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Working Paper

Electronic word of mouth about medical services

HCHE Research Paper, No. 2012/05

Provided in Cooperation with:

Hamburg Center for Health Economics (hche), University of Hamburg

Suggested Citation: Hinz, Vera; Drevs, Florian; Wehner, Jürgen (2012) : Electronic word of mouth about medical services, HCHE Research Paper, No. 2012/05, University of Hamburg, Hamburg Center for Health Economics (HCHE), Hamburg

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Vera Hinz, Florian Dreves, Jürgen Wehner

Research Paper
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<http://www.hche.eu>

Abstract

Electronic word of mouth (eWOM) about medical services gains growing popularity from the part of health care users, accompanied with a high reluctance of health care providers towards existing platforms, fearing unqualified, negative reviews driven by motives of vengeance. Purpose of this research is to shed light on the characteristics, content, and motives of eWOM about medical services. Using primary and secondary data of 822 reviews, this study shows that reviews about medical services are positive more often than negative, and that altruistic motives override egoistic motives. Furthermore, why a review is written significantly relates to the review's valence (positive, negative), degree of affectivity, and degree of differentiation. Motives and characteristics also affect the review's content, differentiated in four aspects (medical care, relationships, comfort, and processes). Hence this study counters the arguments of many health care providers and offers new insights in an underresearched field, providing implications for both management and future research.

Keywords: Electronic word of mouth, online reviews, health care management, hospitals.

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1. Introduction

Recently a large number of online services offering web-based consumer opinion platforms have emerged worldwide, providing consumers with the opportunity to articulate their experiences and comment on products and services (Darley, Blankson, & Luethge, 2010; Grégoire, Laufer, & Tripp, 2010; Lee & Song, 2010). Electronic word of mouth (eWOM) for health services has attracted the attention of service and healthcare management researchers (Niehues, Emmert, Haas, Schöffski, & Hamm, 2012; Rothberg, Morsi, Pekow, & Lindenauer, 2008; Trigg, 2011). Rothberg et al. (2008) argue that social networking websites and opinion platforms may eclipse traditional public reporting in the US health care system. Furthermore, they highlight the relevance of other patients' experiences for the hospital choice of patients due to the characteristics of medical services. In the wake of continuous endeavors to increase patient sovereignty and empowerment (Berry & Bendapudi, 2007), patients need information sources to provide a basis for their own choices. The rising importance of eWOM is accompanied by a high resistance on the part of doctors and hospitals toward opinion platforms, as they are anxious about one-sided, negative reviews driven by the vengeance of patients who might wrongly attribute negative medical outcomes to the quality of care received.

Gal and Doron (2007) point out that further research is needed regarding factors that influence word of mouth (WOM), whether positive or negative, on the part of patients. Compared to negative WOM, online complaining is mass-public oriented, reaches a larger audience, and includes a clearer intent to complain about a firm as a possible indirect means of customer revenge (Ward & Ostrom, 2006). Grégoire et al. (2010) highlight that, although the relevance of eWOM has already been discussed, this behavior has rarely been conceptualized and measured. The discussion about the information quality of the reviews lacks competent knowledge about patients' intentions and the resulting content of the reviews. Until now, research on review properties, especially with respect to inpatient stays, has been scarce. Little is known about the characteristics and content of reviews, and the underlying motivations of reviewers for engaging in eWOM. This study ties in with this research gap and aims at answering two research questions. First, the veracity of claims expressed by doctors and hospitals shall be assessed empirically, hence the first research question:

1. Are online reviews about medical services mainly motivated by revenge and do they have a high negative valence?

Additionally, further insights shall be revealed on the interplay between how reviews are written, what reviewers write about, and why they do it. This relationship is specified in Figure 1 and translates into the following research question:

2. What are the characteristics of eWOM in medical services with respect to review characteristics, review content, and motives for engaging in eWOM?

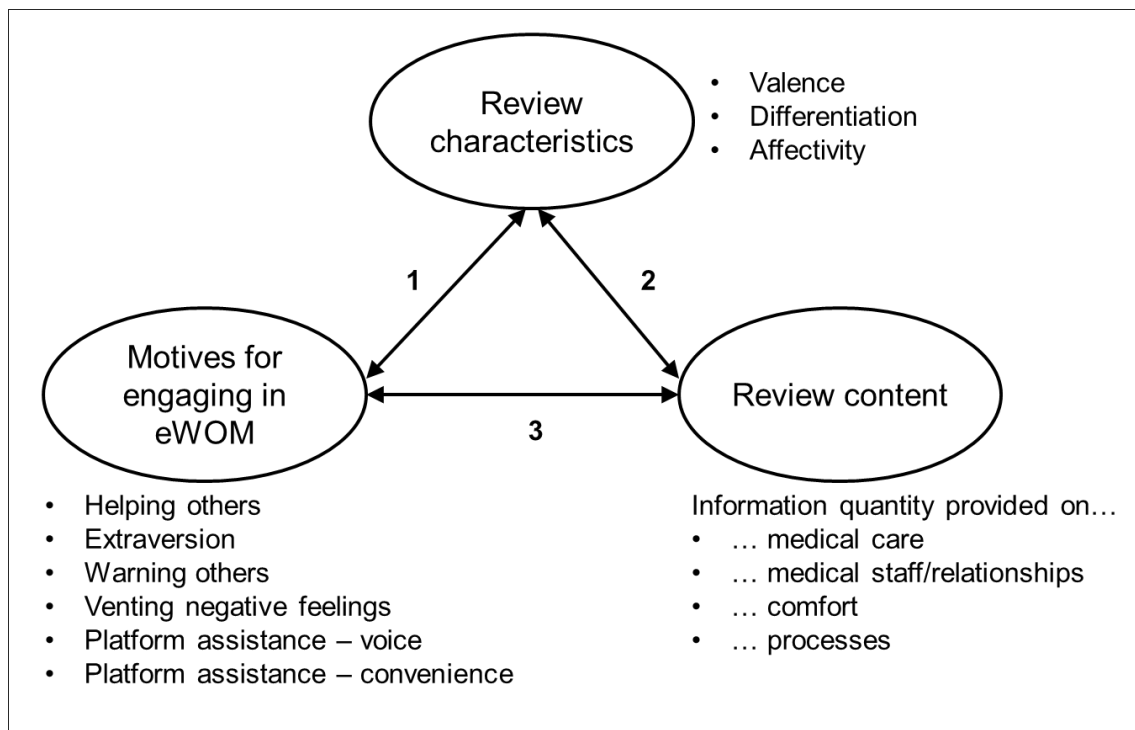


Figure 1: Interplay of review characteristics, review content, and motives for engaging in eWOM

In order to answer these questions, this paper will proceed in the following steps: first, an overview of the current developments in the health care sector affecting the information needs of patients is given, and possible information sources outlined. Then, word of mouth and electronic word of mouth as two important information sources are confined and described. Based on this background and referring to the identified research gaps, an empirical study is conducted. For that purpose, the most prominent German hospital rating site is chosen and more than 800 reviews are analyzed. Using a coding scheme based on former studies, the research team assesses the characteristics and information content of each review. Gaining insights in the underlying motivations for writing is hardly realizable by reading

the review. Moreover, single-source information in general contains severe limitations and is often criticized for its subjectivity. Therefore, an additional, primary data collection process is conducted in form of an online questionnaire. The data from the primary and secondary data collection are then combined and analyzed. Following the presentation and discussion of the results, the paper concludes with implications for further research and practice.

2. The relevance of EWOM in the health care sector

2.1. Information needs of patients

The increasing importance of patient empowerment leads to greater information needs among patients, especially in the rapidly changing health care markets in the US (Kurz & Wolinsky, 1985; Sloane, Tidwell, & Horsfield, 1999) and Europe (Coulter & Jenkinson, 2005; de Cruppé & Geraedts, 2011; Scheibler, Janßen, & Pfaff, 2003). Within this context, the literature review of Dietrich and Grapp (2005) indicates that 30% to 40% of German consumers act confidently as single decision-makers when choosing a hospital for inpatient treatment. Patient participation in the choice of a hospital for an inpatient stay only holds for elective surgery, not for urgent care (Calnan, 1984). Yet elective surgeries represent a major field of hospital activity, and, according to the German Federal Census Bureau, 63% of total surgeries are elective.

Patients access multiple information sources to evaluate and choose a hospital within the context of non-urgent care or elective surgeries. To make informed decisions, health care consumers have to rely on relevant and appropriate information, even more so than consumers in other markets (Robinowitz & Dudley, 2006). This fact is because health care services are credence goods, related to high personal risk and thus high involvement, while the quality is very hard to judge (Ferguson, Paulin, & Bergeron, 2010).

The most important sources of information include personal experience, referrals, health care provider information, public reporting, and recommendations in the form of (e)WOM. Leister and Stausberg (2007) attribute a high importance to *experience*. In contrast, Woodside, Frey, and Daly (1989) posited earlier that consumers' hospital choices are usually not influenced by their own treatment experiences because they have little personal experience. Experience is likely to play a role when consumers make use of a specific medical service regularly. In other instances, experience may be limited and thus play a minor role; instead, consumers must rely on third-party information sources (Woodside et al., 1989). Due to what is usually a personal relationship, general practitioner *referrals* have a high importance (Leister & Stausberg, 2007;

Trigg, 2011). Referrals from physicians who are in frequent, intimate contact with the patients can provide them with information which reduces uncertainty (Dobele & Lindgreen, 2011; Hausman, 2004; Leisen & Hyman, 2004).

Information provided by health care providers, such as hospital quality reports or hospital websites, represents another third-party information source (Gruca & Wakefield, 2004; Leister & Stausberg, 2007). Yet consumers exhibit a lack of awareness, interest, comprehension, and acceptance of information on the quality of health service providers (Jewett & Hibbard, 1996; Marshall, Shekelle, & Leatherman, 2000; Schneider & Lieberman, 2001; Trigg, 2011). An allegedly more objective form of information is provided by *public reports* (Rothberg et al., 2008); however, this information source is often criticized for not being adequately targeted at (future) patients, and for lacking comprehensibility. Conflicting and overly detailed information may result in information overload (Walsh & Mitchell, 2010; Wood, Shinogle, & McInnes, 2010), since patients implicitly look for easy ways to make hospital choices and take short cuts. This lack of interest and awareness occurs even when consumers decide whether and where to undergo elective surgeries (de Cruppé & Geraedts, 2011; Dietrich & Lindenmeier, 2009). *Positive press coverage* may be another source of information (Leister & Stausberg, 2007), yet it is not easy to find in the case of a spontaneous search.

Due to the peculiarities of the service, and the difficulty in obtaining and understanding objective information, *recommendations by relatives and acquaintances*, that is WOM, as well as its new, extended offshoot *eWOM*, are attributed a major role as information sources (Edgman-Levitan & Cleary, 1996; Bates & Gawande, 2000; Leister & Stausberg, 2007; Ferguson et al., 2010). Relying on the recommendations of relatives or acquaintances can ease the difficult decision-making process, especially as patients often dread rational information searches (Hoerger & Howard, 1995; Dobele & Lindgreen, 2011). Both WOM and eWOM have been found to exhibit higher credibility and relevance to customers than marketer-created sources of information on the web (Bickart & Schindler, 2001; Gruen, Osmonbekov, & Czaplewski, 2006). Additionally, the recommendations of other consumers have been shown to outweigh those of experts (Huang & Chen, 2006).

2.2 (Electronic) word of mouth

EWOM can be regarded as a special form of WOM. In contrast to the direct oral communication of WOM, eWOM is an anonymous act, via the internet, of a past, present, or future consumer, who provides his or her assessment of a product or service without any

commercial interests (Hennig-Thurau, Gwinner, Walsh, & Gremler, 2004). Another term for eWOM is word of mouse, underlying that communication takes place in a written, instead of an oral, manner (Xia & Bechwati, 2008). Both WOM and eWOM can be regarded as a form of customer engagement behavior (van Doorn, Lemon, Mittal, Nass, Pick, Priner, & Verhoef, 2010).

When speaking about the negativity or positivity of WOM or a review, that is their valence, a direct link to the valence of the service experience, namely the satisfaction with the experience, can be assumed. Indeed, a number of studies report that satisfaction has a significant effect on WOM (Choi, Cho, Lee, Lee, & Kim, 2004; Brown, Barry, Dacin, & Gunst, 2005; Heckman & Guskey, 1998; Heitmann, Lehmann, & Herrmann, 2007; Hennig-Thurau et al. 2004; Mittal, Huppertz, & Khare, 2008; Price & Arnould, 1999; Söderlund, 2006; Swan & Oliver, 1989; Wangenheim & Bayón, 2007). Meanwhile, Matos and Rossi (2008) show that the valence of a review is mainly determined by satisfaction with and loyalty towards a service, as well as the service quality. High satisfaction leads to positive reviews, while high dissatisfaction leads to negative reviews. One specific characteristic is that reviews are predominantly very positive or very negative; the distribution does not follow the standard normal at all, but rather accumulates at the extremes (Anderson, 1998; Chevalier & Mayzlin, 2006; Duan, Gu, & Whinston, 2008; Mazzarol, Sweeney, & Soutar, 2007; Sweeney, Soutar, & Mazzarol, 2005; Zeelenberg & Pieters, 2004). This phenomenon might be attributable to the fact that extreme service experiences (both positive and negative) are more likely to trigger strong motivations for engaging in eWOM.

Based on the works of Dichter (1966) as well as Sundaram, Mitra, and Webster (1998), the study of Hennig-Thurau et al. (2004) represents one of the most important pieces of research on the motives for engaging in eWOM. Via an online survey, users of an online platform were asked about their motives for writing an online review. The motives are derived from a framework devised by Balasubramanian and Mahajan (2001), according to which participants of virtual communities experience three different kinds of (immaterial) benefits of social interaction. These are focus-related utilities (when adding value to the community through their contributions), consumption utility (direct consumption of the contributions of other community constituents), and approval utility (when other constituents consume and approve of the constituents' own contributions). Hennig-Thurau et al. (2004) extend this framework and add homeostasis utility (desire for balance in their lives). As a result, they depict eight distinct motivations, namely platform assistance, venting negative feelings, concern for other

consumers, extraversion or positive self-enhancement, social benefits, economic incentives, helping the company, and advice seeking. Their resulting analysis suggests that consumers' wish for social interaction, their desire for economic incentives, their concern for other consumers, and the potential to enhance their own self-worth are the primary factors leading to eWOM behaviour, including both platform visit frequency and comment writing.

The motives for writing are significantly affected by the valence of the consumption experience (Sundaram et al., 1998). Motives for positive eWOM include involvement, self-enhancement, and helping the company. Revenge, anxiety reduction, advice seeking, and helping others by warning them are motives in cases of a negative experience (Grégoire et al., 2010; Hennig-Thurau et al., 2004). Warning others is a focus-related utility and can be classified as an altruistic motive: helping others with their purchase decision (or provider choice) stands in the foreground. Warning others is thus the negative counterpart of the positive helping others. In this context, the reviewer might aim at helping future patients on the one hand, or the service provider on the other, by supporting and recommending it. This behavior is explained by altruism as well as by equity theory (Oliver & Swan, 1989). Wetzer, Zeelenberg, and Pieters (2007) assume that the motivations for writing a review might be affected by the emotions elicited by the service experience, and thus differ in their degree of affectivity. Negatively-valenced eWOM is rather self-focused, motivated by the urge to take revenge and vent negative feelings (van Doorn et al. 2010). The underlying service experience might be associated with feelings of anger. Disappointment and regret with respect to the service experience, however, are related to a stronger focus on the message receiver (other-focused message), with motives of warning others and preventing them from having a similar experience.

Reviews do not only vary in valence, but may also differ in other attributes. These may include the degree of affectivity, the content of a review, its length, and the perspective a reviewer takes (Goyette, Ricard, Bergeron, & Marticotte, 2010). An affective message is characterized by personal, emotional descriptions and a scarcity of objective judgements which could be useful for other users. Until now, the degree of affectivity has only been volitionally manipulated in experimental settings in order to analyze its effect on the readers of a review (Huang, Chou, & Lan, 2007). Thereby, affective messages are shown to be perceived as less credible than objective instrumental messages. No research has been conducted to analyze the degree of affectivity of written online reviews. The same holds true for the degree of differentiation, which has until now only been manipulated as a component of a review's credibility (Cheung,

Luo, Sia, & Chen, 2009) or its quality (Park, Lee, & Han, 2007). Meanwhile, medical service providers often voice concerns that reviews are highly emotional, non-generalizable, undifferentiated, and do not contain a lot of detailed information. The valence of online reviews, the degree of affectivity, and the degree of differentiation have not yet been assessed empirically. Thus, review characteristics remain a research gap for eWOM about medical services.

While a considerable amount of research has been conducted regarding WOM behaviour in the field of health care (Ferguson et al., 2010; Gal, Weisberg-Yosub, Shavit, & Doron, 2010; Klinkenberg, Boslaugh, Waterman, Otani, Inguanzo, Gnida, & Dunagan, 2011), only one conceptual article has been published concerning eWOM in the health care sector (Trigg 2011). Trigg (2011) discusses the quality of service-experience reviews with respect to the evaluation of medical care quality. Furthermore, the article gives an overview of the relevance of the topic from different perspectives, including those of the reviewer, the reader, and the health system as a whole. In sum, while WOM has been analyzed in depth, research on eWOM in the health care context is still in its beginnings. With the rise in the practical relevance of online platforms for evaluating hospital stays as a service experience, research gaps emerge on patients' motivations for writing reviews, on the reviews' characteristics, and on their contents. In order to shed light on this field, this study aims at providing empirical evidence to enhance the discussion.

3. Methodology

3.1 Hospital rating site

The data are based on online reviews from the German online platform for hospital reviews www.klinikbewertungen.de. [Klinikbewertungen.de](http://www.klinikbewertungen.de) has existed as an online platform since 2006, and is operated by a nonprofit organization which is government-financed by subsidies and privately financed by advertisements as well as private donations. The site's database consists exclusively of entries made by its users, namely patients, visitors, and medical staff. No case or diagnosis statistics are presented. Each online review consists of a total and partial satisfaction score (overall satisfaction, quality of consultation, medical treatment, administration, on a 4-point scale), an optional detailed field report about the hospital stay, and further particulars such as whether the writer is a relative or a patient, the year of the inpatient stay, their insurance status, and the name of the medical facility. A detailed description and a comparison of this site with other German hospital rating sites can be found in Niehues et al. (2012).

3.2 Data collection

Data collection consisted of two parts. First, a survey was conducted to collect primary data on the medical service experience of persons who had experienced a hospital stay. These persons were identified via the online platform on which they had written a review about the hospital stay. Second, the online reviews of participants in the study were analyzed and coded to obtain a second source of (objective) data. To link the questionnaire to the online review while simultaneously guaranteeing anonymity, the reviewers received personalized links to the survey that included a code associated with the corresponding review. This procedure allowed adding the secondary data to the primary data collected by the survey.

The primary data collection process was preceded by two steps. In the first step, the functionality of the survey was cross-validated with experts in the fields of health care research and patient rating behavior. These experts were asked to answer the online questionnaire in a pre-test mode which allowed them to comment on every subset of questions. Their answers and comments helped to correct any misleading phrases and to make sure no crucial variables were omitted. Moreover, the topicality and relevance of the research from both a managerial and a research point of view was ensured. The second step consisted of a data collection pre-test among 285 persons who had experienced a hospital stay, yielding a dataset of 53 valid respondents (response rate 18.6%). By analyzing the points of withdrawal of 13 respondents who abandoned the questionnaire prior to the last page, one could see that most withdrawals happened on the first two pages. By assessing the response behavior of the remaining 40 respondents, critical questions could be identified and according alterations were made. Among others, two additional open format questions on the first two pages were included, in order to provide the opportunity for patients to elaborate on their experience without being restricted to the standardized response scales. The final data collection process was then initiated, and 4,197 emails were sent to persons who had experienced a hospital stay and written an online review about it during the previous three months on klinikbewertungen.de. This data source provided access to a wide range of individuals with a recent hospitalization experience and an assumedly vivid memory enhanced by the writing of a review about this experience. Within one week, 1,050 persons filled out the questionnaire. After eliminating responses that included too many missing variables, the dataset included 822 responses. This yields an effective response rate of 19.6%.

After completion of the primary data collection process, the online reviews of the 822 respondents were identified and analyzed using qualitative, directed content analysis (Hsieh & Shannon, 2005), also referred to as quantitative analysis of qualitative data (Morgan, 1993). The process is described in the following paragraph.

3.3 Primary and secondary data and measurement

For the primary survey, reliable and valid constructs were derived from former research on eWOM and adapted to the medical context. The measurement and source of each construct are included in Appendix 1. The measurement of the two focal constructs, motives for writing an online review and the evaluation of the hospital stays, will be discussed briefly. The measurement scale for the motives for writing an online review is adapted from Hennig-Thurau et al. (2004). The scale contains 22 items measured on a 7-point scale. These items were translated and adapted to the medical service context. Some items or factors, such as economic incentives as a motive for engaging in eWOM, were excluded as they did not fit the context of the study. To control for the characteristics of the hospital stay, the questionnaire includes an item on the retrospective evaluation of the stay, from very negative to very positive. Measured on a 7-point scale, the direct question on such a simple, rather comprehensible construct presumably leads to valid results.

In the secondary data generation process, three main variables derived from former research were used to characterize the online review. These were the valence of the review (from -2 = very negative to 2 = very positive), the degree of differentiation (from 0 = undifferentiated, one-sided to 2 = differentiated, two-sided), and the degree of affectivity (1 = very low degree of affectivity to 5 = very high degree of affectivity). The latter captures whether the review focuses on a specific reviewer's own experience rather than on generalization (Park et al., 2007; Xia & Bechwati, 2008). Furthermore, the quantity of information provided on four quality aspects (medical care, relationship, comfort, and processes, each from 0 = not mentioned to 2 = described in detail) was extracted. The variables, the coding criteria, and the source for each construct are provided in Appendix 2.

Other information that can be retrieved from the online reviews include the medical service unit, total and partial satisfaction (overall satisfaction, quality of consultation, medical treatment, administration, on a 4-point scale), and an overall recommendation (yes/no).

3.4 Validity and reliability

Concerning the motives, six factors could be derived via exploratory factor analysis. These are similar, although not completely identical, to those differentiated by Hennig-Thurau et al. (2004). Among others, platform assistance was split into two separate factors: convenience and voice. An additional factor, helping others, emerged from the urge to help other consumers as well as the organization. All factors show satisfactory reliability (Cronbach's alphas above .70 except for platform assistance – convenience, with .65), and an average variance extracted of above 50% for all factors. Indicators and reliability measures are provided in Appendix 1. The average variance extracted is higher than the squared multiple correlations for all factors, indicating discriminant validity (Appendix 3).

The following procedure was used to derive the codes for the different variables. Two persons coded the reviews independently and compared their results for each 40 reviews. Codes were then refined until an intercoder reliability of at least 80% was achieved. This procedure was followed for the first half ($n = 400$) of the sample. The remaining 422 reviews were split up between the coders. The primary data process also contains questions on how reviewers rate the degree of affectivity of their own review, as well as their satisfaction with the hospital stay, which has been shown to be highly correlated with the valence of an online review. The first question is of limited validity, as reviewers are unlikely to rate their own review as highly emotional. Still, a significant correlation with the codings can be detected ($r = 0.1$, $p \leq 0.05$). The correlation coefficient between the reported satisfaction and the coded valence is significant and very high ($r = 0.9$, $p \leq 0.001$). These results can be regarded as indicators for convergent validity.

3.5 Sample description

More women than men (63% to 36%, 1% missing) participated in the survey. Mean age of respondents is 47.4 years. With respect to socio-economic status, six different education levels are distinguished, each making up between 8% and 21% of the respondents (8% other or missing). Respondents report between zero and 60 previous hospital stays, the mean is having been hospitalized 6.3 times before (standard deviation 5.8). 19% report that they are hospitalized regularly. The hospital stays to which respondents refer differ in length of stay and medical department where treatment took place.

The mean length of a review is 150 words (standard deviation 94) or 1,016 characters (standard deviation 620). Figure 2 displays the satisfaction reported in the online reviews by

the reviewer. Shares are given for the whole population, that is all online reviews written on the analyzed internet platform, and for those reviewers who participated in the study. The alikeness of the numbers indicates the inexistence of a response bias with respect to satisfaction.

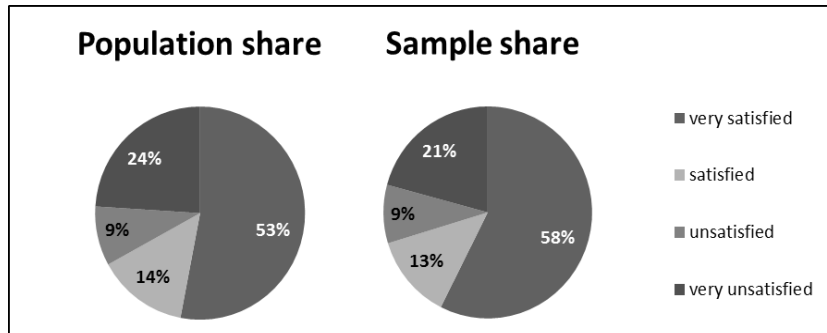


Figure 2: Satisfaction reported in online reviews

4. Results

4.1 Ratings of the hospital stays and review characteristics

The distribution of the valence of the review, codified by the research team, is displayed in Table 1. As can be seen, 72.9% of the respondents are classified as writing either a very negative or a very positive review, thus a high majority is on the scale's extremes. The same holds true for the retrospective rating of the hospital stay by the respondents themselves, as assessed in the survey. About one quarter (25.2%) report their hospital experience to have been rather or very negative, while 66% rate the experience as rather or very positive. The average hospital stay rating is 5.24 on a 7-point scale, with 7 being very positive. The response patterns are not normally distributed either; instead, responses cumulate on the extremes, with 13.6% reporting a very negative (1) experience and 46.5% reporting a very positive (7) experience.

Category	Total number of answers	Relative number of answers
very negative	157	19.1 %
rather negative	65	7.9 %
neutral	52	6.3 %
rather positive	94	11.4 %
very positive	442	53.8 %

Table 1: Distribution of review valence ratings

All three measures—the valence of the review, the satisfaction reported in the online review, and the retrospective evaluation of the hospital stay as assessed in the survey—are highly and significantly correlated (satisfaction and valence $r = .91$, $p \leq .001$; satisfaction and retrospective evaluation $r = .88$, $p \leq .001$; valence and retrospective evaluation $r = .86$, $p \leq .001$). The high correlation indicates that satisfied respondents write more positive reviews and rate the hospital stay as more positive afterwards. Furthermore, satisfied reviewers are able to express their opinion in a comprehensible way, as the subjective evaluation is highly correlated with the external view of the research team who coded the valence.

In the next step, the other review characteristics, namely the degree of differentiation and the degree of affectivity, are described. Regarding the degree of differentiation, about half of the reviews are rather undifferentiated, one-sided (57%). Another 22% of the reviews are mostly one-sided, but try to consider counterarguments as well. 21% of the reviews contain positive as well as negative aspects of the hospital stay. Interestingly, the one-sided reviews are more often positive reviews than negative reviews, meaning a significant negative link between valence and differentiation. This finding counters the criticism that reviewers tend to write undifferentiated reports after a negatively perceived hospital stay. Valence and affectivity are significantly negatively correlated as well. Positive reviews thus exhibit a lower generalizability and a lower degree of affectivity. At the same time, the more affectively a review is written, the less differentiated it is. Correlation coefficients are presented in Table 2.

	Valence	Differentiation	Affectivity
Valence	1		
Differentiation	-.24 ^a	1	
Affectivity	-.37 ^a	-.15 ^a	1

^a $p < .001$, ^b $p < .01$, ^c $p < .05$

Note: For valence and affectivity, the metric correlation coefficient is displayed; due to the ordinal measurement of differentiation, Kendall's tau is used for the other two correlations.

Table 2: Correlation coefficients between valence, differentiation, and affectivity

4.2 Review content and motives for writing

With respect to the review's content, four distinct aspects are differentiated, namely information on medical care, relationships, comfort, and processes. For each aspect, the coders assessed whether the review mentions the aspect at all, and if so, whether the aspect is described briefly or in detail. Results show that medical care (79%) and relationships with the personnel (77%) are most often described (Figure 3). In contrast, the comfort and process aspects remain more often unmentioned (43% and 60% respectively).

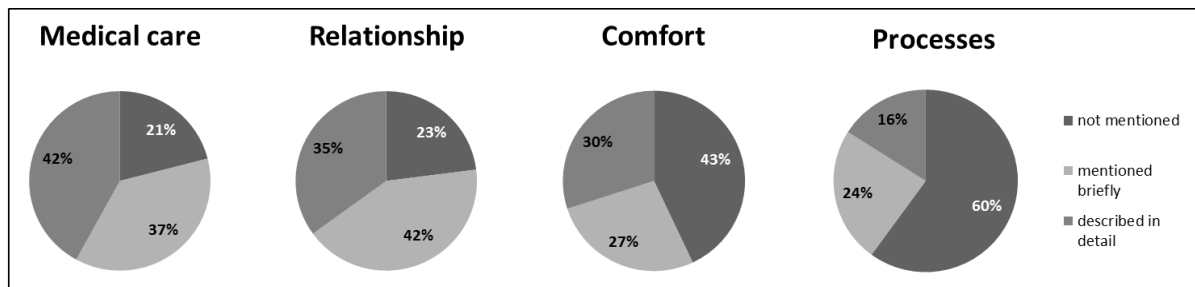


Figure 3: Information quantity provided in the reviews on the four aspects: medical care, relationship, comfort, and processes

Regarding the motives, means and standard deviations—for all respondents, and differentiated by the valence of the service experience (positive, neutral, negative)—are displayed in Table 3. *Concern for others* includes items with the intention of warning others, and is an other-directed motivation in the case of a negative service experience. *Venting negative feelings* is a second factor that serves as major motivation for engaging in eWOM in the case of a negative service experience, but is rather self-focused. The equivalents serving as predominant motives in the case of a positive service experience are *helping others* (other-focused) and *extraversion*, that is sharing positive feelings (self-focused). The aspect of platform assistance, split up into the factors *convenience* and *voice*, plays a minor role in all situations (positive, neutral, and negative service experience).

	Overall		pos. service experience		neutral service experience		neg. service experience	
Motives	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Helping others	4.93	2.33	6.24	1.25	3.80	1.98	2.01	1.48
Extraversion	5.04	2.27	6.24	1.30	3.72	2.00	2.48	1.79
Concern for others – warning others	2.74	2.41	1.33	1.09	3.58	1.95	5.91	1.52
Venting negative feelings	1.64	1.21	1.13	.57	2.05	1.10	2.73	1.53
Platform assistance – convenience	3.63	1.75	3.47	1.76	3.76	1.51	3.90	1.73
Platform assistance – voice	3.34	1.96	3.35	1.96	3.89	1.84	3.18	1.97

Table 3: Means and standard deviations (SD) for all respondents and differentiated by the valence of the service experience.

4.3 Interaction between review characteristics, review content, and motives

As displayed in **Fehler! Verweisquelle konnte nicht gefunden werden.**, interactions can be detected between variables in three different categories. The first group of interactions is between the review characteristics (valence, differentiation, and affectivity) and the motives for engaging in eWOM (extraversion/sharing positive experience, helping others, venting negative feelings, concern for others, platform assistance 1 – voice, platform assistance 2 – convenience). The second group of interactions is between the review characteristics and the review content (information quantity provided on medical care, relationships, comfort, and processes). The last group of interactions is between the motives for engaging in eWOM and the review content. Results for all three groups of interactions are described in this section.

The first group can be split up into interactions between valence and motives, degree of differentiation and motives, as well as degree of affectivity and motives. To start with, the motives for writing an online review are strongly associated with the valence of the reviews (see Table 4). The valence of the service experience review is strongly negatively correlated with concern for others (i.e. warning or preventing others from having a similar experience), and, to a lesser degree, with aspirations of revenge. This result implies that in the case of a

negative service experience, reviewers have altruistic (concern for others) rather than egoistic (venting negative feelings) motives for writing a negative online review. The valence is strongly positively related with the urge to help others (the organization or other patients), and, to a somewhat lesser degree, extraversion, that is the sharing of positive feelings about the experience. Being heard, as one aspect of platform assistance, is slightly negatively related to the review's valence. As a motive for writing an online review, another aspect of platform assistance, the convenience side, does not significantly affect the valence of the review.

	Helping others	Extraversion – sharing positive experience	Concern for Others (warn/alert others)	Venting negative feelings	Platform assistance – Convenience	Platform assistance – Voice
Valence	$r = .80^a$	$r = .73^a$	$r = -.84^a$	$r = -.56^a$	$r = .04$	$r = -.09^b$

^a $p < .001$, ^b $p < .01$, ^c $p < .05$

Table 4: Correlation results between valence and motives

As motives and valence are significantly correlated, analyses of covariance are used with valence as a covariate to detect a link of motives with affectivity and differentiation while accounting for the impact of valence. Results show that how differentiated a review is written is not significantly influenced by the underlying motives of the reviewer. Similarly, the affectivity of the review is not affected by the underlying motives of the reviewer, if valence is controlled for.

The second group of interactions comprises the links between valence and review content, differentiation and review content, as well as affectivity and review content. As the information quantity provided on each aspect is a non-metric variable, the appropriate correlation coefficient to detect a linear relationship between each pair of variables is Kendall's tau. The correlation coefficients for each pair of variables are presented in Table 5.

Regarding the interaction between valence and review content (first column of Table 5), correlation analyses depict that valence and content partially exhibit a significant negative correlation. More specifically, positive service experience reviews tend to include rather brief descriptions of medical care aspects, while negative service experience reviews are more likely to contain detailed descriptions of medical care aspects.

	Valence	Differentiation	Affectivity
Information quantity on medical care	-.15 ^a	.10 ^a	-.07 ^a
Information quantity on relationships	-.00 ^a	.09 ^b	-.13 ^a
Information quantity on comfort aspects	.02 ^a	.31 ^a	-.23 ^a
Information quantity on process aspects	-.19 ^a	.15 ^a	-.04

^a p<.001, ^b p<.01, ^c p<.05

Table 5: Correlation results between review characteristics and review content

No systematic patterns between valence and content can be found with respect to relationship and comfort aspects. Meanwhile, the information quantity with respect to process aspects shows that this is least likely to be mentioned in the case of a positive service experience, and most likely to be described in detail in the case of a negative service experience. This finding might imply that process aspects do not contribute to satisfaction, or, in other words, do not contribute to the creation of a positive service experience, but rather are viewed as a prerequisite. In the case of problems with process aspects, detailed negative service reviews might result.

The dependency of the degree of differentiation and the information quantity with respect to the four aspects is underscored by a significant correlation coefficient for each aspect (second column of Table 5). Not surprisingly, differentiated reviews go along with more information on medical care, relationships, comfort, and processes. As could be expected as well, the degree of affectivity and the information quantity are negatively related (third column of Table 5); the higher the affectivity, the less information quantity on the different aspects is included in the review. This relationship is significant for all aspects except for processes, which are not significantly related to affectivity.

Regarding the last group of interactions, some correlation between the motives for writing and the content of what is written can be observed (see Table 6). For instance, intending to warn others and venting negative feelings are significantly positively related with information on medical care and process aspects, while both motives are unrelated to the information quantity provided on the relationship and comfort aspects. In contrast, the motives helping

others and sharing positive feelings are significantly negatively related to information on medical care and process aspects. Again, both motives are unrelated to the information quantity provided on the relationship and comfort aspects. Platform assistance aspects are not systematically related to information quantity.

	Helping others	Extraversion – sharing positive experience	Concern for Others	Venting negative feelings	Platform assistance – Convenience	Platform assistance – Voice
Information quantity on medical care	-.14 ^a	-.11 ^a	0.13 ^a	.09 ^b	.03	-.06 ^c
Information quantity on relationships	.01	.02	.00	.02	-.02	.01
Information quantity on comfort aspects	.01	0.03	-.06	.01	.04	.01
Information quantity on process aspects	-.14 ^a	-.13 ^a	0.16 ^a	.10 ^a	.01	.00

^a p<.001, ^b p<.01, ^c p<.05

Table 6: Correlation results between motives and review content

5. Discussion and Implications

Research has long acknowledged the high reliance on word of mouth in the context of medical services, which is characterized as a credence good that is not easily assessable. In recent times, eWOM has gained in popularity and relevance for customers and hospitals. This development is accompanied by concerns on the part of hospitals and physicians, alleging that patients predominantly use online communication platforms to spread negative impressions and to vent their negative feelings. While online communication platforms regarding medical service experience witness an increasing numbers of visits, from review writers as well as readers, knowledge on the reviewer's behavior and the underlying motives remains scarce. The presented study ties in with this research gap and analyzes the review characteristics, their

content, and the reviewer's motives for writing. To this end, the study uses a dyadic dataset that combines published information with a primary survey.

Results show that the assumption that reviews are predominantly negative and written for reasons of revenge cannot be supported. Instead, taking the example of the largest German hospital rating site, more than half of all reviews are very positive. This result extends the findings of Anderson (1998), who detected that while dissatisfied customers engage in greater WOM than satisfied customers, the differences are smaller than commonly supposed. Even though eWOM engagement are not quantified in terms of frequency, the study depicts that the reviews written are more often positive than negative. Furthermore, even though the degree of differentiation as coded by the research team is medium, some heterogeneity exists, indicating that some reviewers indeed take a rather differentiated stance which allows for generalization and provides valuable information for other consumers. Interestingly, negative reviews have been found to be more differentiated than positive reviews. This finding again speaks against the criticism voiced by hospitals and others claiming that eWOM is not an adequate information source. Reviews also vary in their degree of affectivity, with negative reviews being more affective. As affectivity and differentiation are negatively correlated, a lower degree of affectivity could enhance the degree of differentiation. This result can be a helpful insight for online platforms: guidelines written for review writers could pick up this finding and point out to reviewers that more emotional reviews are less helpful for other consumers. Reducing affectivity, in the cases of both negative and positive service experiences, is hence an important parameter to improve the generalizability of the reviews.

Moreover, the results show that altruistic motives override egoistic motives. For both positive and negative service experiences, helping or warning others is more important to reviewers than expressing positive or venting negative feelings. Interestingly, neither the degree of affectivity nor the degree of differentiation is related to the motives. The underlying motivation to write an online review thus does not affect how affective or differentiated a review is written, except for the indirect effect of the review valence. Again, this fact leads to a rejection of the assumption that egoistic motives, such as venting negative feelings, have the highest relevance for the reviewers.

With respect to the interplay of service experience and online review, this study shows that the satisfaction reported when writing the online review, the subsequent rating of the service experience in a written questionnaire, and the externally coded review valence are very highly correlated. Thus, the perceived satisfaction during a service experience can be seen as the

main determinant of a review's valence, assigning the assessment and management of customer satisfaction a major role for hospital managers, if they are to impact eWOM behavior. Moreover, this result proves that reviewers are able to translate their subjective impressions into objectively comprehensible appraisals, a fact that has never been empirically tested before.

The information quantity provided on the four distinguished aspects also partially depends on the valence of the review. Negative reviews contain more detailed information on medical care and processes. As medical care aspects can be assumed to be the critical factor in future patients' decision-making, hospitals should tackle this phenomenon. Two possible approaches might be possible. On the one hand, hospitals could actively encourage patients who were satisfied with the medical care received to articulate their positive experience online, potentially by providing them with detailed information about the medical care received. On the other hand, they could focus on the installation or improvement of on-site complaint management systems, to effectively respond to customer issues directly, and prevent negative (e)WOM.

For hospital ratings sites, this study shows that the possibility of giving additional comments to the satisfaction rating in a specific review helps provide further information. The storytelling style, which helps readers to better understand the reviewer (Lee & Song, 2010), is used for detailed information on various aspects of the inpatient stay. Hospital rating sites' guidelines could be further developed in order to specifically enhance the degree of differentiation and reduce affectivity of the reviews, thereby improving the review quality.

As hospital ratings sites gain in relevance, health care policy should tie in with the findings, and support empowered patients to engage in effective eWOM. Increasing patient sovereignty and providing patients with comprehensive information and the ability to handle this information will foster the quality of eWOM. If the quality, that is the generalizability and credibility of reviews, is high, eWOM is a valuable information source that will nurture the competition between health care providers.

6. Limitations and Outlook

As with all research, this study has some limitations which should not go unmentioned. For instance, this study only gives a first insight and is exploratory in its nature. As only one online communication platform was used for data collection, other platforms in Germany or in other cultural contexts might deliver diverging results. This study might be used for replication in other contexts. Although empirical evidence in a new research field is provided, further research is needed to enhance the understanding of causal relationships. For instance, in order to derive further implications for hospital management, further research should investigate how the characteristics of the reviewer (both as a patient and in terms of their visit) affect the review characteristics, its content, and the underlying motives. This investigation might enable target-specific management of customer complaints. Similarly, future research could try to identify those characteristics of the service experience that affect eWOM. A qualitative approach such as the critical incidents technique could help to shed light on the critical factors during the medical service experience, such as feelings of helplessness or anger, which might be especially important for triggering certain eWOM motives and actions. Additionally, the study focused on former patients who voluntarily took action to engage in eWOM. Although participation is rising, the majority of patients do not write an online review after an inpatient stay. A possible avenue for further insights could be to conduct research on the impact of patient or visit characteristics on the likelihood of engaging in eWOM. Similar to WOM research (Anderson, 1998), the frequency of eWOM activities could also be analyzed.

In summary, this study provides some interesting insights on a subject that gains relevance in practice while research lags behind, and fertile avenues for further research remain open.

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Appendix

Appendix A: Measurement model for primary data

Factor	Indicator ^a	Cronbach's Alpha
Helping others	I wrote a comment on klinikbewertungen.de because ... I was so satisfied with the organization and its service that I wanted to help the hospital to be successful. ... I wanted to help others with my own positive experience.	.88
Extraversion	... this way I could express my joy about my hospital choice. ... I feel good when I can tell others about my good hospital choice.	.86
Concern for others	... I wanted to warn others about choosing this hospital for a medical treatment. ... I wanted to save others from having the same negative experiences as me.	.95
Venting negative feelings	... the hospital harmed me, and I wanted to harm the hospital. ... I wanted to take vengeance upon the company. ... my contribution helped me to shake off frustration about my negative experience. ... I wanted to get anger off my chest.	.82
Platform Assistance – Convenience	... it is more convenient than writing to or calling the hospital. ... it is not that costly.	.65
Platform Assistance – Voice	... I believe the platform operator knows the person in charge within the hospital and will convey my message. ... the platform operator will stand up for me when speaking to the hospital. ... I believe the hospital is more accommodating when I publicize the matter.	.71

^a All indicators are measured on a 7-point Likert scale with 1 = I don't agree at all to 7 = I totally agree.

Appendix B: Measurement model for the secondary data

Constructs & Source	Scale/criteria
Valence	-2 = very negative -1 = rather negative -0 = neutral 1 = rather positive 2 = very positive
Differentiation Cheung et al. (2009)	0 = undifferentiated, completely one-sided review 1 = mostly one-sided review 2 = ambivalent, two-sided review
Affectivity Park et al. (2007), p. 128; Xia, Bechwati (2008), p. 5 and 7	1 = Very low degree of affectivity: focus on facts, appraisals are based on arguments, low referral to own feelings, low amount of appraisals, objective rather than subjective, specific, clear statements 2 = Low degree of affectivity (rather cognitive) 3 = Medium high degree of affectivity 4 = High degree of affectivity (affective rather than cognitive) 5 = Very high degree of affectivity: the review focuses on specific reviewer's own experience and own feelings rather than on generalization, no reasoning, lots of appraising adjectives
Information quantity regarding a) medical care aspects b) relationships with physicians, therapists, nurses c) comfort aspects d) process aspects derived from sufficiency construct; Park et al. (2007), p. 128; Lee et al. (2008)	a) Medical care aspects such as the process of care, medical competence of physicians, diagnosis and treatment evaluations, are ... b) The relationships with physicians, therapists, nurses, including aspects such as taking time, being friendly, listening, are ... c) Comfort aspects, including facilities and food, are ... d) Processes and organisation, including waiting times, administration, entry and exit, are ... 0 = not mentioned 1 = mentioned briefly 2 = described in detail (e. g. at least one complete sentence incl. explanation or reasoning)

Appendix C: Discriminant validity (Average variance extracted and squared correlations)

	Helping others	Extraversion – sharing positive experience	Concern for Others (warn/alert others)	Venting negative feelings	Platform assistance - Convenience	Platform assistance - Voice
Helping others	.895 ^a					
Extraversion – sharing positive experience	.731	.876 ^a				
Concern for Others (warn/alert others)	.648	.552	.909 ^a			
Venting negative feelings	.310	.261	.316	.694 ^a		
Platform assistance - Convenience	.004	.006	.000	.009	.740 ^a	
Platform assistance - Voice	.000	.001	.022	.017	.071	.636 ^a

^a Average variance extracted. The remaining statistics represent the squared correlation coefficients between two factors. Discriminant validity exists between two constructs if the average variance extracted of both constructs is greater than the variance shared by the two (i.e., the squared correlation coefficient).

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hche Research Paper Series, ISSN 2191-6233 (Print), ISSN 2192-2519 (Internet)

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