropriate advertising. In addition, we show that advertising can also provoke unsolicited effects in terms of negative consumer reactions and that an emotion-based ad (compared to a cognition-based one) even reinforces this effect. It is very important for marketers to know about such negative consumer reactions because they can be very harmful to a company's product sales. The finding that consumers show positive and negative reactions to the same ad demonstrates that not only the stimulus itself but also person-specific variables play an important role. As previous research has demonstrated that consumers' general predisposition to show reactance can have a significant negative influence on their reactions to a specific stimulus (e.g. Dillard and Shen 2005; Fitzsimons and Lehmann 2004), we provide insights into the role that consumers' propensity to show reactance in response to advertising (referred to as PSR in the following) plays in the context of negative consumer reactions to advertising strategies, which was not examined in previous studies.

In addition to addressing researchers, this paper addresses marketers by providing recommendations on which type of advertising to use in order to compensate the detrimental effects of negative online reviews that consumers read on opinion platforms. Moreover, the results of the studies presented below provide marketers with knowledge about conditions in which such advertising can intensify consumers' negative reactions, thus enabling them to adapt their advertising strategy accordingly.

4.2. Theoretical background and hypotheses

4.2.1. Effects of cognition-based versus emotion-based advertising

4.2.1.1. Positive effects of cognition-based versus emotion-based advertising

The functional matching approach is used to explain how attitudes can be changed through persuasion attempts. It suggests that persuasive messages are more effective when the arguments presented match the basis of an attitude (Petty and Wegener

1998). This effect occurs because consumers consider matching information as highly diagnostic (Pham and Muthukrishnan 2002) and thus engage in more intensive elaboration of such information (Petty and Wegener 1998). However, previous research in this field has provided contradictory results. Fabrigar and Petty (1999) demonstrated a matching effect in that cognition-based (emotion-based) information which addresses cognition-based (emotion-based) attitudes was more persuasive than non-matching information. Clarkson et al. (2011) showed this matching effect only for those individuals who were certain of their initial attitudes. Edwards (1990) confirmed the effect for emotion-based attitudes in that individuals were more susceptible to emotion-based than to cognition-based persuasive information. For cognition-based attitudes, Edwards (1990) found a tendency to support for a matching-effect in a first study and no support in a second study.

A closer look at these studies shows that they were conducted in social psychology contexts and that they differ considerably from the research focus considered here. Fabrigar and Petty (1999), for example, induced the initial cognition- and emotion-based attitudes through a description of a fictitious animal in a more cognition-based or emotion-based style and then presented the respondents with persuasive arguments that were either cognitively or emotionally driven. Thus, it is difficult to make any inferences from these basic studies as to the effects of cognition- versus emotion-based advertising as a reaction to negative cognition-based product reviews, which are considered here.

A study conducted by Millar and Millar (1990) can provide interesting insights regarding the context considered here. They demonstrated a mismatching-effect for the situation in which negative cognition-based (emotion-based) attitudes were addressed with a cognition-based (emotion-based) ad. In this sense, Petty and Wegener (1998) argue that arguments matching an attitude basis are not always advantageous because they enable people to scrutinize these arguments and identify their weak points. According to Petty and Wegener (1998), the occurrence of the matching or mismatching effect is influenced by the arguments put forward in the persuasive message. When strong and persuasive arguments are presented, the matching effect should occur. However, when the arguments are less convincing, mismatching information should be more effective.

In our research, we consider the situation in which a company tries to compensate the detrimental effects of negative cognition-based reviews containing detailed criticism with the use of advertising. For a highly involving product such as a mobile phone, a point of criticism in a consumer review could be, for example, a lack of usability. A cognition-based ad could positively highlight the criticized aspects, such as high usability. An emotion-based ad would rather contain a slogan that could, for example, praise a unique product experience. In such a context, the following effects are plausible. Reviews written by consumers are likely to be perceived as more credible than information provided by the company (Godes and Mayzlin 2004; Krishnan et al. 2012). When arguments are presented by a less credible source, consumers tend to question the credibility of these arguments (Johnson and Izzett 1972) and develop counterarguments (Johnson and Scileppi 1969). Moreover, the information should be processed more thoroughly and scrutinized more intensely when both information sources focus on the same attributes and the content can therefore be easily compared (Zhang and Markman 1998, 2001). Consequently, in the context considered here, a mismatching effect should occur in that consumers faced with advertising (less credible) after contact with product reviews (highly credible) are likely to scrutinize and refute the advertising message. Furthermore, they should do so even more carefully if the information presented in the persuasive message matches the reviews encountered. Thus, when consumers read negative cognition-based reviews that contain detailed information about specific product attributes and are then confronted with a cognition-based ad that focuses on the same product attributes in a positive way, they are expected to carefully compare the two sources of information and refute the information provided by the company. In contrast, an emotional slogan that communicates on a non-cognitive level cannot be compared directly with the information provided in the reviews. Consequently, scrutinizing is more difficult and refuting is less likely.

Furthermore, the occurrence of a mismatching effect should be particularly strong in the situation considered here. This can be explained through the Elaboration Likelihood Model (Petty and Cacioppo 1986). According to this model, the extent to which people elaborate the arguments presented in a persuasive message depends on their motivation. In a situation in which people are highly motivated, people are likely

to scrutinize the arguments and relate them to their initial attitude towards an object, which is also referred to as central processing route. Such a situation can for example occur when consumers are interested in a high involvement product. When they see an advertisement for this product, they should be strongly motivated to scrutinize the product information provided in the ad (Petty et al. 1983). In contrast, when the motivation to process arguments is low, a more peripheral processing occurs (Petty and Cacioppo, 1986; Petty et al. 2004). In this research, we consider the situation in which consumers are interested in a high involvement product. Therefore, when confronted with an ad, they should show a strong motivation to scrutinize its content and compare it to their initial attitudes, which were formed based on the information provided in the cognition-based reviews. As a cognition-based ad addresses the central processing route, the arguments provided by the company should be salient and easily refutable. On the contrary, as emotion-based advertising addresses more peripheral processing routes, it is more difficult for consumers to build a link between an emotion-based ad and the arguments provided by the reviews. Thus, the effect of emotion-based advertising is less likely to be devaluated and this type of advertising should consequently be more effective in recovering consumers' negative attitudes.

Therefore, we assume:

H1: After encountering negative cognition-based online product reviews, emotion-based advertising has stronger recovery effects on consumers' attitudes than cognition-based advertising.

4.2.1.2. Negative effects of cognition-based versus emotion-based advertising

Although advertising can have positive effects on consumers' attitudes, company-based communication used to compensate the effects of negative reviews might also trigger negative reactions. According to research, the concepts of reactance (Brehm 1966; Brehm and Brehm 1981) and resistance (e.g. Tormala and Petty 2004; Tormala et al. 2007) play an important role in the context of the effectiveness of persuasive communication. Whereas some researchers do not clearly differentiate between these two constructs (e.g. Silvia 2006; Zuwerink Jacks and Devine 2000), other literature

suggests that reactance is a broader concept representing a motivational state which is aroused when people feel their freedom to act or think is threatened by an influence attempt (Brehm 1966). Such a motivational state can lead people to show resistance (Brehm and Brehm 1981; Fitzsimons and Lehmann 2004) in terms of protecting their attitudes from a persuasive influence (e.g. Ahluwalia 2000; Tormala and Petty 2002; Tormala et al. 2006). In this sense, resistance represents a behavioral component of reactance. As such, it will be treated in the following.

The occurrence of reactance can be identified through a person's reactions to a specific stimulus (Brehm 1972), such as attitude changes into a negative direction (e.g. Carver 1977). Clee and Wicklund (1980) argue that reactance effects can occur in various different contexts, such as advertising. Thus, in a context where a consumer reads highly credible negative reviews and is subsequently confronted with an ad that promotes the product positively, it is plausible that some consumers consider such company-based communication a manipulation attempt and that reactance is triggered.

The magnitude of the expressed reactance is likely to depend on the type of the encountered stimulus (Brehm 1966). Previous research provides the notion that consumers show negative attitudes and reduced behavioral intentions when they perceive a marketing tactic as manipulative (e.g. Campbell 1995; Cotte et al. 2005; Hibbert et al. 2007; Kirmani and Zhu 2007; Wentzel et al. 2010). Thus, even though cognition-based and emotion-based ads both represent persuasion attempts, consumers are likely to react differently depending on the ad content, as will be explained in the following. A cognition-based ad usually has an informative rather than a persuasive character (Santilli 1983), whereas the purpose of an emotion-based ad is to influence consumers' feelings and emotions towards products (Taute et al. 2011). One might argue that emotion-based ads, such as an ad displaying the product with a beautiful background, may not be considered manipulative. However, we are interested in an ad containing a slogan that aims to induce positive feelings towards the product. As consumers generally recognize slogans as an influence attempt (Laran et al. 2011), an emotion-based ad with such an emotional slogan should be perceived as more manipulative than a cognition-based ad. Thus, for those consumers who show negative reactions to an ad, an emotion-based ad should lead to stronger attitude

changes into a negative direction than a cognition-based ad. Therefore, we hypothesize:

H2: After encountering negative cognition-based online product reviews, emotion-based advertising leads to stronger attitude changes into a negative direction than cognition-based advertising.

4.2.2. Effects of consumers' propensity to show reactance

Some consumers might consider company-driven communication a threat to their freedom to form whatever attitude they wish (Brehm and Brehm 1981). Consequently, such consumers are likely to resist the persuasive message (Clee and Wicklund 1980) and show counter-reactions (Brehm and Brehm 1981) in terms of attitude changes into a negative direction (Carver 1977; Clee and Wicklund 1980; Wicklund and Brehm 1968). However, due to different life experiences, cultures or social environments, consumers differ in their definitions of freedom (Brehm and Brehm 1981) and their perceptions of threats, and thus in their predisposition to show reactance (Dillard and Shen 2005; Fitzsimons and Lehmann 2004; Miller et al. 2007; Quick and Stephenson 2008). Furthermore, consumers' strong predisposition does not necessarily mean that they are permanently in a state of reactance. It rather implies that high (as compared to low) predisposition causes stronger negative responses to specific stimuli (Dillard and Shen 2005) if these stimuli trigger reactance.

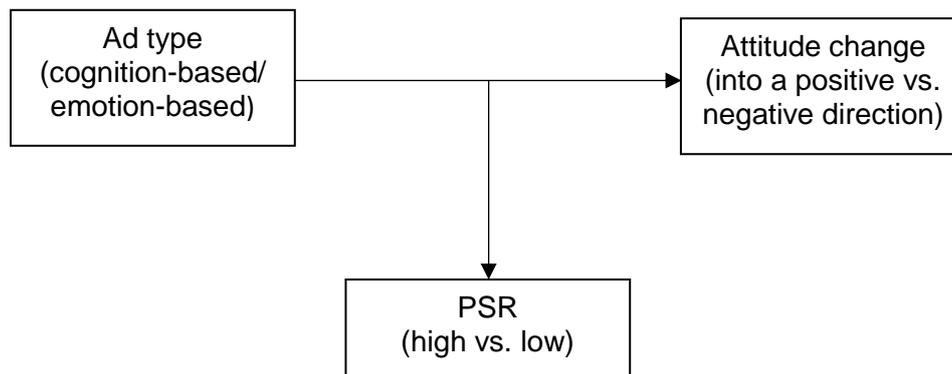
As consumers are exposed to many company-based persuasion attempts, such as advertising in newspapers and journals (Anderson and de Palma 2012), it is plausible that some consumers perceive an information overload caused by companies' communication strategies and thus develop a specific type of propensity to show reactance in response to advertising. In the context considered here, the contact with an ad is one such stimulus that might trigger reactance. Such an ad contact could lead consumers to resist the company's influence attempt and even to change their attitudes into a negative direction. Such a negative change should be stronger for high PSR consumers than for low PSR consumers. However, when reactance is not triggered and consumers change their attitudes into a positive direction, the level of PSR should

not make any difference. Furthermore, we assume that the level of PSR intensifies the negative effects of an emotion-based ad in comparison to a cognition-based one. Therefore:

H3: The more negative effects of emotion-based (vs. cognition-based) advertising are stronger when high PSR consumers (compared to low PSR consumers) are addressed.

The attitude change after contact with the two alternative ad types, from one which is initially negative due to contact with negative cognition-based reviews, can be illustrated as shown in Figure 2. Note that PSR only moderates the effects of ad type in the case of an attitude change into a negative direction because a change into a positive direction means that no reactance is triggered and thus PSR plays no role.

Figure 2: Effects of ad type and PSR on attitude change



4.3. Empirical studies

4.3.1. Preliminary study

Purpose: The purpose of the preliminary study was to show the destructive effects of negative cognition-based product reviews on consumers' attitudes. A differentiation for a familiar versus an unfamiliar brand was made in order to see whether attitude changes differ depending on brand familiarity. Furthermore, we aimed to test the appropriateness of the stimulus material for the main studies.

Test product and brands: The test product was a complex, technical high-involvement product because specifically for such products, consumers engage in intensive information search processes (Divine 1995) and are thus motivated to read product reviews (Ha 2002). We selected a multimedia-based mobile phone as the test product because visiting several opinion platforms such as epinions.com and ciao.de showed that many consumers publish reviews about mobile phones.

Appropriate brand names were identified in a pretest. Fifteen respondents were asked to rate nine brand names based on the three aspects "I have a lot of experience with this brand", "The brand is familiar to me", "I know a lot about this brand" (e.g. Graeff 2007, Kent and Allen 1994; $\alpha = 0.99$; 1 = totally disagree to 7 = totally agree). Based on the resulting mean values (Glofiish: $M = 1.13$, CECT: $M = 1.29$, HTC: $M = 1.64$, LG: $M = 2.47$, BenQ: $M = 2.93$, Samsung: $M = 4.67$, Motorola: $M = 6.13$, Sony Ericsson: $M = 6.13$, Nokia: $M = 6.87$), we selected the brands with the lowest (Glofiish) and highest (Nokia) values. In order to ensure that the respondents did not have extremely negative or positive initial attitudes towards the brand, which could bias the results, another 20 respondents were asked to indicate their attitude towards those brands, such as Nokia and Samsung, that obtained mean values above or around the scale mid-point (4) and were thus qualified as moderately or very familiar. These initial attitudes towards the brands were measured based on the statements "I like the brand", "The brand is appealing", "The brand stands for good quality" (e.g. Biehal et al. 1992; Gardner 1985; Graeff 2007; $\alpha = 0.86$; 1 = totally disagree to 7 = totally agree). The resulting mean value of $M = 4.75$ shows that consumers' attitudes towards the brand Nokia are neither negative nor extremely positive. The initial attitudes towards those brands with low scale values for familiarity, such as Glofiish, were not measured because people usually do not have attitudes towards unfamiliar brands.

Test reviews: According to previous research, reviews which provide detailed objective information about the product are highly persuasive, whereas rather subjective reviews written in an emotional style are less persuasive (Park et al. 2007). Our examination of reviews posted on several opinion platforms confirms this distinction: cognition-based reviews which contain information about important product attributes are usually rated higher on usefulness and quality, and have a higher number of hits than emotion-based reviews.

We focus on the effects of such cognition-based reviews because previous research has shown that they have a greater impact on consumers' purchase intentions (Park et al. 2007) and are more harmful to companies (Bambauer-Sachse and Mangold 2012). As such reviews usually contain about 350 words and consumers read on average 2.6 reviews (Bambauer-Sachse and Mangold 2011), we used three reviews of about this length as test stimuli. In order to select highly persuasive negative reviews, 20 respondents were asked in a pretest to read six cognition-based reviews attentively and to rate them using the statement "The product review is persuasive" (scale: 1 = totally disagree to 7 = totally agree). Based on the resulting mean values (review 1: $M = 5.2$, review 2: $M = 5.5$, review 3: $M = 5.7$, review 4: $M = 5.0$, review 5: $M = 5.1$, review 6: $M = 5.0$), we selected the three most persuasive reviews.

The test reviews were presented in an authentic layout in order to make the situation as realistic as possible (Appendix 1). For example, in accordance with research conducted by Sen and Lerman (2007), a review helpfulness rating of other consumers was displayed because such a rating is often provided in real reviews (Mudambi and Schuff 2010). As we are only interested in the effects of highly persuasive reviews, the helpfulness rating displayed was high for each review and not manipulated (high vs. low helpfulness) in the studies that will be presented in the following. The review content was kept constant across brands and only the brand name differed.

Sample and Procedure: The respondents were 58 Swiss students (undergraduate, graduate and doctoral students, 53.4% women, 46.6% men, average age: 24.10). We chose students as respondents for our empirical studies because they had proved to be a suitable target group in previous research on the effects of online word-of-mouth communication (e.g. Chan and Cui 2011; Chatterjee 2001; Chiou and Cheng 2003; Huang and Chen 2006; Khare et al. 2011; Park and Lee 2009; Schlosser 2011; Sen and Lerman 2007; Xue and Zhou 2011). No incentives were offered to the respondents in the preliminary and the main studies. We presented the respondents with the following scenario: "Imagine that you are planning to purchase a new mobile phone and that you are particularly interested in the one you see here." [*Contact with the picture and description of the mobile phone*]. "Please evaluate the mobile phone" [*First evaluation of the test product*]. "Now, assume that before making your final purchase decision, you go to an online opinion platform in order to read some reviews from other

consumers about this product to ensure you make the right decision. You find the following reviews. Please read them carefully.” [*Contact with three negative reviews, presented in a varying order*]. [...] “Please now evaluate the mobile phone again.” [*Second evaluation of the test product*]. At the end of the questionnaire, the respondents indicated their age and gender. Before evaluating the phone a second time, the respondents had to answer several distracting questions in order to avoid them concentrating too much on the repeated evaluation measure.

Measures: Taking the suggestion of previous research to measure the dependent variable before and after the respondents’ contact with a specific stimulus and using the difference as the focal construct in order to capture the effectiveness of persuasive communication (e.g. Ahluwalia 2000; Muthukrishnan and Chattopadhyay 2007; Tormala et al. 2006), we measured attitudes in terms of product evaluations before and after respondents’ contact with the ad. We used five statements (“This product seems to be of high quality”, “This product is reliable”, “This is a high performance product”, “I like this product”, “I am interested in this product”; e.g. Malaviya 2007; Bouten et al. 2011; $\alpha_{\text{before}} = 0.88$; $\alpha_{\text{after}} = 0.83$; 1 = totally disagree, ..., 7 = totally agree) in order to determine the attitude change caused by the contact with the reviews. Given that product attitudes might differ from person to person after contact with negative reviews and given that their initial product attitudes represent the starting point for the attitudes formed after contact with the reviews, we consider the attitude change resulting from the before/after comparison to be more reliable in the context considered here than simply analyzing the attitudes resulting from contact with the reviews. Alternatively, a control group could have been used instead of the before-after measurement. However, with such an experimental design, it would not have been possible to gain insights into the effects of the reviews on an individual level. Moreover, if a control group had been used, the cognitive effort to process the stimulus material might not have been the same across groups because people in the experimental groups would have read three relatively long online product reviews, whereas people in the control group would have been presented with no information or a neutral text. Therefore, we decided to use consumers’ attitude changes as the focal construct in the empirical studies.

Results: The attitude changes after contact with the reviews are shown in Table 17.

Table 17: Attitude changes depending on brand familiarity

	Familiar brand (n = 29)	Unfamiliar brand (n = 29)
b	4.90 (1.15)	3.83 (0.95)
a	2.54 (0.77)	1.87 (0.90)
a-b	-2.35 (0.88)	-1.97 (0.99)

Note: SD indicated in parentheses
b: product evaluation *before* contact with the reviews
a: product evaluation *after* contact with the reviews
a-b: attitude change (all changes are significant at the 0.01 level)

The results in Table 17 show that negative online product reviews cause attitude changes into a negative direction. An independent samples t-test additionally reveals that these changes are equally strong for both the familiar and the unfamiliar brand ($t = 1.57$; $p > 0.10$). Consistent with previous research (Chiou and Cheng 2003; Huang and Chen 2006), the results of the preliminary study provide support for the detrimental effects of negative online product reviews. Moreover, these effects are captured more precisely than in previous studies by using a before-after measurement, by using more systematic combinations of positive and negative reviews, and by controlling for message content effects (positive and negative reviews in previous studies contained different aspects of product information). Given these destructive effects, it is important for marketers to recognize this problem and to develop appropriate recovery strategies. Therefore, we will examine the effects of advertising strategies that could be launched for this purpose in the following.

4.3.2. Study 1

Purpose: The first objective of this study was to analyze whether consumers who have read negative product reviews and then see an ad for this product show rather positive or negative reactions. The second objective was to analyze whether cognition-based or emotion-based advertising is more appropriate to recover the detrimental effects of negative reviews in the specific situation where consumers encounter only negative reviews because this situation represents the worst case for a company.

Experimental design: A 2 (ad: cognition-based vs. emotion-based) x 2 (brand familiarity: high vs. low) between-subjects design was used as will be explained in the following. The respective ads are shown in Appendix 2. The respondents were faced with either the cognition-based or the emotion-based ad that aimed to recover the detrimental effects of the product reviews encountered previously. In order to control for possible brand effects, we used the same familiar and unfamiliar brands as in the preliminary study. The ad layout and the picture of the test product were kept constant across experimental conditions. Thus, only the ad content (cognition-based information vs. emotional slogan) and the brand differed across test ads.

Test ad pretest: The objectives of this pretest were to test whether the cognition-based (emotion-based) ad was perceived as such and to identify the emotional slogan which triggered the most positive attitude towards the ad. The layout of the fictitious test ads consisted of a product picture and a neutral color element. No brand information was provided in the pretest in order to avoid biasing effects. The cognition-based test ad highlighted the most important points of criticism about the mobile phone mentioned in the test reviews (bad quality of the camera, short battery life, lack of usability of the touch-display and insufficient internal data space) in a positive way. For the emotion-based ad, we developed and tested several slogans (see Table 18) with varying degrees of emotionality in order to examine to what extent they were perceived as rather emotion-based or cognition-based. Thus, six alternative slogans were developed. The emotional slogans were integrated into test ads and tested in a pretest together with the cognition-based ad. The cognition-based ad contained slightly more information than the emotion-based ad, which is typical for the two different ad types. However, we ensured that the difference in the amount of information was not too large in order to avoid any bias which might be caused by considerably different levels of cognitive effort needed to process the ads. The 54 participants in the pretest received the seven ads in a varying order and were asked to indicate their attitude towards the ad (“I like the ad”, “The ad raises my interest in the product”) following the recommendations of Biehal et al. (1992); Gardner (1985) and Mitchell and Olson (1981). Furthermore, the respondents were asked to rate the persuasiveness of the ad (“The ad is persuasive”). As an analysis of reliability over the three items showed a sufficiently high Cronbach’s Alpha ($\alpha = 0.91$), we aggregated these three items and

calculated a mean value for the construct attitude towards the ad.

Moreover, the perception of the ad as rather cognition-based or emotion-based was measured by two statements which referred to the cognition-based character of the ad (“ad highlights usefulness of the product”/“focuses on product functionality”; $r = 0.85$) and two statements that referred to emotionality (“ad highlights a positive product experience”/“elicits emotions”; $r = 0.69$) which were aggregated respectively. Please note that we indicate correlation coefficients and no Cronbach’s Alpha values when only two items are used to measure the constructs of interest as recommended by Verhoef (2003). All items were rated on seven-point scales (1 = totally disagree, ..., 7 = totally agree). The results of the ad pretest are presented in Table 18.

Table 18: Results of the ad pretest

Ad type	Attitude towards the ad	Ad perception	
		Cognition-based	Emotion-based
Emotion-based ad with slogan 1 (“More than just a mobile phone”)	3.20	1.83	5.39
Emotion-based ad with slogan 2 (“Expect more from your mobile phone”)	4.20	1.85	5.71
Emotion-based ad with slogan 3 (“Best quality for you”)	3.19	1.94	5.76
Emotion-based ad with slogan 4 (“Quality you can count on”)	3.55	2.06	5.81
Emotion-based ad with slogan 5 (“Technology that makes you dream”)	4.90	1.86	5.81
Emotion-based ad with slogan 6 (“Best quality and much more”)	4.11	1.97	5.89
Cognition-based ad	4.67	5.63	2.34

The results in Table 18 suggest that the tested emotional slogans were perceived to be rather emotion-based than cognition-based even though they evoke rather

cognition-based aspects, such as quality and technology. Furthermore, they show that the slogan “Technology that makes you dream” evoked the most positive attitude towards the ad ($M = 4.90$) and scored high on the emotion-related items ($M = 5.81$) as well as low on the cognition-related items ($M = 1.86$) and was thus selected. The cognition-based ad also evoked a relatively positive attitude towards the ad ($M = 4.67$) and was perceived, as intended, as rather cognition-based ($M = 5.63$) than emotion-based ($M = 2.34$). There was no significant difference between respondents’ attitude towards the cognition-based and the emotion-based ad ($p_{\text{Scheffé}} > 0.10$).

Sample and procedure: The initial sample consisted of 402 Swiss students (undergraduate, graduate and doctoral students, 55% women, 45% men, average age: 29.1 years) from different areas of study. An official email list of the university was used to contact the respondents with an email that contained a link to an online questionnaire. After the elimination of those respondents who did not show an attitude change, a final sample of 385 respondents (average age and gender structure remained unchanged) resulted.

The respondents were asked to imagine that they intended to purchase a new mobile phone and saw a picture of and technical information about the product. Then, the respondents were provided with the product reviews (in a counterbalanced order). They were asked to read them as thoroughly as in a real situation in which they were looking for such information before making a purchase decision. Afterwards, the respondents had to evaluate the product for the first time. The subsequent instructions were as follows: “Now assume that shortly after having read the reviews, you see the following ad in the newspaper.” [*Contact with the cognition-based or the emotion-based ad; the respondents could decide freely how long they looked at the ad*]. “Please now evaluate the product again.” [*Second evaluation of the test product*]. Finally, the respondents had to indicate their age and gender and to evaluate the ad as rather cognition-based or emotion-based. Again, we included several irrelevant and distracting questions before the respondents were asked to make the second evaluation.

Measures: The attitude measurement was the same as in the preliminary study ($\alpha_{\text{before}} = 0.94$; $\alpha_{\text{after}} = 0.91$; 1 = totally disagree, ..., 7 = totally agree). Given

that the initial attitudes represent the starting point for the attitudes formed after contact with the ad, in accordance with the preliminary study, we consider the attitude change resulting from the before/after comparison to be more reliable in the context considered here than simply analyzing the attitudes that result from contact with the ad. Furthermore, we measured the respondents' perceptions of the ad type as described for the ad pretest ($r_{\text{cognition-based}} = 0.84$; $r_{\text{emotion-based}} = 0.83$). All items were rated on seven-point scales.

Results: The results of the manipulation check for the ad type show that the cognition-based ad was ranked significantly higher on the cognition-related items than the emotion-based ad ($M_{\text{cognition-based ad}} = 3.81$, $M_{\text{emotion-based ad}} = 3.18$, $t = 5.94$, $p < 0.001$) and vice versa ($M_{\text{emotion-based ad}} = 4.23$, $M_{\text{cognition-based ad}} = 2.80$, $t = 9.10$, $p < 0.001$). In order to test the first hypothesis, we used the initial sample (including the "no change" respondents). In Table 19 we present the mean values of the respondents' attitudes before and after contact with the respective ad as well as the attitude changes both for the pooled sample and differentiated for test brands.

Table 19: Attitude changes depending on the ad type (initial sample)

Ad type	Pooled sample		Familiar brand		Unfamiliar brand	
	Cognition-based (n = 194)	Emotion-Based (n = 208)	Cognition-based (n = 106)	Emotion-based (n = 99)	Cognition-based (n = 88)	Emotion-based (n = 109)
b	2.79 (1.45)	3.02 (1.74)	3.18 (1.38)	3.67 (1.68)	2.32 (1.40)	2.43 (1.58)
a	4.36 (1.30)	4.45 (1.35)	4.75 (1.14)	5.00 (1.23)	3.88 (1.33)	3.95 (1.26)
a-b	1.57 (1.35)	1.43 (1.68)	1.57 (1.46)	1.33 (1.78)	1.56 (1.21)	1.52 (1.59)

Note: SD indicated in parentheses

b: product evaluation after contact with the reviews and *before* contact with the ad

a: product evaluation *after* contact with the ad

a-b: attitude change (all changes are significant at the .01 level)

The results of an analysis of variance show that the type of advertising has no significant effect on attitude changes ($F = 0.87$, $p > 0.10$). Thus, the data of the initial sample do not provide support for H_1 . Furthermore, neither the brand nor the interaction of the brand and the ad type has any effect on attitude changes (brand: $F = 0.38$, $p > 0.10$; brand*ad type: $F = 0.39$, $p > 0.10$). Interestingly, a check of the attitude

changes in the initial data set indicates that not all respondents showed changes into a positive direction after contact with the ad. Instead, a considerable percentage of the respondents (17%) showed changes into a negative direction, and a small percentage showed no change (4%). The direction of the attitude change did not depend on the ad type (chi-square = 3.82, $p > 0.10$). The fact that some respondents showed a change into a positive direction whereas others showed no change or a change into a negative direction cancelled out the ad effects, which explains why no effect of ad type could be found in the initial sample. Therefore, a differentiation for the change into a positive direction and a change into a negative direction will be made for the following analyses. As the focus of this paper is on analyzing the effects of advertising strategies, it makes no sense to consider respondents who were not affected by the tested advertising strategies. Therefore, those few respondents will be excluded from further analyses. Table 20 shows the effects of ad type on attitude changes differentiated for those people who showed changes into a positive direction and those who showed changes into a negative direction.

Table 20: Attitude changes depending on the ad type, differentiated for the direction of the attitude change (sample without “no change”)

Attitude change into a positive direction						
Ad type	Pooled sample		Familiar brand		Unfamiliar brand	
	Cognition-based (n = 160)	Emotion-based (n = 156)	Cognition-based (n = 82)	Emotion-based (n = 72)	Cognition-Based (n = 78)	Emotion-based (n = 84)
b	2.52 (1.30)	2.45 (1.42)	2.80 (1.20)	3.10 (1.49)	2.22 (1.35)	1.88 (1.08)
a	4.48 (1.24)	4.59 (1.30)	4.92 (1.07)	5.21 (1.14)	4.02 (1.25)	4.06 (1.20)
a-b	1.96 (1.14)	2.14 (1.23)	2.12 (1.17)	2.11 (1.34)	1.80 (1.08)	2.18 (1.13)
Attitude change into a negative direction						
Ad type	Pooled sample		Familiar brand		Unfamiliar brand	
	Cognition-based (n = 26)	Emotion-based (n = 43)	Cognition-Based (n = 19)	Emotion-based (n = 22)	Cognition-based (n = 7)	Emotion-based (n = 21)
b	4.34 (1.24)	4.84 (1.31)	4.53 (1.18)	5.05 (1.15)	3.83 (1.34)	4.61 (1.45)
a	3.95 (1.26)	3.96 (1.26)	4.12 (1.23)	4.13 (1.20)	3.49 (1.33)	3.78 (1.34)
a-b	-0.39 (0.23)	-0.88 (0.76)	-0.41 (0.25)	-0.92 (0.87)	-0.34 (0.19)	-0.83 (0.63)

Note: SD indicated in parentheses
b: product evaluation after contact with the reviews and *before* contact with the ad
a: product evaluation *after* contact with the ad
a-b: attitude change (all changes are significant at the .01 level)

The analyses on brand level provide similar result patterns with regard to the two following aspects. First, the attitude changes into a positive direction are equally strong

for the cognition-based and the emotion-based ad. Second, the attitude changes into a negative direction are stronger for the emotion-based ad. Therefore, the results for the pooled sample will be interpreted in the following.

The results in Table 20 show that consumers in the “positive change” group react similarly to cognition-based and emotion-based advertising ($2.14 - 1.96 = 0.18$, $t = 0.95$, $p > 0.10$). Thus, $H1$ can be confirmed. On the contrary, consumers in the “negative change” group show stronger attitude changes into the negative direction if an emotion-based ad (compared to a cognition-based ad) is used ($-0.88 - (-0.39) = -0.49$, $t = -3.04$, $p < 0.001$), which provides support for $H2$. As some consumers react positively whereas others react negatively to advertising that aims to recover the effects of negative reviews, we will examine in Study 2 to what extent consumers’ predisposition to show reactance in response to advertising is able to explain this phenomenon. We assume that such a predisposition is not the factor which determines positive and negative reactions, but rather the degree to which consumers react negatively.

The results pooled across ad type further show that the attitudes after contact with the negative reviews (first attitude measurement) are more negative in the “positive change” group ($M = 2.48$) than in the “negative change” group ($M = 4.65$, $t = 12.09$, $p < 0.001$). Possible reasons for this phenomenon will be analyzed in Study 2.

4.3.3. Study 2

Purpose: The first objective was to validate the findings of Study 1 using a larger sample. The second purpose was to examine in more detail the phenomenon observed in Study 1 that consumers who changed their attitudes into a positive direction after contact with the ad (“positive change” group) showed much more negative attitudes after their contact with negative reviews than consumers in the “negative change” group. The third objective was to analyze the role of consumers’ PSR in the context of consumer reactions to advertising which aims to recover the negative effects of online reviews.

Experimental design: A two-group design, based on the ad type, was used in Study 2.

This was based on the same test product (mobile phone), the same sets of negative reviews and the same test ads as Study 1. Only the test brand differed from Study 1 (see Appendix 3).

Qualitative study: In order to gain basic insights into why consumers react differently to negative *reviews* (attitude after contact with the reviews) as well as to *advertising* (attitude after contact with the ad) that aims to recover the negative effects of such reviews, an exploratory group discussion of about one hour was conducted before the second main study was planned. Five graduate students, who regularly read online product reviews, were asked to put themselves into the situation of planning to purchase a high-involvement product (i.e. new mobile phone). Subsequently, the same three negative cognition-based reviews as in the preliminary study and the first main study were provided and they were asked to read them as if they had looked for such reviews on a real platform. Afterwards, they were presented with the ads used in Study 1 (cognition-based and emotion-based) and asked to imagine that they had come across these ads in an everyday situation. Then, they were asked to express spontaneously what they thought about the reviews, the ads and a possible purchase of the mobile phone. Afterwards, they were asked how they judged their processing of the reviews (in terms of their self-estimations of how thoroughly they had read and elaborated on the reviews) and how they perceived their reaction to the ad. The participants described considerable differences with regard to how carefully they had processed the reviews. The three participants who indicated that they had read the reviews thoroughly seemed to be more negatively influenced in their attitudes than the other two participants. Thus, reviews can affect people's attitudes differently depending on the extent of processing and as a result, attitudes can differ considerably after contact with negative reviews. Consequently, in the second main study, we decided to measure consumers' judgments of their processing as well as of whether the reviews provided a sufficient basis for forming an attitude, in order to examine whether these variables can explain the phenomenon that the people in the "positive change" group have less positive attitudes towards the product after their contact with the reviews than the people in the "negative change" group. The second interesting conclusion that can be drawn is that the same three discussion participants who seemed to be more negatively influenced by the reviews reported positive thoughts about the ad, whereas

the other two were rather annoyed. The latter respondents mentioned that they did not believe what the company was trying to tell them about the product and that they would not purchase it because of this ad. Such negative reactions can be interpreted in terms of consumer reactance, which will also be examined in more detail in Study 2.

Sample procedure and test brand: The initial sample (sample without “no change” respondents) consisted of 982 (911) Swiss students (undergraduate, graduate and doctoral students; 60% women, 40% men for both samples, average age: 27.4 (26.6) years) from different areas of study. The official university email list was used to send out a link to the online questionnaire.

The basic procedure of Study 2 was the same as for Study 1. In addition, the participants were asked to indicate how carefully they thought they had processed the reviews, to what extent they judged that the reviews provided a sufficient basis to form an attitude and to rate their PSR in response to advertising. Again, a mobile phone was used as the high-involvement test product. As Study 1 had shown that attitude changes did not differ depending on respondents’ brand familiarity, we only used one brand for Study 2. Based on the brand selection pretest described in the preliminary study, we chose the brand Samsung, which represented a brand moderately familiar to the respondents. Again, respondents’ attitude towards the brand that was also measured in the ad pretest was neither negative nor extremely positive ($M = 4.63$; scale: 1 = totally disagree to 7 = totally agree).

Measures: We measured attitudes using the same items and procedures as in the preliminary study ($\alpha_{\text{before}} = 0.93$; $\alpha_{\text{after}} = 0.89$). Respondents’ perceptions of the ad type were measured using one bipolar item (1 = cognition-based ad, ..., 7 = emotion-based ad) instead of several items because the ads had proven to be perceived as intended in Study 1.

In addition, we measured how consumers judged their processing of the reviews (“I read the reviews carefully”, “I processed the reviews thoroughly”; $r = 0.62$) and the consumers’ judgments of whether the reviews provided a sufficient basis for forming an attitude (“I think that I can assess the product appropriately after having read the reviews”). We used two and one statement respectively so as not to extend questionnaire length unnecessarily as experience with the preliminary study and Study

1 had shown that processing the stimulus materials and filling in the questionnaire took quite a while. The concept “judgment of processing” can be clearly separated from the concept “judgment of whether reviews provided a sufficient basis for forming an attitude” as the inter-concept correlation of 0.30 is weak (Evans 1996). Moreover, we operationalized consumers’ PSR to advertising with two statements (“I am irritated if companies try to influence me through advertising”, “It bothers me if I am influenced in my consumption decisions by advertising”; $r = 0.50$) as will be argued in the following. Previous research on reactance as a personality trait, which used typical scales, such as Hong’s Psychological Reactance Scale (Hong 1992; Hong and Faedda 1996; Hong and Page 1989), was conducted in contexts that differ considerably from the one considered here, e.g. health-related communication (Dillard and Shen 2005; Miller et al. 2007; Quick and Stephenson 2008). A scale developed for a completely different context is less appropriate for measuring the specific type of trait reactance considered here (i.e. consumers’ predisposition to show reactance in response to advertising). As argued by Donnell et al. (2001) and Hong and Page (1989), the feeling of irritation in response to an influence attempt can serve as an indicator of trait reactance. It has also been demonstrated in previous research that advertising can evoke such a feeling of being irritated (e.g. Aaker and Bruzzone 1985; Edwards et al. 2002). Therefore, we operationalized PSR through consumers’ general feeling of being irritated or bothered by advertising in terms of a company-initiated persuasion attempt.

Results: The ad manipulation as rather cognition-based or rather emotion-based was successful ($M_{\text{cognition-based ad}} = 2.60$, $M_{\text{emotion-based ad}} = 4.95$, $t = 21.18$, $p < 0.001$).

The same procedure as for Study 1 was used in the first step. Thus, Table 21 displays the results for the initial sample and the results differentiated for attitude changes into a negative and positive direction based on the sample from which the “no change” respondents were excluded. A check of the initial sample of Study 2 revealed that 13% of the respondents showed attitude changes into a negative direction, and 7% showed no attitude change. Again, the direction of the attitude change did not depend on the ad type (chi-square = 0.93, $p > 0.10$).

Table 21: Replication of the results of Study 1

Analysis based on the initial sample		
Ad type	Cognition-based (n = 499)	Emotion-based (n = 483)
b	2.55 (1.43)	2.55 (1.36)
a	3.96 (1.34)	4.06 (1.26)
a-b	1.41 (1.30)	1.51 (1.38)
Analysis based on the sample without “no change” respondents, attitude change into a positive direction		
Ad type	Cognition-based (n = 397)	Emotion-based (n = 396)
b	2.26 (1.19)	2.29 (1.13)
a	4.10 (1.21)	4.23 (1.12)
a-b	1.84 (1.08)	1.94 (1.09)
Analysis based on the sample without “no change” respondents, attitude change into a negative direction		
Ad type	Cognition-based (n = 61)	Emotion-based (n = 57)
b	4.21 (1.29)	4.18 (1.56)
a	3.82 (1.31)	3.46 (1.49)
a-b	-0.39 (0.19)	-0.72 (0.66)

Note: SD indicated in parentheses
b: product evaluation after contact with the reviews and *before* contact with the ad
a: product evaluation *after* contact with the ad
a-b: attitude change (all changes are significant at the 0.01 level)

The results in Table 21 have the same pattern as the findings of Study 1 in that attitude changes into a positive direction do not differ depending on ad type, but are stronger into a negative direction for the emotion-based ad. Thus, they validate these findings. The next step consists of analyzing whether the consumers in the two groups differ in their processing of the product *reviews*. The results of t-tests show that consumers in the “positive change” group judged their processing of the negative reviews as more careful (“positive change” group: $M = 4.39$ vs. “negative change” group: $M = 3.72$, $t = 4.14$, $p < 0.001$) and were more convinced that the reviews provided a sufficient basis for forming an attitude than consumers in the “negative change” group (“positive change” group: $M = 5.24$ vs. “negative change” group: $M = 4.41$, $t = 5.70$, $p < 0.001$). These results suggest that the considerably more negative attitudes after contact with the *reviews* in the “positive change” group are due to these consumers processing the reviews more carefully and thus, being more strongly influenced by them.

Furthermore, the consumers in the “positive change” group, who have more negative attitudes after their contact with negative reviews and who react to the ad with attitude changes into a positive direction, seem to be susceptible to reviews written by

consumers and to company-driven advertising. The consumers in the “negative change” group are less susceptible to negative reviews and are not influenced by advertising in the intended way. They instead show negative reactions. Even though we demonstrated in our preliminary study that negative online product reviews generally cause attitude changes into a negative direction, the results of Study 2 suggest that some consumers (those in the “negative change”) group are less negatively influenced by reviews than others (those in the “positive change” group).

In the next step, we examine the role of consumers’ PSR in the context of consumers’ reactions to the *ad*. A basic analysis of PSR in the two groups provides the notion that the consumers in the “positive change” group are not generally characterized by lower levels of PSR ($M = 3.75$) than those in the “negative change” group ($M = 3.77$, $t = 0.13$, $p > 0.10$). An additional look at the minimum and maximum values of PSR as well as the standard deviations (“positive change” group: min = 1, max = 7, SD = 1.22; “negative change” group: min = 1, max = 6.5, SD = 1.35) shows that PSR varies considerably in both groups. Thus, as we assumed, consumers’ PSR cannot explain why some consumers react positively to advertising and others negatively. Consequently, we will examine PSR in more detail by differentiating for the level of PSR. In accordance with previous research (e.g. Fitzsimons and Lehmann 2004; Kwon and Chung 2010), the differentiation for low and high PSR level was based on a median split (values above the median designate a high PSR level). The results are presented pooled across and differentiated for the ad types, both for the data pooled across attitude change groups and differentiated for attitude change groups. The results are shown in Table 22.

Table 22: The role of PSR and ad type in the context of consumers' attitude changes after contact with advertising

Data pooled across attitude change groups						
	Low PSR level	High PSR level	Low PSR level	High PSR level	Low PSR level	High PSR level
Ad type	Pooled across ad types		Cognition-based	Emotion-based	Cognition-based	Emotion-based
	(n = 449)	(n = 462)	(n = 231)	(n = 218)	(n = 227)	(n = 235)
b	2.39 (1.26)	2.65 (1.43)	2.43 (1.31)	2.35 (1.21)	2.60 (1.43)	2.70 (1.44)
a	3.97 (1.19)	4.22 (1.22)	3.91 (1.18)	4.04 (1.20)	4.22 (1.24)	4.22 (1.19)
a-b	1.58 (1.26)	1.57 (1.37)	1.48 (1.25)	1.69 (1.26)	1.62 (1.27)	1.52 (1.46)
Attitude change into a positive direction						
	Low PSR level	High PSR level	Low PSR level	High PSR level	Low PSR level	High PSR level
Ad type	Pooled across ad types		Cognition-based	Emotion-based	Cognition-based	Emotion-based
	(n = 394)	(n = 399)	(n = 196)	(n = 198)	(n = 201)	(n = 198)
b	2.18 (1.10)	2.37 (1.21)	2.14 (1.10)	2.22 (1.10)	2.37 (1.26)	2.37 (1.15)
a	4.04 (1.17)	4.30 (1.15)	3.94 (1.19)	4.13 (1.14)	4.27 (1.21)	4.33 (1.09)
a-b	1.86 (1.09)	1.93 (1.08)	1.80 (1.08)	1.91 (1.10)	1.90 (1.07)	1.96 (1.09)
Attitude change into a negative direction						
	Low PSR level	High PSR level	Low PSR level	High PSR level	Low PSR level	High PSR level
Ad type	Pooled across ad types		Cognition-based	Emotion-based	Cognition-based	Emotion-based
	(n = 55)	(n = 63)	(n = 35)	(n = 20)	(n = 26)	(n = 37)
b	3.91 (1.29)	4.43 (1.49)	4.09 (1.17)	3.60 (1.46)	4.36 (1.44)	4.49 (1.54)
a	3.53 (1.30)	3.74 (1.49)	3.77 (1.18)	3.12 (1.43)	3.88 (1.48)	3.65 (1.51)
a-b	-0.38 (0.18)	-0.69 (0.64)	-0.32 (0.15)	-0.48 (0.19)	-0.48 (0.20)	-0.84 (0.78)

Note: SD indicated in parentheses
b: product evaluation after contact with the reviews and *before* contact with the ad
a: product evaluation *after* contact with the ad
a-b: attitude change (all changes are significant at the 0.01 level)

For the data pooled across ad types and attitude changes, independent samples t-tests show that the PSR level has no effect on attitude changes ($t = 0.13$, $p > 0.10$). This suggests that it makes sense to differentiate for attitude changes into a positive and negative direction. The results based on the data pooled across ad types for the “positive change” group show that the PSR level does not make a difference ($t = 0.94$, $p > 0.10$). However, as expected in $H3$, the PSR level has a significant influence on attitude changes into a negative direction ($t = 3.75$, $p < 0.001$) in that respondents with a high PSR level show a stronger attitude change into a negative direction after contact with the ad than respondents with a low PSR level. These findings confirm the assumption that the level of PSR only makes a difference when reactance is triggered,

which is not the case when consumers are positively influenced by advertising. Furthermore, the findings show that high PSR does not necessarily imply that reactance is triggered in response to a stimulus. However, when reactance is triggered, negative reactions are stronger for high than for low PSR consumers. Interaction effects of consumers' PSR and ad type are examined in the following. For the data pooled across attitude change groups, the results of an analysis of variance show that neither the PSR level nor ad type nor their interaction has an effect on the attitude change (PSR: $F = 0.02$, $p > 0.10$; ad type: $F = 0.42$, $p > 0.10$; PSR*ad type: $F = 3.30$, $p > 0.50$).

A closer look at the "negative change" group shows that the more negative attitude changes caused by emotion-based (vs. cognition-based) advertising are even stronger for high than for low PSR consumers (low PSR: $-0.48 - (-0.32) = -0.16$; high PSR: $-0.84 - (-0.48) = -0.36$; $t = -8.62$, $p < 0.001$). Thus, $H3$ is supported.

4.4. General discussion

The starting point of the studies presented above was the observation that companies are facing an increasing number of consumer product reviews on the Internet. Specifically, negative, cognition-based reviews represent a serious threat to companies because of their highly persuasive character and their detrimental effects. Thus, it is important for companies to find appropriate communication strategies with which consumers' negative attitudes can be recovered. We started from the idea that when consumers read negative online reviews about a product and are subsequently confronted with an ad for this product, two completely different types of reactions (attitude changes into a positive or negative direction) can occur in response to such a company-based persuasion attempt. For those who react positively, we assumed that the emotion-based ad would lead to even more positive reactions than the cognition-based one. However, when reactance is triggered through consumers' confrontation with two contradictory persuasive messages (i.e. negative consumer-based product review vs. positive company-based ad), we assumed that the emotion-based ad would lead to more negative attitude changes than the cognition-based one.

A preliminary study was conducted to prove the detrimental effects of such reviews on consumers' attitudes. The results show that, independently of brand familiarity, consumers show an attitude change into a negative direction. Furthermore, we conducted two main studies in order to identify appropriate advertising strategies that companies could use to recover such negative effects and to examine the role of consumers' PSR in this context. The results of both studies show that, although the majority of consumers (Study 1: 79%, Study 2: 80%) are likely to show positive reactions to both cognition-based and emotion-based ads, a considerable percentage of respondents (Study 1: 17%, Study 2: 13%) shows negative reactions which are of particular interest for the present research focus. The results show that these negative reactions are even stronger if emotion-based advertising is used. Thus, advertising is not always able to recover consumers' attitudes which are negative due to contact with negative reviews.

An additional finding of Study 1 was that after contact with negative reviews, the consumers in the "positive change" group have more negative attitudes than the consumers in the "negative change" group. A possible explanation could be that the first group of consumers is more strongly influenced by both peer-to-peer communication and company-driven advertising than the second group. This is specifically interesting because two completely different sources of information cause the observed reactions. Those consumers who are strongly influenced by the negative reviews and consequently have comparatively negative attitudes after contact with the reviews show clear attitude changes into a positive direction after contact with the ad, even though communication through advertising is much less credible than consumer-driven communication. On the other hand, consumers who are less influenced by even highly credible reviews should rather ignore the ad, as it is much less credible. Instead, they show very strong reactions in terms of negative attitude changes. Thus, factors beyond the mere opportunity to show a change into a positive (negative) direction due to the initially comparatively negative (positive) attitude are likely to cause such an effect.

The results of Study 2 additionally provide insights into the determinants of consumers' reactions to negative product reviews and the role of consumers' PSR in the context of reactions to advertising that aims to recover negative attitudes. The findings provide

the notion that consumers in the “positive change” group process reviews more carefully, are more convinced that the reviews provide a sufficient basis for forming an attitude and are thus more influenced by such reviews than those in the “negative change” group. Consequently, they have more negative attitudes after their contact with the reviews.

The results further show that the consumers in the “negative change” group are not characterized by higher average levels of PSR than those in the “positive change” group. However, differentiating for low and high PSR in each group demonstrates that PSR determines the reactions to advertising to some extent. In the “negative change” group, high PSR consumers show significantly more negative attitude changes after their contact with the ad than low PSR consumers, and they react even more negatively when faced with an emotion-based ad. In contrast, the PSR level does not make a difference in the “positive change” group. Thus, in the positive change group, contact with the ad did not trigger reactance, but instead caused positive reactions. A possible explanation for these findings could be that consumer reactions to advertising after their contact with negative reviews are not only determined by their individual PSR level, but also by other (e.g. external) factors. For example, consumers’ speculation on the motive behind an advertising measure might also determine their reactions. Some low PSR consumers might believe that the company is trying to mislead them by distracting them from the negative reviews which are highly credible and thus show negative reactions to the perceived threat. On the other hand, in some high PSR consumers, reactance might not be triggered and they might show positive reactions because they might think that the company has launched the advertising measure because it believes in its products.

These findings have important implications for marketers who are interested in an advertising strategy that is appropriate to recover consumers’ attitudes that have been negatively influenced by negative reviews. First of all, it is good news for marketers that advertising can recover negative attitudes in the majority of consumers independently of whether cognition-based or emotion-based advertising is used. However, for a minor, but not insignificant part of consumers, such recovery attempts can cause negative reactions. When choosing the type of advertising (cognition-based vs. emotion-based), we recommend that marketers take into account the fact that these

two groups of consumers exist. Although no ad type proved to clearly outperform the other in the “positive change” group, the results for the “negative change” group suggest that an emotion-based ad produces even more negative reactions than a cognition-based ad, and that this effect is even stronger if high PSR consumers are addressed. Consequently, a cognition-based ad that informs consumers about favorable product attributes is more appropriate to recover attitudes for the majority of consumers and helps to limit possible negative effects in the group showing negative reactions.

4.5. Limitations and suggestions for future research

The research presented here has certain limitations. We used students as respondents because they proved to be a suitable target group in previous research on the effects of online word-of-mouth communication (e.g. Chan and Cui 2011; Chatterjee 2001; Chiou and Cheng 2003; Huang and Chen 2006; Khare et al. 2011; Park and Lee 2009; Schlosser 2011; Sen and Lerman 2007; Xue and Zhou 2011). Nonetheless, it would be interesting to test whether the same effects occur when non-student samples are used.

Our studies were designed with the objective of controlling for biases which are likely to occur for a dynamic environment such as the Internet. However, this led to a study design that one might judge as rather artificial. Future research could therefore examine the effects of advertising strategies aiming to recover detrimental effects of online product reviews published on real opinion platforms.

One might argue that sleeper effects (Hannah and Sternthal 1984) occur, which in the considered context means that online product reviews as well as advertising have a delayed impact on consumers' attitudes. This could make the differing credibility of the consumer- and company-based information sources less relevant. However, contrary to product information originating from offline word-of-mouth communication, online product reviews are available for a long period of time. Thus, for highly involving products such as consumer electronics, it is plausible that consumers read the reviews and are influenced in their attitudes shortly before they purchase a product. To be

effective, the contact with the ad should therefore take place before the actual purchase. Therefore, we only considered the situation in which a consumer is confronted with the reviews as well as the ad without a long time lag in between. In this context, it could be interesting to test inverse effects with a certain time delay (i.e. advertising followed by negative reviews after a certain amount of time) because it is possible that contact with an ad could lead consumers to become less susceptible to the influence of negative online product reviews. A study conducted by Smith and Vogt (1995) in the field of offline word-of-mouth communication has already examined such message order effects, but did not compare the effectiveness of different advertising strategies. As in reality, it is difficult for marketers to control whether consumers first read negative reviews and then see the ad or vice versa, it would be interesting to have results for both situations.

Furthermore, it would be interesting to test under which conditions consumers can show reactance to *reviews*. For example, consumers who already have a mobile phone of a specific brand and have a positive pre-attitude towards it might be less influenced by the reviews than consumers who do not have a product of this brand. Thus, in future studies, consumers' pre-attitudes towards a brand as well as actual brand possession should be included and analyzed in detail.

Moreover, respondents' situational involvement could explain why some respondents process reviews more thoroughly than others. We chose a high involvement product as test product but did not control for situational involvement in the experiments.

In addition, it would be interesting to analyze whether positive and negative effects of advertising on consumer attitudes depend on general consumer attitudes (e.g. Jin and Lutz 2013) or skepticism (e.g. Ford et al. 1990). Moreover, while we only used two items to measure consumers' PSR, future research could use more extended scales capturing aspects that go beyond irritation or feeling being bothered by advertising.

Future studies should also measure attitudes towards the ad, perceived ad credibility and the perceived manipulative intent of the advertiser because such factors might further explain differing consumer reactions such as those observed in our empirical studies. Investigating whether consumers speculate on the motives behind advertising messages might also provide interesting insights in this regard. Moreover, it could be

important to examine the role of consumers' affect intensity because this variable was shown to influence consumers' reactions to emotion-based advertising (Moore and Harris 1996) and thus might additionally explain the reactions to emotion-based advertising which were found here. In addition, it could be interesting to compare the effects of cognition-based ads which highlight positively product features which are criticized in product reviews (as in the studies presented above) with the effects of cognition-based ads that highlight other product features.

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Appendix 1

Example of a negative online product review

Produktbewertung: ★☆☆☆☆

Verfasser: S.B.

Diese Produktbewertung wurde von 96% der Mitglieder dieses Portals durchschnittlich als **sehr hilfreich** bewertet

Nachfolgend möchte ich detailliert berichten, was zur negativen Bewertung dieses Produkts geführt hat. Im Bereich Telefonausstattung dieses Modells von Nokia gibt es meiner Meinung nach einiges zu bemängeln. Sprachwahl und Sprachsteuerung, eine ziemlich unübersichtliche Kontaktverwaltung und kaum Umgebungsprofile. Den Startbildschirm kann man nur begrenzt nach seinem Geschmack gestalten und nur wenige Schnellzugriffe für wichtige Funktionen definieren. Bei den Datenfunktionen hat Nokia ebenfalls einiges vergessen. So hat das Nokia zwar WLAN (802.11g) und einen Internet-Browser, Flash-Inhalte werden jedoch nicht angezeigt. Das Handy kann man zwar über USB anschließen, man kann jedoch leider nur ganz kleine Datenmengen an Musik, Videos, etc. laden. Das Übertragen größerer Datenmengen ist sehr zeitintensiv und die Datenübertragung bricht teilweise ohne ersichtlichen Grund nach einiger Zeit ab. Nachteil ist ebenfalls der geringe interne Speicherplatz, dem einige andere Handys voraus sind. Albumcover, sowie weitere Information zum Lied (z.B. Länge) werden nicht automatisch angezeigt. Das Handy verfügt über einen 3,5 mm Klinckenstecker, das heißt man kann alle normalen Kopfhörer anschließen. Die Stereo-Lautsprecher des Nokia haben jedoch bei hoher Lautstärke einen sehr schlechten Klang. Die Kamera liefert trotz 2.0 Megapixel, Autofokus und LED-Blitz sehr unscharfe Bilder und auch die Qualität von Videos lässt zu wünschen übrig. Die Verarbeitung der Vollplastikhülle ist ebenfalls ziemlich schlecht und Kratzer entstehen sehr schnell. Vor allem ist das Handy auch relativ schwer. Der Touchscreen ist wenig benutzerfreundlich und das Navigieren zwischen verschiedenen Ordnern oder das Scrollen in längeren Listen ist ziemlich zeitaufwändig. Das Display von 3 Zoll stellt vor allem Fotos und Videos sehr unscharf dar. Die Akustik bei Telefonaten ist oftmals sehr schlecht, so dass der Gesprächspartner teilweise kaum zu hören ist. Vor allem der Freisprecher ist sehr enttäuschend. Durch fehlende Lautstärke und Klang entsteht oft ein Dröhnen, so dass das Telefonieren im Auto teilweise sehr unpraktisch ist. Ein weiterer negativer Aspekt ist die geringe Akkudauer dieses Handys. Bei einer Ladezeit von ca. 2-3 Stunden hält der Akku nicht einmal einen Tag und dies selbst bei geringer Handynutzung. Alles in allem ist dieses Modell von Nokia qualitativ gesehen ein ziemlich schlechtes Handy. Da einiges fehlt, was man von einem Handy erwartet, kann ich dieses Modell nicht weiterempfehlen.

Appendix 2

Experimental design of Study 1

	Unfamiliar brand (Glofiish)	Familiar brand (Nokia)
Cognition-based ad	<p>glofiish</p> <p>Benutzerfreundlicher Touchscreen Lange Akkulaufzeit Hochwertige Kamera Grosser interner Speicherplatz</p> 	<p>NOKIA</p> <p>Benutzerfreundlicher Touchscreen Lange Akkulaufzeit Hochwertige Kamera Grosser interner Speicherplatz</p> 
Emotion-based ad	<p>glofiish</p> <p>Technologie, die Sie zum Träumen bringt</p> 	<p>NOKIA</p> <p>Technologie, die Sie zum Träumen bringt</p> 

Appendix 3

Experimental Design of Study 2 (moderate brand familiarity)

Cognition-based ad

Emotion-based ad



5. Do consumers still believe what is said in online product reviews? A persuasion knowledge approach⁴

5.1. Introduction

Consumers increasingly rely on other consumers' product information provided on the Internet before buying a product (Dellarocas 2006; Hu et al. 2011) in order to reduce purchase risks. Due to its non-commercial character, such word-of-mouth is considered as highly credible and trustworthy (Godes and Mayzlin 2004; Mayzlin 2006; Smith et al. 2005). Thus, consumers are more susceptible to word-of-mouth than to product information provided by companies (Bickart and Schindler, 2001; Trusov et al. 2009), which is perceived as less credible (Bickart and Schindler 2001) due to companies' self-interest in providing such information (Mourali et al. 2005).

Online product reviews that are posted on independent opinion platforms represent one of the most popular forms of consumer-generated content (Schindler and Bickart, 2005; Schlosser, 2011; Sen and Lerman, 2007). Because of the considerable reach of online reviews marketers are becoming increasingly aware of the opportunities and risks associated with such reviews and closely monitor what consumers post online about the company and the products (Hu et al., 2011; Kozinets et al., 2010). Many companies even go a step further and publish fake positive reviews about the own products or negative ones about competitor products (written by company employees or hired customers) with the objective to increase the companies' sales (Dellarocas, 2006; Hu et al., 2011) or to hurt the competitors (Dellarocas, 2006). Such dishonest marketing tactics are increasingly covered by the media. For example, a well-known travel advice site was criticized because several hotels referenced on this site had paid visitors to write untruthful hotel reviews [1]. Another example is a report about an employee of a well-known coffee machine producer who published very positive

⁴ published as "Bambauer-Sachse, S.; Mangold, S. (2013): Do consumers still believe what is said in online product reviews? A persuasion knowledge approach, in: Journal of Retailing and Consumer Services, 20 (4), pp. 373-381."

reviews about several of their products on Amazon.com [2]. Even though it is nearly impossible for consumers to distinguish real consumer opinions from non-authentic ones, news publications about manipulated reviews should raise consumers' awareness of the existence of such influential marketing approaches. Acquiring such persuasion knowledge in terms of increased knowledge about manipulative tactics (Friestad and Wright, 1994) could lead consumers to become more skeptical (Mayzlin, 2006) toward information provided by online product reviews, which would weaken the impact of reviews on consumers' product evaluations.

A company faced with negative reviews about its own products or with an unrealistically large number of positive reviews about competitors' products might be interested in informing its customers about possible review manipulations. However, especially in the case of negative reviews, consumers could perceive such a company-based persuasion attempt as less credible because they could assume that the company has a hidden self-interest in providing the information. They could think that the company is trying to discredit the negative product information in order to avoid possible detrimental effects. Thus, in a context where the knowledge that reviews can be manipulated influences the effects of reviews on consumer reactions, the credibility of the source providing this knowledge might also play a role.

Although the described phenomenon is gaining importance, previous research has not yet dealt with possible effects of consumers' knowledge about marketers' manipulative tactics in the context of effects of online reviews on product evaluations. Thus, the research presented in this paper pursues two objectives. Starting from the situation where consumers are interested in buying a product and actively look on the Internet for other consumers' opinions, the first objective of this paper is to examine the effects of different combinations of positive and negative online reviews on product evaluations depending on consumers' knowledge that such reviews can be manipulated. The second purpose is to analyze effects of the credibility of the source (independent newspaper, highly credible source vs. company-based information, less credible source) that provides consumers with the knowledge that reviews can be manipulated.

This paper contributes several new aspects to the existing body of research. Given

that, in the long run, more and more consumers will know that reviews can be manipulated, the studies presented here provide insights into whether the effectiveness of online product reviews will persist in the future or decrease. Second, this paper provides insights into the role of the credibility of different types of sources that provide the information that reviews can be manipulated. As previous studies on the effects of online product reviews assume that consumers do not question the fact that such reviews are written by real consumers, this paper presents a completely new way of looking at possible effects of such reviews.

In addition to addressing researchers, this paper offers interesting insights for marketers by providing more detailed information on the effects of online reviews on consumers' product evaluations than done by previous studies. Furthermore, marketers learn whether and under which specific conditions, the considerable impact of such reviews will be attenuated as well as whether company-based information about the fact that such reviews can be manipulated can be as efficient as information provided by an independent source. These insights might be of specific interest for companies that are often confronted with negative reviews about their products or with a large number of very positive reviews about competitors' products because they could benefit from a weakening impact of consumers' knowledge that reviews can be manipulated by actively communicating this aspect.

5.2. Empirical background

5.2.1. Previous research on consumers' persuasion knowledge

Studies that analyzed consumer reactions to company-driven communication provide the notion that consumers show negative reactions in terms of negative attitudes and lower behavioral intentions when they perceive a marketing tactic as manipulative (e.g., Campbell, 1995; Cotte et al., 2005; Hibbert et al., 2007; Kirmani and Zhu, 2007; Wentzel et al., 2010). Two studies that are close to the research focus of this paper examine effects of concrete, objective persuasion knowledge that consumers acquire from external sources in the context of effects of company-driven communication on product evaluations. Hardesty et al. (2007) examined, among other effects, the effects

of consumers' persuasion knowledge on their evaluation of running shoes advertised with an imprecise indication of possible price reductions (i.e. tensile price claim). The results of their study show that respondents with comprehensive persuasion knowledge about pricing-tactics evaluate the offer advertised with a tensile price claim more negatively than those with poor persuasion knowledge.

Wei et al. (2008) analyzed the effects of consumers' persuasion knowledge on their evaluation of a macaroni brand mentioned in a radio show on nutrition. The authors found that when persuasion knowledge (the knowledge that the brand paid to be mentioned in the radio show) was available, respondents evaluated the brand mentioned in the radio show more negatively than when persuasion knowledge was not available.

The findings of these studies show that knowledge about marketers' persuasion tactics can weaken the impact of such tactics, which can lead to more negative product evaluations. With regard to the research question considered here, it can be concluded that consumers who learn that online product reviews can be manipulated by companies, show similar responses to product reviews as to company-driven communication in that they are less influenced by such reviews when forming their product evaluations.

Even though the above-presented studies provide interesting insights into the role of persuasion knowledge, important aspects remain unexamined and require a new empirical study. First, the effects of persuasion knowledge are not analyzed in an online context but in the context of offline communication. Second, the effects of such knowledge are analyzed in response to communication that is initiated by a company. However, the effects of knowing that reviews can be manipulated on the processing of such reviews could be different because it might not be clear at first sight whether these reviews are written by real consumers or manipulated by companies.

5.2.2. Previous research on source credibility

The credibility of the source providing the knowledge that online product reviews can be manipulated might affect the role such knowledge has in the context of the effects of reviews on consumers' product evaluations. Source credibility is one of the most often examined variables in persuasion studies (Nan, 2009) and has been demonstrated to play an important role in the context of online and offline persuasion (e.g., Andrews and Shimp, 1990; Brown et al., 2007; Buda and Zhang, 2000; Cheung et al., 2009; Citera et al., 2005; Dholakia and Sternthal, 1977; Gotlieb and Sarel, 1992; Grewal et al., 1994; Hovland and Weiss, 1951-52; Jain and Posavac, 2001; Johnson and Izzett, 1972; McKnight and Kacmar, 2006; Petty et al., 1981; Senecal and Nantel, 2004; Sternthal et al., 1978; Tormala and Petty, 2004). However, studies on the role of source credibility in the field of research considered here do not exist. Studies that use a systematic manipulation of source credibility through information about the source as having a high or low self-interest in the communication topic and that examine the role of credibility in the context of the effects of product-related claims on product evaluations are closest to the question examined here and thus will be considered in more detail. Table 23 provides an overview of these studies in a chronological order.

Table 23: Studies on the role of source credibility in the context of effects of product-related claims on product evaluations

Study	Study description	Manipulation of source credibility	Relevant findings
Wiener and Mowen (1986)	The authors analyzed effects of the credibility of a car mechanic making claims about the mechanical quality and value of a car on consumers' car evaluations.	Describing the car mechanic as part owner of the car dealership (low credibility due to high self interest) or as having no relation with the car dealership (high credibility due to low self-interest).	When the source was highly credible, the study participants evaluated the car more positively than when the source was less credible.
Wiener et al. (1990)	The authors examined effects of the credibility of a repair center evaluating the value of a car on consumers' agreement with the statements made by the center.	Stating that the repair center evaluating the car was part owner of the auto dealership (low credibility due to high-self interest) or that there was no connection (high credibility due to low self-interest).	When the source was highly credible, study participants showed a higher agreement with the source's statements than when the source was less credible.
Chaiken and Maheswaran (1994)	The authors analyzed effects of the credibility of a source providing a description of a telephone answering machine on consumers' product evaluations.	Telling participants that the product description stemmed from a promotional advertising of a discount retail chain (low credibility due to high-self interest) or from a magazine specialized in scientific product tests (high credibility due to low self-interest).	In the high-credibility condition, study participants evaluated the product more positively than in the low-credibility condition.
Artz and Tybout (1999)	The authors examined effects of source credibility on the persuasive effect of a claim made for the purchase of a micro printing utility to reduce printing delays at university on the evaluation of the product.	Attributing the claim to a professor who created the utility and who would receive royalties (low credibility due to high self-interest) or a professor who would use the utility to print documents (high credibility due to low self-interest).	When faced with a high-credibility source, the claim had a stronger persuasive effect on respondents' product evaluations than in the case where the respondents were faced with a low-credibility source.
Tormala et al. (2007)	The authors analyzed the role of source credibility in the context of effects of a persuasive message on the beneficial effects of laundry detergents on consumers' product evaluations.	Telling the participants that the message came from a detergent manufacturer (low credibility due to high self-interest) or from a government agency that supports consumers in making their product decisions (high credibility due to low self-interest).	In the high-credibility condition, the persuasive message led to more positive product evaluations than in the low-credibility condition.

The results of the studies summarized in Table 23 show that a persuasive message coming from a credible source has weaker effects on product evaluations than a persuasive message coming from a less credible source. Transferring these findings to the field of research considered here suggests that consumers who are informed about review manipulations through company-driven communication are likely to perceive the source as less credible due to its self-interest in the communication topic. Consequently, for such consumers the weakening impact of knowing that reviews can be manipulated will be weaker than for those consumers who acquire this knowledge from an independent newspaper which has no self-interest in providing such information.

However, as previous research left several gaps, a new study is needed. First of all, the authors did not measure consumers' product evaluations before and after the presentation of the persuasive message and therefore did not exactly capture the impact of product-related claims on product evaluations depending on the credibility of the source. In addition, the persuasive communication in previous studies was directly product-related. In the present research, information that comes from a more (newspaper article) or less (company news release) credible source is not directly product-related, but instead refers to another type of information (the reviews) that has a more or less strong influence on consumers' product evaluations. Furthermore, the effects of source credibility were not analyzed in an online context. Due to the anonymity of the Internet, the information source could play an even more important role.

5.3. Theoretical framework and hypotheses development

5.3.1. The effects of consumers' knowledge of being manipulated

Persuasion knowledge represents an important knowledge domain of consumers' daily life and makes consumers aware of situations where an outside agent tries to change their thoughts, emotions, attitudes, or decisions (Friestad and Wright, 1999). In a marketing context, persuasion knowledge mirrors consumers' knowledge about marketers' persuasion objectives and about how such strategies trigger and influence

psychological processes (Hibbert et al., 2007) that lead to consumer reactions sought by the marketer such as higher attention or interest (Kirmani and Zhu, 2007). Consumers acquire their persuasion knowledge from interactions with friends or family, from observing marketing activities of companies, or from news reports about marketing tactics (Friestad and Wright, 1994). The more comprehensive and activated the consumers' persuasion knowledge is, the more suspicious are consumers about marketing activities in that they perceive such activities as deceptive or manipulative (Kirmani and Zhu, 2007). Thus, increasing persuasion knowledge leads consumers to become less susceptible to marketing tactics (Friestad and Wright, 1994).

The persuasion knowledge model can be applied to the context of online product reviews as follows. Consumers are believed to acquire increasing knowledge that reviews can be manipulated by marketers. Such knowledge is likely to lead them to consider reviews less credible and thus less convincing than they might have previously considered them. Consequently, the effects of such reviews on product evaluations are believed to become weaker with increasing knowledge that such reviews can be manipulated.

However, the knowledge effect described is likely to differ for the cases of reading negative versus positive reviews as will be argued in the following. In situations where consumers are planning to purchase a product, this intention to purchase is associated with a positive initial evaluation of the product. In order to verify this evaluation, an increasing number of consumers look for product reviews on the Internet before making the final purchase decision (Dellarocas, 2006; Hu et al., 2011). If such consumers read mainly negative reviews, two alternative effects can occur. On the one hand, the arguments provided by the reviews could be scrutinized and undermined due to the fact that they are contrary to the initial evaluation. Consequently, the contact with negative reviews would cause a rather weak change of the initial product evaluation into a negative direction. This argument is derived from the disconfirmation model proposed by Edwards and Smith (1996). On the other hand, the negative information could be considered highly diagnostic (Ahluwalia, 2002; Herr et al., 1991) and thus, the contact with the negative reviews could lead to a strong change of evaluations into a negative direction. Specifically when faced with several negative reviews that contradict a consumer's initial positive product evaluation, he or she might

revise this evaluation. The occurrence of one of these alternative effects is believed to depend on the knowledge that reviews can be manipulated. If consumers have such knowledge, they are likely to process the arguments that are contrary to their initial product evaluations in a very critical manner and thus only show a weak change of their evaluations into a negative direction. If consumers do not have such knowledge, the diagnosticity effect is more likely to occur in that consumers considerably revise their initial positive product evaluations into a negative direction.

For the situation where consumers read only positive reviews, it can be argued that they show a change of their product evaluations into a positive direction and this change is more or less independent of the knowledge that such reviews can be manipulated because the arguments provided by the reviews confirm the initial positive evaluation. Thus, even if consumers are aware of the fact that some of the positive reviews they have read might be manipulated, they are still left with some reviews that might be true and that support their initial evaluation. These arguments lead to the first hypothesis:

H1: The negative effects of negative reviews on product evaluations are weaker if consumers know that such reviews can be manipulated than in the case where consumers do not have this knowledge. Such a knowledge effect does not exist for positive reviews.

5.3.2. The effects of source credibility

Signaling theory can be used to explain the effects of the credibility of the source providing the information that reviews can be manipulated. The basic assumption of signaling theory is that, due to a lack of information, consumers use signals that provide information about the object to be evaluated (Dutta et al., 2007; Pennanen, 2011; Tsao et al., 2011) to reduce information asymmetry and cognitive load when making quality assessments (Erdem and Swait, 1998; Kirmani and Rao, 2000). Source credibility can be used as a quality signal (Gotlieb and Sarel, 1992). When information is attributed to a highly credible source (compared to a less credible source) argument processing leads to stronger persuasion (Chaiken and Maheswaran, 1994).

When a consumer is faced with online product reviews and gets the information that such reviews can be manipulated, it is difficult for the consumer to judge whether these reviews are indeed manipulated or not. Thus, the consumer is likely to use the credibility of the source that provides this information as a signal of the truthfulness of the information. Information coming from a company could be interpreted as less credible due to the company's self-interest in the communication topic. However, if an independent newspaper provides the information that reviews can be manipulated, consumers are believed to be more strongly influenced by the information, and persuasion knowledge will therefore be more intensively activated than in the case where the information is provided by a company. When consumers read negative reviews, a high credibility (compared to a low credibility) of the source providing the knowledge that reviews can be manipulated is believed to attenuate even more the destructive effects of negative reviews. However, for the case where consumers are faced with positive reviews, it can be argued that if the knowledge does not play an important role, the credibility of the source providing this knowledge does not have an effect either. Therefore:

H2: The knowledge that reviews can be manipulated leads to even weaker effects of negative reviews on product evaluations if this knowledge is provided by a highly credible source (compared to a less credible source). Such an effect of source credibility does not exist for positive reviews.

The two research hypotheses developed above will be tested in two empirical studies that will be presented below.

5.4. Empirical studies

5.4.1. Purpose of the two empirical studies

The objectives of Study 1 were to basically examine whether people differ with regard to the knowledge that reviews can be manipulated and to analyze possible effects of such knowledge.

The first purpose of Study 2 was to replicate the results of Study 1 using a systematic knowledge manipulation. The second and main objective of Study 2 was to examine

whether the credibility of the source providing the information that reviews can be manipulated has an effect.

5.4.2. Type, length, and number of the tested online product reviews

The test reviews were consumer reviews published on independent opinion platforms. Such reviews are supposed to produce stronger consumer reactions than reviews published on retailer or manufacturer websites because they cannot be directly controlled by retailers or manufacturers.

Previous research provides the notion that online product reviews that consumers seriously consider contain detailed objective information about specific product attributes (Racherla et al., 2012). Such reviews have a length of about 350 words and on average, people read 2.6 reviews when making product evaluations (Bambauer-Sachse and Mangold, 2011). Thus, three reviews that met these criteria were used.

5.4.2. Pretest on product type

The test product was a high-involvement product because consumers especially look for advice from other consumers before purchasing high-involvement products (Ha, 2002). As previous research provides the notion that the product type (utilitarian vs. hedonic) can influence effects of online product reviews (Sen and Lerman, 2007), a hybrid test product (characterized by both utilitarian and hedonic traits) was used in order to control for possible product type effects. Four products that were shown to be high involvement products in previous research (Antonides, 1996; Helgeson and Beatty, 1987; Nguyen et al., 2008; Von Reischach et al., 2010) and that were a-priori judged as hybrid (motorcycle, watch, bike, multimedia-based mobile phone) were tested in a pretest. Forty-four pretest participants rated each of the four products on a scale ranging from 1 = "I associate this product with usefulness" to 7 = "I associate this product with fun". As mean value comparisons ($M_{\text{motorcycle}} = 2.3$, $M_{\text{watch}} = 5.6$, $M_{\text{bike}} = 3.8$, $M_{\text{mobile phone}} = 4.1$) show that the value for the mobile phone was closest to the scale midpoint (4), the mobile phone served as test product for the main studies.

5.4.3. Pretest on review valence

As different combinations of negative and positive product reviews were examined, a pretest on review valence was additionally needed. Ten respondents were asked to rate the negativity of six negative reviews of mobile phones that were selected from a real opinion platform on the basis of the item “the author has a very negative opinion about the product” (scale: 1 = “totally disagree”, ..., 7 = “totally agree”). Based on the resulting mean values (6.2, 6.4, 6.5, 6.6, 6.7, 6.9) the three most negative reviews were selected.

The respondents were additionally asked to rate the persuasiveness of the reviews on seven-point scales. The resulting mean values of the selected reviews were significantly higher than the scale midpoint of 4 (review 1: $M = 5.2$, review 2: $M = 5.5$, review 3: $M = 5.7$; all p -values < 0.01). Thus, the reviews were perceived as persuasive.

The three selected negative product reviews were used to create the positive ones by using opposite descriptions of the product. This procedure was chosen to assure the comparability of the review content. Then, the following combinations of negative and positive reviews were created: three positive reviews, two positive reviews and one negative review, one positive review and two negative reviews as well as three negative reviews.

5.4.4. Measures

In order to measure product evaluations, the items shown in Table 24 were used (Bouten et al., 2011; Dawar and Pillutla, 2000; Hung and Wyer, 2011; Yoo et al., 2000). The study participants rated these items before and after their contact with the product reviews. This procedure aimed to identify the differences in product evaluations caused by the contact with the product reviews more clearly than done by previous studies, which had only measured product evaluations after the contact with the test stimuli. In order to determine the changes in product evaluations, the difference value $\text{value}_{\text{after}} - \text{value}_{\text{before}}$ was calculated for each item. In order to show that the test product was indeed perceived as a hybrid product, the same measure as in the pretest was used.

As no previous studies measured the knowledge that reviews can be manipulated and as it was not possible to adapt measures used for persuasion knowledge from other application contexts, new measures were developed. Two items directly captured consumers' knowledge that reviews can be manipulated and two items rather indirectly measured this knowledge by addressing consumers' trust in online product reviews, which represents a consequence of available persuasion knowledge. This procedure of merging direct measures with measures of consequences into one variable is similar to the way how other constructs were conceptualized in previous research (e.g., attitude measures often capture both direct cognitive aspects and behavioral consequences, Eagly and Chaiken, 1993).

In order to do a manipulation check, source credibility (newspaper article vs. company news release) was measured following the recommendations of Tormala et al. (2007). For the data of the first study, Cronbachs Alpha was determined in order to judge whether the variables were reliably measured. For the data of Study 2, a confirmatory factor analysis was additionally conducted to examine measurement quality in more detail and to prove discriminant validity for the two concepts "knowledge that reviews can be manipulated" and "perceived credibility of the information source". Table 24 displays the items, the alpha values for Study 1, and the results of the confirmatory factor analysis for Study 2.

Table 24: Measures of product evaluation, knowledge and perceived credibility

Variable	Item	Coefficient alpha	
		Study 1	Study 2
Difference in product evaluations (after – before)	high product quality	0.79	0.88
	reliable product		
	high performance product		
	product liking		
	interest in the product		
Knowledge that reviews can be manipulated	product reviews on independent platforms are credible because provided by real consumers (recoded)	0.82	0.82
	companies can manipulate product reviews on independent platforms		
	trust in consumer product reviews on independent platforms (recoded)		
	product reviews on independent platforms do not necessarily reflect real experiences of real consumers		
Perceived credibility of the information source	intention to highlight facts (recoded)	-	0.89
	intention to provide neutral information (recoded)		
	objective position (recoded)		
	no trust in provided information		
	provided information is not true		
	text is not credible		

Scale: ranging from 1 = “totally disagree” to 7 = “totally agree”

The overall fit measures for Study 2 show that the measurement model provides a good fit to the data (Bagozzi and Yi, 1988). All factor loadings are higher than 0.5 (Bagozzi and Yi, 1988) and have significant t-values proving the existence of convergent validity (Bagozzi et al., 1991). The factor reliability of each construct is higher than the required value of 0.6 (Bagozzi and Yi, 1988). Discriminant validity (Fornell and Larcker, 1981) is proven because the values of the average variance extracted exceed the squared factor correlations ($r^2_{E_K} = r^2_{E_C} = 0.01$, $r^2_{K_C} = 0.05$). In addition, the high alpha values for both studies indicate that the items reliably measure the variables they were intended to measure. For the subsequent analyses, the overall variable values were calculated as mean values of the respective items.

5.4.5. Study 1: Effects of consumers' knowledge that reviews can be manipulated

Purpose The objectives of Study 1 were to basically examine whether people differ with regard to the knowledge that reviews can be manipulated and to analyze possible effects of such knowledge.

Experimental design, sample, and procedure The design of Study 1 consisted of four independent groups based on the combinations of reviews (3 positive, 2 positive + 1 negative, 1 positive + 2 negative, 3 negative). The data collection took place in Switzerland in the first half of 2011. The participants were 211 students and other university members (49% women, 51% men, average age: 27.7 years).

The following procedure was used. First, the respondents were asked to imagine that they intended to purchase a new mobile phone and were presented with a picture and technical product description. Then, they had to indicate their initial product evaluations and afterwards received one of the four combinations of the reviews. They were instructed to carefully read these reviews as if they were in a real information search situation before buying a new mobile phone. The reviews were presented in a varying order to avoid possible order effects. In order to make the procedure as realistic as possible, online questionnaires displaying the online product reviews in a realistic layout were used. After having read the reviews, the participants completed the product evaluation scales for a second time and were then asked to rate their knowledge about the fact that reviews can be manipulated. Finally, they had to indicate their age and gender.

Results The results of a manipulation check for the product type (one-sample t-test with the scale midpoint as test value) show that the mobile phone is perceived as a hybrid product ($M_{\text{product type}} = 4.09$, $t = 0.89$, $p > 0.10$), as was intended.

The procedure of the main part of the data analysis was as follows. After calculating an overall variable value for knowledge from the four items that were used to measure this variable, the frequencies of this overall variable were computed. These frequencies clearly indicate that there is a considerable variance on the individual level ($M = 3.58$, $SD = 1.33$, minimum value = 1, maximum value = 7). Thus, some consumers

are well informed about review manipulations and other consumers still believe that online product reviews are written by other consumers and thus credible.

Based on a median split for the knowledge variable (median = 3.75), a dummy variable was created and used for the further analyses. These analyses aimed to determine the effects of different combinations of product reviews on changes in product evaluation (product evaluation_{after} – product evaluation_{before}) depending on the knowledge that such reviews can be manipulated. Table 25 shows the results.

Table 25: Changes in product evaluations depending on the valence of the product reviews and persuasion knowledge

Combinations of product reviews	No/poor knowledge that reviews can be manipulated ^a	Comprehensive knowledge that reviews can be manipulated ^b
3 positive	0.72	0.69 ^{n.s.}
2 positive + 1 negative	- 0.15	0.02 [*]
1 positive + 2 negative	- 1.12	- 0.65 ^{**}
3 negative	- 1.78	- 1.24 ^{***}

Note: pairwise comparisons: a-b, * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$, n.s. not significant; group sizes vary from 24 to 29 because variable was measured, not manipulated

The results for three positive reviews show that the positive effects on product evaluations are not significantly weaker if consumers have comprehensive knowledge that reviews can be manipulated ($M_{no/poor\ knowledge} = 0.72$ vs. $M_{comprehensive\ knowledge} = 0.69$), as was assumed in H1.

However, when consumers are faced with one negative review among two positive ones, the knowledge that reviews can be manipulated makes an interesting difference. If people have this knowledge, the negative effect of one negative review is overcompensated by the positive effects of the two positive ones, and the effect on product evaluations remains positive. If people have no/poor knowledge that reviews can be manipulated, one negative review in combination with two positive ones is sufficient to cause a negative effect on product evaluations ($M_{no/poor\ knowledge} = -0.15$ vs. $M_{comprehensive\ knowledge} = 0.02$). In the situation where consumers are faced with mainly or only negative reviews, a negative effect on product evaluations can be observed for

consumers with no/poor as well as those with comprehensive knowledge that reviews can be manipulated. This negative effect is significantly weaker under comprehensive knowledge that reviews can be manipulated (1 positive + 2 negative reviews: $M_{no/poor\ knowledge} = -1.12$ vs. $M_{comprehensive\ knowledge} = -0.65$; 3 negative reviews: $M_{no/poor\ knowledge} = -1.78$ vs. $M_{comprehensive\ knowledge} = -1.24$). Thus, the strong effects of negative product reviews are considerably attenuated when consumers are aware of marketers' manipulative tactics. These results provide support for H1.

5.4.6. Study 2: Effects of source credibility

Purpose The first purpose of Study 2 was to replicate the results of Study 1 using a systematic knowledge manipulation. The second and main objective of Study 2 was to examine whether the credibility of the source providing such information has an effect.

Experimental design, sample, and procedure A 4 (combination of reviews: 3 positive, 2 positive + 1 negative, 1 positive + 2 negative, 3 negative) x 2 (knowledge that reviews can be manipulated: provided, not provided) x 2 (source credibility: newspaper article, company news release) between-subjects design was used. 1280 students and university members (53% women, 47% men, average age: 24.9 years) participated in the second study. The data were collected in Switzerland in the second half of 2011. Again, an online questionnaire was used.

The basic procedure was the same as in Study 1. In addition, before reading the reviews, one group of the participants was asked to read a text providing the information that companies increasingly hire people to write positive opinions about own products or negative ones about competitors' products, whereas the other respondents received a text with about the same length containing general information about online product reviews. This procedure of priming the knowledge that reviews can be manipulated was adapted from previous research on persuasion knowledge (e.g., Williams et al., 2004). Both texts were either presented as an online newspaper article (highly credible source) or as a news release of the company (less credible source) concerned.

Results The results of the manipulation check for product type show that, as intended, the mobile phone is perceived as a hybrid product ($M_{\text{product type}} = 4.02$, $t = 0.58$, $p > 0.10$). The manipulation check for the knowledge that reviews can be manipulated indicates that, independently of their initial levels of this knowledge, the respondents who received the respective information reported significantly more comprehensive knowledge in this regard ($M = 4.22$) than the respondents who received no information ($M = 3.55$, $t = 10.20$, $p < 0.01$). The results of the manipulation check for source credibility show that, as intended, the newspaper article is perceived as significantly more credible ($M = 4.61$) than the company news release ($M = 4.35$, $t = 3.94$, $p < 0.01$). Table 26 shows the results for the effects of the manipulated knowledge that reviews can be manipulated.

Table 26: Replication of the results of Study 1

Combinations of product reviews	No/poor knowledge that reviews can be manipulated^a	Comprehensive knowledge that reviews can be manipulated^b
3 positive	0.84	0.77 ^{n.s.}
2 positive + 1 negative	- 0.25	0.03 ^{**}
1 positive + 2 negative	- 1.01	- 0.71 ^{**}
3 negative	- 1.74	- 1.31 ^{***}

Note: pairwise comparisons: a-b, ^{**} $p < 0.05$; ^{***} $p < 0.01$, n.s. not significant

The results in Table 26 replicate the results of Study 1. The fact that the knowledge manipulation in Study 2 produces the same effects as the knowledge measurement in Study 1 validates the assumption that such knowledge can weaken the effects of specifically negative reviews on product evaluations.

The next step of the data analysis will consist in basically examining the relationship between the knowledge that reviews can be manipulated and the credibility of the source providing this knowledge, which was additionally manipulated in Study 2. The results of a regression analysis show that credibility has a positive effect on knowledge ($\beta = 0.23$, $t = 7.93$, $p < 0.001$), which is plausible because the credibility of a source determines the extent to which people adopt the knowledge provided by this source.

At the same time, the low R^2 -value of the regression model ($R^2 = 0.05$) shows that factors other than source credibility affect the knowledge that reviews can be manipulated. Thus, knowledge is not completely dependent on source credibility.

The main part of the data analysis consists in looking in more detail at the case where people have comprehensive knowledge that reviews can be manipulated, and to examine the effects of the credibility of the source that provides such information on product evaluations for the different combinations of reviews (see Table 27). Such further differentiation makes sense because the preceding step of the analysis has shown that knowledge is not completely determined by source credibility.

Table 27: Changes in product evaluations depending on source credibility for the case of comprehensive persuasion knowledge

Combinations of product reviews	Comprehensive knowledge that reviews can be manipulated	
	less credible source (company news release) ^a	highly credible source (newspaper article) ^b
2 positive + 1 negative	- 0.07	0.14 ^{n.s.}
1 positive + 2 negative	- 0.81	- 0.62 ^{n.s.}
3 negative	- 1.46	- 1.17 ^{**}

Note: pairwise comparisons: a-b, *** $p < 0.01$; n.s. not significant

The results presented in Table 27 show that, when consumers know that product reviews can be manipulated, the effects of specifically negative reviews are even weaker if the information is provided by a credible source (newspaper article as opposed to a company news release). An interesting finding is the following: if no differentiation for source credibility is made, a combination of two positive reviews and one negative review produces a slightly positive effect in the case of comprehensive knowledge (see Table 26). When differentiating for source credibility, this combination of reviews has a slightly negative effect in the case of a less credible source, whereas it produces a positive effect in the case of a highly credible source. However, only in the case of three negative reviews, providing the knowledge that reviews can be manipulated through a highly credible source (compared to a less credible source) is significantly more effective in attenuating the detrimental effects of negative reviews.

Thus, the results provide support for H2 for the situation where consumers encounter a set of only negative reviews.

5.5. Conclusion

The starting point of this paper was the observation that consumers are increasingly learning that online product reviews are not necessarily written by real consumers, but can also be manipulated by companies. Consequently, from a researcher's perspective, the question arose as to whether consumers basically differ with regard to such knowledge, whether such knowledge weakens the effects of online product reviews, and whether the credibility of the source of such knowledge plays a role.

Two empirical studies examined the role of the knowledge that online reviews can be manipulated as well as the role of the source providing such knowledge. The results of the first study show that the knowledge that reviews can be manipulated differs considerably within a sample that is homogenous with regard to age and gender. The findings of both studies further show that the knowledge that reviews can be manipulated does not have an impact on product evaluations when only positive reviews are encountered. These findings are good news for marketers because positive reviews about own products are good advertising for a company's products. However, such knowledge significantly attenuates the negative effect of negative reviews on product evaluations. Specifically, when consumers are faced with a larger number of positive than negative reviews, this knowledge leads to an overcompensation of the detrimental effects of negative reviews by the beneficial effects of positive ones. When a set of only negative product reviews is encountered, available knowledge that reviews can be manipulated significantly attenuates the detrimental effects on product evaluations. Study 2 additionally shows that, when this knowledge is provided by a highly credible source (as opposed to a less credible source), consumers are less influenced by a set of negative reviews. No such effect occurs when consumers are faced with a combination of positive and negative reviews.

The findings of the studies presented here provide both theoretical as well as practical contributions. The major theoretical contribution consists in the asymmetry found for

the effect of the knowledge that reviews can be manipulated in the context of positive versus negative reviews. The practical implications are as follows. The results provide good news regarding the detrimental effects of negative reviews because, with increasing knowledge that reviews can be manipulated, these effects decrease. Consequently, marketers can actively spread such knowledge (e.g., through a news release on their website) in order to support the observed beneficial effects in the case of negative reviews. However, if consumers are faced with a set of only negative reviews, the knowledge that reviews can be manipulated is more effective when provided by highly a credible source such as an independent newspaper. In that case, marketers should, if possible, leave it to journalists or to other more credible sources to inform the public about occurring online product review manipulations rather than publish their own news releases.

Future research could examine the role of brand knowledge in the considered context. Consumers could be more skeptical about positive reviews on an unknown brand because they assume that the company is trying to build their reputation and to increase their sales by providing fake reviews. Moreover, when faced with a considerable number of negative reviews, consumers could be tempted to think that an unknown company that proactively informs about the existence of fake reviews about the company's products is trying to distract customers from problems with product quality. In addition, it could be helpful to analyze whether other types of online product information, for example provided on independent expert websites, are more influential than online peer-to-peer communication when it is increasingly known that reviews can be manipulated. Finally, an examination of the effects of online reviews depending on the knowledge that reviews can be manipulated in services industries such as tourism could provide valuable insights because, due to the intangibility of services, consumers ascribe considerable importance to peer-to-peer information.

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6. Overall conclusions

6.1. Relevant findings

This doctoral thesis examined the effects of consumer online product reviews. Based on observations in practice and the existing body of research, several factors that could play a role in such a context and that had not yet been analyzed in previous studies have been identified. The thesis combines different fields of research coming from marketing, sociology and psychology thus developing a new theoretical framework. Several empirical studies have been conducted with the objective of filling important research gaps by providing new findings. The present research constitutes a basis for managerial recommendations and provides several starting points for future studies.

In a first step, an overview of the research questions, the derived hypotheses and the results of the four different research projects that are presented in this work will be given in Table 28. Next, each research project will be briefly summarized and the relevant findings will be discussed in more detail.

Table 28: Overview of hypotheses and results

Re-search project	Research questions	Hypotheses	Results
1	To what extent is a brand's consumer-based equity negatively affected when consumers read negative online reviews about one of its products?	Negative online product reviews have detrimental effects on consumer-based brand equity which occur in terms of brand equity dilution.	Supported
2	Can the negative effect of negative online product reviews on consumer-based brand equity be reproduced using a larger sample?	Negative online product reviews have detrimental effects on consumer-based brand equity which occur in terms of brand equity dilution.	Supported
	Are consumers more influenced by negative high-quality online product reviews than by negative low-quality product reviews?	Negative high-quality product reviews have stronger effects on consumer-based brand equity in terms of brand equity dilution than have negative low-quality product reviews.	Supported
	Does the perceived credibility of negative online product reviews mediate the relation between review quality and brand value perceptions?	Perceived credibility of negative online product reviews mediates the relation between review quality and consumer-based brand value perceptions.	Supported
3	Is emotion-based or cognition-based advertising more suitable to recover consumers' negative attitudes they have formed after encountering negative online product reviews?	After encountering negative online product reviews, emotion-based advertising has stronger recovery effects on consumers' attitudes than cognition-based advertising.	Not supported
	Do some consumers who have read negative online reviews about a specific product and subsequently see an advertising for that product also show reactance and change their attitudes into a more negative direction? If yes, does emotion- or cognition-based advertising lead to stronger attitude changes into a negative direction?	After encountering negative online product reviews, emotion-based advertising leads to stronger attitude changes into a negative direction than cognition-based advertising.	Supported
	Do high PSR consumers show stronger attitude changes into a negative direction in response to advertising that follows negative online product reviews than low PSR consumers?	The more negative effects of emotion-based (vs. cognition-based) advertising are stronger when high PSR consumers (compared to low PSR consumers) are addressed.	Supported
4	Are the effects of online product reviews on consumers' attitudes weaker if consumers know that such reviews can be manipulated?	The negative effects of negative reviews are weaker if consumers know that such reviews can be manipulated than in the case where consumers do not have this knowledge. Such a knowledge effect does not exist for positive reviews.	Supported
	Should a company actively inform consumers about occurring review manipulations or should it let such information be provided through a highly credible source with no self-interest in the topic?	The knowledge that reviews can be manipulated leads to even weaker effects of negative reviews on product evaluations if this knowledge is provided by a highly credible source (compared to a less credible source). Such an effect of source credibility does not exist for positive reviews.	Partly supported

The starting point of research project 1 was the growing popularity of opinion platforms. Consumers more and more often read online product reviews to gather information about the products they are interested in. Product information provided by companies is thus increasingly losing its importance. Furthermore, a review of extant literature (see Chapter 1.3.1) suggests that consumers' attitudes are strongly influenced by negative online product reviews. In such a context, the question arose to what extent the company is negatively affected when consumers read negative online reviews about its products. In a first step, it was therefore important to select a response variable that plays an essential role in marketing and that had not yet been considered in previous research on the effects of online product reviews. Consumer-based brand equity was identified as such. It stood therefore to reason to develop a new theoretical framework by integrating the concept of brand equity dilution in the context of effects of online product reviews and to test if negative online product reviews have detrimental effects on consumer-based brand equity. The findings of an empirical study support the hypothesis that negative online product reviews have harmful effects on consumer-based brand equity and cause a significant brand equity dilution. Even brands that are well-known to consumers are not immune and are found to be strongly affected by the negative review effects. This finding is very interesting because previous research suggests that brands towards which consumers have a comprehensive knowledge are rather protected from negative information (e.g. Laczniak et al. 2001, p. 66; DeCarlo 2007, p. 47; Sundaram and Webster 1999, p. 666). A possible explanation for such contrary results is that the mentioned studies were conducted in the research field of traditional WOM communication. In such a context, consumers generally receive less negative information than in an online field where several negative reviews about a brand's product are available. Thus, the effects of negative information on a brand should be stronger in an online than in an offline setting. Furthermore, the results of the study show that the strong detrimental effects of negative reviews occur independently of person-related variables such as consumers' susceptibility to online product reviews. More recent studies could be identified that supported the harmful effects of negative online reviews about highly involving electronic products on attitudes (Pang and Qiu 2016, pp. 370-371) as well as on consumer-based brand equity (Beneke et al. 2016, pp. 186-188).

Research project 2 started from the observation that a large volume of product reviews is available on the Internet and that these reviews differ considerably in their content. Two basic types of reviews were identified that can be characterized as rather high- and low-quality reviews. High-quality reviews are relatively objective and provide concrete information about product attributes and reasons for a positive or negative evaluation. Low-quality reviews, in contrast, are rather subjective and written in an abstract, emotional style. This distinction was also confirmed by previous research (see Chapter 1.3.3). Thus, the question arose as to whether high-quality online product reviews have stronger effects on consumer-based brand equity than low-quality product reviews. Furthermore, it was interesting to examine a possible mediating role of perceived review credibility in the relation between review quality and brand value perceptions that are a pre-stage of brand equity. As the credibility of online WOM communication cannot be assessed in the same way as in an offline setting where the communicator is often known, the perceived credibility of online product reviews was an important factor to study. The results of an empirical study confirm the strong detrimental effects of negative online product reviews on consumer-based brand equity found in research project 1 and show furthermore that brand equity dilution effects are stronger in the case of high quality reviews thus providing support for the research hypothesis. The stronger effects of high-quality reviews compared to low-quality reviews have been supported in a more recent study conducted by Li et al. (2013). In accordance with the present study results, the authors found that consumers are more influenced by reviews that provide concrete product information than by reviews written in a more abstract, emotional style (Li et al. 2013, p. 116). A more in-depth examination of the underlying effects reveals that review quality has a significant influence on the perceived review credibility. This mediator variable in turn affects consumers' brand value perceptions. Thus, the more consumers perceive reviews as being credible the more they are influenced by the reviews in their brand value perceptions. Similarly, Jensen et al. (2013, p. 311) compared the effects of reviews written in a more factual versus a more emotional style. The operationalization of the authors is comparable to the high- and low-quality reviews used in the present research. The authors found that more factual reviews are perceived to be more credible than reviews written in a more emotional way. Furthermore, the authors also demonstrated that the higher the

perceived review credibility, the stronger consumers are influenced by the reviews in their product quality perceptions (Jensen et al. 2013, pp. 311-313) thus supporting the effects found in research project 2. Reimer and Benkenstein (2016, pp. 5996-5997) did not find a mediating but a moderating effect of review credibility in that when reviews are considered to be credible, a negative review leads to weaker purchase intentions than a positive review. Interestingly, when reviews are perceived to be poorly credible, review valence influences purchase intentions in an opposite direction. The authors explain the results through reactance that is triggered within consumers and leads to boomerang effects (Reimer and Benkenstein 2016, p. 5996-5997). The finding that consumers show reactance to reviews is very interesting and responds to a call made by Bambauer-Sachse and Mangold (2014, p. 252) to examine conditions under which consumers' confrontation with reviews can trigger reactance.

Having demonstrated the risk for companies inherent with negative online product reviews, particularly with high-quality ones, the question arose as to how a company can react to recover the detrimental effects of such reviews. For research project 3, it stood therefore to reason to test appropriate recovery strategies that companies could implement as a response to negative reviews about their products. To this end, a second target variable was necessary because the numerical values for brand equity can only be calculated on an aggregate data level. Product attitudes in terms of product evaluations were identified as such. Furthermore, cognition-based versus emotion-based advertisements were selected as recovery strategies because they are two typical types of advertising that are commonly used in research and practice. However, their effects have not yet been analyzed in the context of negative online product reviews. Thus, it was important to test the effectiveness of these two types of advertisements in recovering consumers' negative attitudes. In a first step, a preliminary study was conducted through which the harmful effects of negative online product reviews on consumers' attitudes toward the product were demonstrated. The findings confirm the finding of research project 1 that even a brand that is familiar to consumers is not protected from the strong negative effects of negative online product reviews. Two main studies further aimed at testing to what extent the chosen advertising strategies can recover consumers' negative attitudes and to what extent they can also provoke reactance in terms of attitude changes into an even more

negative direction. The results of the first study prove that a majority of consumers change their attitudes into a positive direction after their contact with both the cognition-based and the emotion-based ad. The two advertisement types revealed to be equally effective and the hypothesis that an emotion-based ad is more suitable to recover the effects of negative online product reviews could not be confirmed. The data showed furthermore that a substantial part of consumers reacted negatively to the advertisements by changing their attitudes into a more negative direction. This reactance effect was even more pronounced when an emotion-based ad was used. Thus, in order to derive useful recommendations for marketers, it was important to gain closer insights into the mechanisms underlying these negative advertising effects. As the first main study had shown that consumers react positively and negatively to the same stimulus, it was likely that a person specific variable determined such effects. Consumers' general propensity to show reactance was identified in previous research as a factor that could lead to such consumer reactions. Extending the field of research, consumers' propensity to show reactance specifically with regard to advertising (PSR) was introduced as a new concept and its effects were analyzed in a new empirical study. The results of the second main study of research project 3 show that consumers' PSR is not the factor that causes positive and negative consumer reactions. In fact, the two groups of consumers with attitude changes into a positive and negative direction were characterized by the same average levels of PSR. A differentiation for high and low PSR in both groups further demonstrates that the PSR still plays an important role. Whereas the level of PSR did not make a difference in the group with positive attitude changes, high PSR consumers in the group with negative attitude changes showed a significantly stronger attitude change into a negative direction than low PSR consumers. Consequently, consumers' level of PSR is not the determining factor that triggers reactance and leads to positive and negative reactions but it reinforces the negative effects when reactance is triggered. In other words, reactance can be triggered in consumers with high and low PSR but the negative reactions are stronger for high PSR consumers. There is a considerable lack of research in this field and no more recent study could be identified supporting the results or showing different findings. An abstract in the American Academy of Advertising Conference Proceedings suggests, that similar results were found in an empirical study conducted by Bhandari

and Rodgers (2016) in that a company response to negative online WOM can lead to positive and negative consumer reactions (Bhandari and Rodgers 2016, p. 127). Unfortunately, the full study has not yet been published.

In light of the fact that consumers are more and more aware that manipulations of online product reviews occur, it was furthermore important to examine whether consumers differ in their knowledge about review manipulations and whether this knowledge has a weakening impact on the effects of online product reviews. Moreover, the question arose as to which role the source providing such knowledge plays. More specifically, it stood to reason to find out if it is more advantageous for a company to inform consumers about review manipulation tactics carried out by competitors or if it is recommendable to leave it to an independent source with no self-interest in the communication topic. To find an answer to these questions, research project 4 was conducted which consisted of two empirical studies. Contrary to research project 1-3, negative as well as positive reviews served as stimulus material because positive reviews are good advertising for companies, and marketers need to know if and under which conditions their beneficial effects are weakened. Based on the findings of the first study, it can be concluded that the knowledge that reviews can be manipulated differs significantly from consumer to consumer. Furthermore, the results of the first and second study show that the knowledge does not affect product attitudes when a consumer is confronted with only positive reviews. However, when a consumer is confronted with negative reviews, the knowledge about review manipulations attenuates the effect of the reviews on product attitudes. More precisely, when consumers encounter more positive than negative reviews, the available knowledge leads to an overcompensation of the harmful effects of the negative reviews by the advantageous effects of the positive reviews. In the case of exclusively negative online product reviews, consumers with comprehensive knowledge about review manipulations are less negatively influenced in their product attitudes by these negative reviews than consumers without persuasion knowledge. In addition, the second study provides interesting insights into the role of the source providing the persuasion knowledge. When such knowledge is transmitted by an unbiased and thus very credible source (independent newspaper), negative reviews have a significantly weaker impact on consumers' attitudes toward the product than when the knowledge

is conveyed by a biased source that has a self-interest in the communication topic (company news release). This effect could not be observed when consumers read exclusively positive or combinations of positive and negative online product reviews. No more recent results could be found that examined the influence of consumers' knowledge about review manipulations on the effects of online product reviews.

6.2. Theoretical contributions and managerial implications

Research projects 1-4 build and expand upon the online WOM knowledge base. The findings of six comprehensive empirical studies conducted on the effects of negative consumer online product reviews make important contributions and have implications for researchers as well as marketers.

From a theoretical point of view, research projects 1 and 2 add to the existing body of research because studies that examine the link between negative online product reviews and the dilution of consumer-based brand equity did not exist. Furthermore, the role of the perceived review credibility in the relation between review quality and brand value perceptions, a pre-stage of consumer-based brand equity, has so far been neglected in previous studies and the here obtained results fill an important gap in the existing body of research. From a practical perspective, it can be recommended that marketers of both well-known and less-known brands continuously monitor the reviews published on opinion platforms about their products. Such a review monitoring should particularly focus on negative reviews that have a high quality and thus are very credible from a consumer point of view. These reviews contain detailed information about consumers' experiences with a product and their evaluations of the product attributes. This valuable content should be systematically analyzed, product weaknesses should be identified and the so gained information should be used as a basis for product improvements. In addition, opinion platforms often provide information about the perceived usefulness or quality of a review rated by other consumers and the review valence, thus allowing consumers to sort the reviews by these two types of information. As consumers tend to find negative product information more diagnostic and useful than positive information, it is likely that consumers intentionally filter out negative reviews that have been useful to other consumers and

have a high review quality. Thus, based on the information provided by opinion platforms, marketers can assess the probability that potential customers are confronted with a considerable number of negative high-quality reviews. This knowledge is also important for retailers because negative reviews about a specific product do not only have negative effects for the brand itself but might also harm the equity of the retailer who sells the product.

Even if review monitoring can provide important information for companies, it implies a mere observation of what is said about a company's products and leaves the company in a passive position. Thus, if the likelihood that consumers encounter a relatively important number of negative high-quality reviews is high, companies need to implement adequate communication strategies that can recover consumers' negative product attitudes. The results of research project 3 contribute to the existing body of research by showing how and to what extent the detrimental effects of negative reviews can be attenuated or even compensated through appropriate advertising. More specifically, the research makes an important academic contribution by demonstrating that advertising can be used to recover the negative product attitudes that result from consumers' reading of negative online product reviews and that it is effective for a majority of consumers independent of the type of advertisement (cognition-based vs. emotion-based) being used. Furthermore, research has so far neglected the unsolicited effects of advertising in terms of attitude changes in an opposite direction as intended with a communication measure. The two studies conducted for research project 3 demonstrated such unintended boomerang effects by showing that an emotion-based ad leads to even stronger attitude changes into a negative direction than a cognition-based ad, thus enriching the existing body of research. Also, the role of consumers' PSR has so far received insufficient research attention. This research shed more light on the effects of such a person-specific variable by demonstrating that consumers with a high PSR show even more negative reactions than low PSR consumers provided that reactance is triggered. From a practical perspective, it is important that marketers become aware of the fact, that consumers can show completely opposed reactions to the same ads. Whereas none of the two ad types was more effective in the group with attitude changes into a positive direction, based on the findings for the group with attitude changes into a negative

direction it can be recommended that marketers implement a cognition-based ad which informs consumers about product attributes because it conveys a weaker risk to provoke strongly negative reactions after consumers' reading of negative product reviews than an emotion-based ad.

From a theoretical perspective, research project 4 contributes findings on the effects of online product reviews examined from a new point of view. Whereas existing studies part from the assumption that online product reviews reflect real consumer experiences, this research used a different approach by taking into consideration the fact that consumers are more and more informed about companies' review manipulation tactics. It demonstrates that consumers are influenced differently by online product reviews depending on their knowledge about review manipulations. Moreover, research project 4 also sheds light on the effects of the credibility of the source transmitting the knowledge about review manipulations. The findings of the two empirical studies also benefit practitioners. It can be recommended that marketers who are faced with some fake negative online reviews among positive ones actively inform consumers about review manipulations, e.g. through a news release on the company website. This allows them to benefit from the beneficial effects of persuasion knowledge in that the harmful effects of negative reviews are attenuated. However, when only negative reviews are published about a product, marketers should avoid informing consumers about manipulations of negative reviews on their own and leave it to an independent journal because the solicited attenuating knowledge effect is stronger when provided by an unbiased and thus very credible source. In the case of exclusively positive reviews about a product, the positive review effects on attitudes persist even if consumers are informed about review manipulations. This finding is good news for marketers because positive reviews are good advertising for a company's products.

6.3. Limitations and starting points for future research

Even though the above-presented studies consider various factors that play a role in the context of effects of negative online product reviews, several research questions and practical issues remain unexplained.

First, some limitations should be noted which are common to the four different research projects. The effects of negative online reviews were examined by means of several experiments. This procedure allowed to control for extraneous variables that can easily occur in such a dynamic and fast changing environment as the Internet and lead to biased results. The experiments were created as realistically as possible with reviews and company-based communication strategies designed to mimic those used by existing companies. Furthermore, scenario techniques were used to make respondents imagine themselves in a specific consumer context. This procedure has been successfully used in other studies on the effects of online product reviews (e.g. Jones et al. 2009, p. 254; Pan and Chiou 2011, p. 71; Park and Lee 2008, p. 391; Sen and Lerman 2007, p. 84; Smith et al. 2005, p. 22; Zhang et al. 2010, p. 1338) and allows therefore to gain reliable insights into the effects of online product reviews. However, it can be criticized that controlling for biasing factors leads to a study design which is somewhat artificial. For future research, it would therefore be important to test the effects of online product reviews and company-based response strategies in field experiments using consumers who really have the intention to buy a specific product and look for product information on real consumer opinion platforms.

A further limitation is the use of student samples. This target group was used because it proved to be adequate in previous research on the effects of online product reviews (e.g., Chan and Cui 2011, p. 328 and p. 330; Chatterjee 2001, p. 131; Chiou and Cheng 2003, p. 54; Goldsmith and Horowitz 2006, p. 6; Huang and Chen 2006, p. 419; Jones et al. 2009, p. 252; Khare et al. 2011, p. 117; Park and Lee 2009, p. 64; Schlosser 2011, p. 231; Sen and Lerman 2007, p. 84; Sun et al. 2006, p. 1112; Xue and Zhou 2011, p. 50). Furthermore, a study conducted by TNS Infratest [1] showed that particularly younger aged people between 16 and 34 years trust peer recommendations on the Internet. However, it can be observed that an increasing number of middle-aged and older consumers are familiar with the Internet and use it

to gather product information [2]. Thus, it should be tested if the same effects of online product reviews occur when using non-student samples.

The effects of online product reviews have been demonstrated using the example of electronic products. This product category was chosen because the quality of electronic products is difficult to evaluate before use and consumers therefore read consumer online product reviews to reduce their uncertainty and thus the perceived purchase risk. For a greater generalizability of the results, it would be useful to analyze the effects of negative online reviews in a different context such as the services industry. Due to the intangibility of services, consumers cannot be sure about the service quality. In tourism, for example, online WOM plays an important role (Filiari and McLeay 2014, pp. 44) and websites publishing reviews such as Tripadvisor.com have become very popular. Interestingly, previous research in this field showed that negative information is not necessarily weighted stronger in judgments than positive. On the one hand, for very complex travel products such as multi-service packages consumers find negative reviews more persuasive than positive ones (Tsaur et al. 2014, pp. 891-892). However, for products such as budget airline tickets positive reviews have been found to be more persuasive than negative ones (Tsaur et al. 2014, p. 891-892). The robustness and generalizability of the negativity effect (Ahluwalia 2002 p. 270; Skowronski und Carlston 1989, p. 131) as assumed in this work can thus be questioned and new studies should be conducted.

In this research, the effects of negative online product reviews on attitudes and consumer-based brand equity have been analyzed in the context of a planned product purchase. For a greater generalizability of their impact on consumers it would be important to test review effects after a product purchase. In such a situation, the negativity bias may also not hold because consumers are likely to look for information that positively confirms their purchase decision to avoid the occurrence of cognitive dissonance. Thus, positive online product reviews may be weighted more heavily than negative ones.

Research project 1 and 2 focused on an examination of the effects of negative online product reviews on the brand's equity. In such a context, it would also be important to test if equally negative effects occur for a retailer selling a brand's product that has

received very negative reviews. It is plausible that a retailer's consumer-based equity (Jinfeng and Zhilong 2009, p. 487) is also diluted.

Research project 3 entails several limitations and presents interesting starting points for future research. Two company-based advertising strategies, namely an emotion- and cognition-based ad, have been analyzed regarding their effectiveness to recover the negative effects of negative online product reviews. The results cannot be generalized because only two different types of advertising have been used. Thus, it would be important to test different types of advertising strategies that could be implemented to cope with the effects of negative online product reviews. It would be important to test, for example, to what extent cognition-based versus emotion-based banner or pop-up ads are suitable to recover consumers' negative product attitudes and to what extent they provoke consumer reactance. Companies can be tempted to implement such advertising forms in order to communicate over the same channel as online product reviews, namely the Internet. However, as these types of advertising are perceived to be quite intrusive themselves (McCoy et al. 2007, p. 87), even stronger reactance effects are plausible than in the case of an advertisement that is, for instance, published in a newspaper.

It would also be interesting to test whether different types of company-based communication strategies as a response to negative online product reviews can lead to similar negative consumer reactions as observed in the case of advertising. A company could, for example, encourage its customers to post their product experiences directly on the company website. This would allow them an easier surveillance of the published review content and a direct response to negative reviews. In such a response, it could provide an excuse to the customer, a proposition for exchange or refund etc. Such a coping strategy is already used by some companies such as Decathlon (see Appendix 4). However, no study could be identified that provides empirical results on the effects of interest and further research is thus required.

Future studies should examine further factors that could lead consumers who have read negative online product reviews to show negative reactions to a company-based advertising measure. A possible factor could be the perceived motives behind a

company's communication strategy. Some consumers who have read negative reviews about a specific product could believe that by implementing an advertising strategy a company tries to distract consumers' attention from real problems with a product. This could lead even low PSR consumers to show negative reactions. On the other hand, some consumers could think that a company has implemented an advertising strategy because it is really convinced of a good product quality which could lead even high PSR consumers to show positive reactions. Another factor could be consumers' exposure to company-based communication in terms of advertising in daily life. Consumers who are frequently confronted with advertising may show stronger negative reactions when being exposed to an ad after having read negative online product reviews than those who are rarely exposed to advertising.

Future research should examine in more detail under which conditions and to what extent consumers show reactance to reviews. As mentioned above, Reimer and Berenstein (2016, p. 5997) demonstrated that for highly trustworthy online product reviews positive and negative reviews influence consumers in the intended direction. If a review is perceived as being untrustworthy, however, reactance effects have been observed in that consumers are influenced in an opposite direction as intended with the review. More detailed empirical results are needed in this regard.

Investigating whether consumers' situational involvement (Park et al. 2007, pp. 129-130) has an influence on consumers' reactions could also provide interesting insights. In this work, a high involvement product category was chosen as stimulus material. However, it is plausible that some consumers already have a specific product and are less motivated to process information thoroughly than consumers who are really interested in buying a specific product and thus have a higher situational involvement.

Chatterjee 2001 (p. 133) suggested that advertising can protect a company from the deleterious impact of negative online product reviews. It would therefore be interesting to test if cognition-based versus emotion-based advertising strategies can exert a bolstering effect in that consumers who have seen an advertising about a specific product and then are confronted with negative reviews about this product may be less influenced by the reviews. As in practice it is problematic for marketers to control whether consumers are first confronted with negative online product reviews and then

see an ad for the same product or vice versa, empirical results for both situations would be important.

Further limitations have their origin in the measurement of reactance. In accordance with prior research, attitude changes into a negative direction were used as indicator of occurring reactance. Future research should use further indicators such as negative cognitions and anger (e.g. Dillard and Shen 2005, p. 159; Quick and Stephenson 2007, p. 266; Quick and Stephenson 2008, p. 461; Rains and Turner 2007, p. 252) to prove the presence of reactance in the here considered context. Also, it would be important to test whether reactance is more cognitively or emotionally driven. A strong presence of negative emotions could explain why an emotion-based ad triggers stronger attitude changes into a negative direction than a cognition-based ad. Consumers' affect intensity (e.g. Moore and Harris 1996, p. 41; Moore et al. 1994 pp. 182-183) could also provide an explanation for consumers' different reactions to emotion-based advertising.

The two empirical studies conducted for research project 4 present a major limitation which is related to quick evolutions of opinion platforms within the last couple of years. Whereas at the time when the studies were conducted online product reviews were presented in a rather basic form with few reviewer information, today, many websites also indicate how many reviews the consumer has already published and how many other consumers trust the reviewer. On online retailer websites or company websites, a "verified purchase" certificate is often shown to prove that the reviewer really knows the product (see example in Appendix 4). It would therefore be interesting to test whether consumers trust reviews more when more reviewer information is available or if they still mistrust the reviews due to their knowledge about occurring review manipulations.

Several other starting points for further studies can be identified with regard to research project 4. First, it would be interesting to test persuasion knowledge effects for online product reviews about vacation destinations because reports about review manipulations have been particularly frequent in the tourism industry [3].

Second, it would be important to examine whether the manipulation of online product reviews really pays off for a company or has unintended backlash effects. If a company,

for example, publishes fake positive reviews about one of its products, it is likely that consumers who read the reviews develop high expectations toward the product. If, however, the product after purchase does not meet these expectations, negative consumer reactions are likely. Minnema (2016) demonstrated in such a context that very positive reviews lead to high sales but also to high expectations. When these expectations about product quality are not met, product returns occur which leads to a negative impact on a company's profits (Minnema 2016, p. 263). Maity (2012, pp. 313) suggests that consumers return their products due to a state of cognitive dissonance. Thus, future research should examine the relation between fake positive online reviews promising a product quality that the real product cannot hold, consumers' expectations and actual product experience as well as the cognitive dissonance aroused from this gap between expectations and real experience. The construct of cognitive dissonance could thereby be measured following the recommendations of Sweeney et al. (2000, p. 381). It is furthermore plausible that consumers whose product expectations are not met engage themselves in negative WOM communication and publish negative reviews about their experiences. Thus, the question if the publication of fake reviews is really worthwhile for a company or not should be examined in future studies.

It would also be important to analyze to what extent the equity of a specific company brand is diluted when it is publicly known that the company has consciously manipulated online product reviews. One other more recent research could be identified in which a persuasion knowledge effect was demonstrated in an online product review setting. Stephen et al. (2014, p. 3) found that consumers are negatively influenced in their product attitudes when they are informed that the author of a review received a monetary compensation for writing the review about the product. Thus, it is plausible that a similar negative carry over effect occurs for a company's brand equity when it receives negative publicity because its' review manipulations have been discovered.

Another interesting question is whether reviews on independent expert websites such as Consumerreports.org or Cnet.com gain in importance when consumers are increasingly aware of occurring manipulations of consumer online product reviews. Product reviews on such websites are mainly based on third party laboratory testing and expert evaluations (Chen and Xie 2008, p. 480). A study conducted by Li et al.

(2013, p. 116) showed that product reviews written by consumers are considered to be more helpful than reviews written by experts. However, the effect could be different when consumers are knowledgeable about manipulations of consumer online product reviews. Thus, in such a context it would be important to test if independent expert evaluations have a stronger influence on consumers than product reviews when they are informed that companies publish fake consumer online reviews to rise their sales and harm competitors.

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Appendix 4

Example of company response to negative consumer product review found on Decathlon.fr


Déception

12/02/2017
• Achat confirmé •
LAURENT (France)

Utilisé depuis 2 à 8 semaines

Je viens de faire l'achat de ce modèle et je suis vraiment très déçu de l'autonomie en mode GPS. En effet une randonnée à ski, ou un petit trail de 02 heures et la batterie est vide !!!!!
 Comment faire sur des trails long, une sortie vélo ????

Et encore je ne suis pas encore servi de la fonction cardio en même temps !!
 Donc très grosse déception, je ne recommande pas cet achat.

Réponse de la marque

Bonjour Monsieur,

Je vous remercie pour votre avis sur le GPS Tom Tom Adventurer.

Tout d'abord, je me permets de vous présenter mes sincères excuses au nom de notre enseigne pour les désagréments occasionnés lors de l'utilisation de votre produit.

L'autonomie en mode GPS Standard annoncée par Tom Tom est de 11 heures environ.

Votre produit doit donc certainement présenter un dysfonctionnement.

Aussi, je vous invite à le rapporter dans le magasin Decathlon de votre choix afin de le faire remplacer.

Je vous souhaite une excellente fin d'après-midi.

Fabien LECUROUX
 Equipe support Decathlon Electronics


LAURENT a trouvé cette réponse satisfaisante