

Dissatisfactions that Leads to Least Online Rating of Hospitals by its Customers

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Abstract

Word of mouth publicity has been casting substantial impact on hospital's business. This has become even more impactful with increasing use of online rating and reviews. A lower average rating can potentially affect the hospital's business negatively. Average rating gets considerably lowered with customers giving least rating to a hospital. This study attempts at identifying components that leads a customer to give least rating to a hospital. The study analyses 669 descriptive reviews accompanying a rating by qualitatively analysing and grouping them in component of dissatisfactions (CoD). Each CoD was then tested for their association with least online rating to identify significant ones. Out of 5 CoD, 3 were found significant (Medical Care, Conduct and Money making attitude) while remaining 2 were not (System and facilities and Expensiveness). Amongst CoD that were found significant, no significant difference was found in between them in their strength of association with least online rating.

Keywords: Dissatisfaction; Healthcare; Hospital; Online rating; Online reviews; Word of mouth

Introduction

Word of mouth (WOM) publicity casts substantial impact on hospital's image and business. This has become even more impactful, in recent years, with increasing use of online rating and reviewing mediums. As pointed out by Negroponte and Maes [1,2], the advent of the Internet and the growth of the World Wide Web, have given consumers an entirely new realm in which they can communicate and thus influence each other. Increasing use of electronic WOM has also been witnessed for hospitals in India. Indian customers usually post their experiences with hospitals on platforms such as mouthshut.com, consumercomplaints.com and google reviews. There is no platform specifically for hospitals, but google reviews seems to be the most used for posting rating and reviews on hospitals. Data from google reviews shows that number of online ratings for hospitals in India has increased by 162% in 2016 as compared to 2015 and by 473% as compared to 2011 (i.e. within 5 years). In last 2 years few corporate hospitals like, Columbia Asia, Narayan Hrudalaya and Apollo Hospitals have started to responds to online customer voices. This indicates that hospitals are now considering online ratings and reviews as an important part for their publicity and image. Growing popularity of online rating is making it necessary for hospitals to understand what can lead to a lower rating by customers.

As of date, there is no empirical research to understand what causes customers to give a specific rating to hospital. This research study attempts at identifying those components, with which customer's dissatisfaction may increase the chances of hospital being rated low. The study is done on customer ratings of Indian hospitals, using secondary data available online on Google reviews.

Literature Review

Numerous researches have established importance of WOM on hospital's publicity and image. Ferguson, Paulin et al. [3] found WOM recommendation as a powerful marketing tool for hospitals. In a research study done in Malaysia, Yeoh et al. [4] found that most medical tourists in Malaysia were influenced by friends, family, relatives and doctor's referral. Lauer [5,6] also stated that WOM and physician referral drive healthcare providers' choice. Traditionally WOM reach of a customer was limited to his/her family, friends, relatives and neighbours. But the advent and increasing popularity of internet had overcome this

limitation. It has given rise to a new format of word mouth i.e. Online Customer Reviews (OCR). OCR enables prospective customers to know what other customers have to say about a particular product/service. Effect of OCR on business has been studied by many researchers and in most studies it was found effective. Kostyra et al. [7], found that valence, moderated by volume and variance, affects customers' choice for a product. Cheung et al. [8] reported that comprehensive and relevant OCR influence information adoption by prospective customers. Chevalier and Mayzlin [9] stated that higher volume of OCR and better valence improves relative sales for Amazon. Ho-Dac, Carson and Moore [10] reported that Positive (negative) OCRs increase (decrease) the sales of models of weak brands.

No literature could be found that specifically studies effect of OCR on hospital business. Few studies have been conducted on online physician reviews. Gao et al. [11] stated that online physician rating is rapidly growing and becoming commonplace. Reimann and Strech [12-14] identified 13 dimensions of patient's experiences and satisfaction that influence rating on physician rating sites.

Most studies support that valence has a significant influence on prospective customers' choice. 14 studies identified by Kostyra et al. [7] in his literature review supports this against 2 that do not support it. Also, there are few studies that report that significance of negative reviews. Chen et al. [15], reported that negative reviews are more influential than positive. Anderson [16] found that dissatisfied customers do engage in WOM more than satisfied customers.

Literature studied indicates that low valence on OCR can have a negative effect on hospital business. Least online rating can significantly affect the valence. This calls for a need to know what causes customers to give low rating. There is already a dearth of study on relationship

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between OCR and hospital business and there is no study that identifies the link between customers' experience of hospital and his/her rating decision. Thus there is a gap in understanding this phenomenon, which this study tries to address. If hospitals can understand what their customers are intolerant towards, when it comes to OCR, appropriate preventive measures can be taken.

Conceptual Framework

User experience and rating

As identified through literature, valence has a significant influence on business. A dissatisfied customer is more likely to give low rating which can reduce valence and ultimately affect the business. Applying these evidences in a hospital setting, it can be stated that a dissatisfied customer can give low rating to hospital which can affect its image and business. However, a question arises as to what type of experiences in a hospital setting is dissatisfactory enough for customers of to give least online rating. To know this, descriptive reviews can be decomposed and those components of hospital can be identified with which customers' dissatisfaction can result in least online rating.

OCR of hospitals on Google review

On Google, OCR for hospitals has two parts: Quantitative and descriptive. In descriptive OCR, the customer in a free form provides a written description of his experience with the hospital. There is no limit on the length of the description. On an average descriptive reviews were found to be of 93 words in length with standard deviation of 57 words (n=150). It is not mandatory for customers to provide descriptive review. Quantitative review on other hand requires customers to reflect their impression of the hospital on a 1 to 5-point star rating scale with 1 star reflecting worst impression and 5 stars reflecting best impression. These ratings are given for each reviews and an average rating (valence) is also given for every hospital reviewed on Google. Unlike descriptive review, providing quantitative review is mandatory for customers. This gives rise to two types of online reviews: reviews having both parts and reviews having only quantitative components.

For this study, we have considered only those reviews which have both quantitative and descriptive parts in it.

Methodology

The study is conducted using exploratory sequential design mixed method [17]. Initially the qualitative reviews of sampled hospital were qualitatively analysed to code them in different components of hospital to which customer mentioned their dissatisfaction with. Each component was then statistically tested to measure its association with least online rating given by customers.

Sampling and data

Data for analysis was sampled from customer posted reviews of different hospitals on Google reviews. Initially, a list of hospitals matching the criteria (Table 1) was prepared for four regions of the country (North, South, West and Centre and East). From this list, 39 hospitals were selected through stratified random sampling. From the sampled hospitals, OCR on Google reviews of the sampled hospitals was collected. Sampling plan was designed to reflect the online rating across India. All reviews matching the criteria (Table 1) of the sampled hospitals were collected. The sample size, regional distribution and the selection criteria for hospitals and reviews are given in Table 1.

*Reviews with 5 star rating were excluded on the basis of assumption that these customers are completely satisfied with the hospital. This puts them in an altogether different group making them non-suitable for comparison with those who gave a lower rating. It is also assumed that customers who gave 2, 3 and 4 star rating did have some concerns for not giving highest rating, thus rendering them suitable for comparison with 1 star rating customer.

Qualitative analysis

Descriptive reviews were qualitatively analysed to decompose them in different codes, termed as Component of Dissatisfaction (CoD). These were those components of the hospital with which descriptive reviews reflect its dissatisfaction. At the beginning, a list of 17 anticipated CoD was developed. The list was then continuously modified as the descriptive reviews were assessed for coding into different CoD. Many CoD that were identified as overlapping, interrelated or closely connected were merged under a broader CoC. Finally, 5 CoC that were distinct, were kept in the list. These are described in Table 2.

Coding

Each descriptive review was read and statements that described any form of dissatisfaction were highlighted. Based on the description (Table 2), each CoD that reflected from highlighted statements were noted in front of each descriptive review. Each review was re-examined by a second person to verify if the CoD noting was appropriately done.

Hypothesis

Based on identified CoD (Table 2), hypotheses were developed for each one of them, as describe below,

H1: Customers with medical care as CoD are more likely to give least rating to the hospital compared to others.

H2: Customers with conduct towards patient/caretaker as CoD are more likely to give least rating to the hospital compared to others.

Region	Hospitals	Online written reviews (OWR)
North	9	163
South	11	263
West & centre	11	117
East	8	127
Total	39	670
Selection criteria	<p>Inclusion</p> <ul style="list-style-type: none"> Non-government hospitals with 30 or more in-patient beds Allopathic medicine and primary mode of treatment <p>Exclusion</p> <ul style="list-style-type: none"> Hospitals mostly providing free or heavily subsidized treatment Hospitals having less than 30 online reviews on google in last one year Functional for less than a year 	<p>Inclusion</p> <ul style="list-style-type: none"> Reviews with written description Reviews posted within 1 year <p>Exclusion</p> <ul style="list-style-type: none"> Reviews with 5 star rating* Written description of less than 10 words Reviews in languages other than English or Hindi

Table 1: Sample size, regional distribution and selection criteria.

CoD	Description	Examples
Medical Care	Qualification; experience and capabilities of doctors; skills of nurses in patient care; diagnosis; treatment outcome; patients' death; harm to patient	"Doctor messed it up and finally my father died" "I don't believe doctor said that patients in hospitals are prone to get infection. This is just to cover up their mistake" "Nurse didn't know how to apply IV and pricked my baby 4 to 5 times" "Even after 2 days of admission, they couldn't tell what was the problem with my mother"
Conduct towards patient/ caretaker	Behaviour of staff; attention to patient; care and support provided; sensitivities to needs; helping attitude	"They don't even listen and return patient saying that doctor do not meet without appointment" "Inconsiderate doctors and staff" "They don't even tell us what is happening with our patient"
System and facilities	Location; infrastructure and maintenance of facility; Administrative processes; staff's efficiency; waiting time; hospital's policies; accessibility	"Service is very weak and slow" "The front staffs are inefficient. They should at-least hire someone who is good in speaking English language" "No body picks the phone. I had to do multiple rounds to get my investigation reports"
Attitude towards money	Rationality of prescriptions; investigations and treatment; referrals; billing policies; focus on money	"They do cheating if patient is insured" "If you had a simple disease the will loot by doing no of test and they do not do x ray rather prefer CT scan" "They just see patient as money making opportunity"
Expensiveness	Cost of services; total bill	"Expensive hospital" "The final bill amount was very high. Difficult to afford" "Looks good externally, but will cut your purse down bit by bit"

Table 2: Components of dissatisfaction (CoD) and their description with examples.

H3: Customers with systems and facilities as CoD are more likely to give least rating to the hospital compared to others.

H4: Customers with money making attitude as CoD are more likely to give least rating to the hospital compared to others.

H5: Customers with expensiveness as CoD are more likely to give least rating to the hospital compared to others.

The components that are found significant after testing for above hypotheses will be compared with each other to test whether they vary in their association with 1 star rating. The hypothesis for this is:

H6: The significant CoDs differ with each other in their association with least rating tendency.

Quantitative analysis

Qualitative analysis gave the data on distribution of descriptive reviews amongst 5 components of hospitals. Based on this data, quantitative analysis was directed at testing the hypotheses stated above. As 1 star is the least possible rating that can be given, the analysis was focussed on the frequency of 1 star under different components. Frequencies of other star ratings, even if found statistically significant were not considered as those were not the objectives of this study.

Statistical testing

For hypothesis 1, 2, 3, 4 and 5, Chi square test of independence was used to test if 1 star rating is independent of presence/absence of the component under testing. For each component that was under testing, the frequency of each rating was totalled, after controlling other components to prevent their effects on rating. Then the frequency of each rating was summed from those descriptive reviews that did not have the CoD under testing present. These frequencies were plotted on a 4 × 2 matrix table (4 columns for rating and 2 rows for presence or absence of a component). Using Post Hoc Chi square test of association, residual value and its p value of the cell describing presence of component under test and 1 star rating was calculated.

For hypothesis 6, Chi square test of association was used to test if the 5 component are similar in their association with rating given to hospital. In this frequency of each rating for each component (after

controlling other components) were plotted on a 4 × 5 matrix table (4 columns for rating and 5 rows for presence of components). Using Chi square test, residual value and p-value of each cell that depict 1 describe 1 star rating for a component was calculated.

Results and Discussion

Descriptive statistics

From qualitative analysis frequency and distribution of components of hospitals were found. All 670 descriptive reviews were analysed for coding in component out of which 77 reviews were found non-conclusive. These were excluded from the study and from remaining 593 reviews, in 114 no CoD was present, i.e. they did not mention any dissatisfaction/concern with the hospital. 479 descriptive reviews had mentioned 1 or more CoD present with 163 reviews mentioning more than 1 component and 316 reviews mentioning any one CoD. The distribution of quantitative rating of the hospital amongst descriptive reviews having presence of a CoD is given in Table 3.

Numbers in parenthesis represents the frequency after controlling for other components.

The percentage in last column is the percentage of QR in which concern for the component was mentioned.

Inferential statistics

To test whether or not presence of a CoD in descriptive review is positively associated with 1 star rating, post hoc Chi square test of association was used. Since the objective was to see association in only one cell (i.e. the cell that describe presence of a component and 1 star rating), adjusted residual value and its p value of only that cell was considered. Also, as we were specifically looking for an association only in positive direction any negative association reflected through residual value have been considered as no positive association. The result from statistical analysis is given in Table 4. The findings from Table 4 supports hypothesis is H1, H2 and H4 and do not support hypothesis H3 and H5.

To test hypothesis H6 the hypothesis H1, H2 and H4 were statistically tested using Chi square test of association. No significant

Component	Quantitative rating				Total for component
	1	2	3	4	
Medical care	93 (40)	8 (4)	4 (3)	0 (0)	105 (47) 17.7%
Conduct toward patient/caretaker	127 (40)	17 (2)	5 (3)	8 (4)	157 (49) 26.5%
Inconvenience with facilities and systems	113 (58)	33 (24)	21 (15)	25 (21)	192 (118) 32.4%
Money making attitude	106 (43)	11 (3)	5 (2)	0 (0)	122 (48) 20.6%
Expensive	30 (9)	14 (5)	19 (12)	30 (28)	93 (54) 15.7%
Total for rating	469 (190)	83 (38)	54 (35)	63 (53)	669 (316)

Table 3: Distribution of quantitative rating to hospital by presence of CoD.

Component	Statistical values	Hypothesis tested
Medical care	Residual value: 5.9 P=0.000	H1-Supported
Conduct towards patient care taker	Residual value: 5.5 P=0.000	H2-Supported
Inconvenience with facility and system	Residual value: 1.1 P=0.273	H3-Not supported
Money making attitude	Residual value: 6.6 P=0.000	H4-Supported
Expensive	Residual value: -4.5 P not applicable	H5-Not supported

Table 4: Residual value and its P value of 1st cell in each CoD from post hoc chi square test of association.

difference was found between medical care, conduct and money making attitude components and 1 star rating. (Chi square 8.941, p=0.177).

Conclusion

Least online rating of hospital varied with the type component reflected in customer's descriptive review. Out of 5 components tested 3 were found to be significant for 1 star rating. The conclusions from the study is presented below

Dissatisfaction with medical care, conduct of staff/doctor towards patient/caretaker and attitude towards making money were significant in resulting in least online rating to the hospital. These 3 components did not vary and were equally likely to result in least online rating.

Dissatisfaction with system/facilities was not significant in resulting in 1 star rating.

Being perceived as expensive, when other components are absent, was not significant in resulting in 1 star or even 2 star rating.

Implications

The research findings have an implication for healthcare providers and managers of hospitals. By taking care of the significant CoDs hospitals can prevent themselves from getting least rating online, which in turn will prevent low average rating. This in turn will prevent their image and business from the negative impacts of online rating.

Limitations

There are some important limitations with the study that must be kept in mind while taking its conclusions.

1. The data coming out of qualitative analysis is dependent on what was written by customers in a free form. While this gives an advantage of being free from lead bias, it could be possible that there are certain experiences that were not written, but had played a role in customer's rating decision. Experiences/feedback not written in QR was not reflected in the data from qualitative analysis.
2. The study also did not capture the customer's level of dissatisfaction, which can have an effect on their rating decision. Assessing level of dissatisfaction from unstructured QR was not possible and hence the study only classified them into two levels, i.e. whether a component was present or absent.

The study also did not factor the effect of positive experience that may have moderated customers rating decision.

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