

Online Reviews in an E-Commerce Environment: Impact on Brand Trust and Consumer Equity

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Abstract

The aim of this study is to determine the effects of consumer-to-consumer online reviews on the drivers of customer equity (CE) and the role of brand trust. An experimental online forum was purpose-built and a restricted probability sample of 269 participants was drawn from a registered online panel. The research finds: (a) that the valence of consumer-to-consumer online reviews positively affects customer equity; (b) that negative online reviews cause have the highest relative impact on customer equity, and (c) as brand trust increases, the change in the customer equity drivers tend to become more negative.

Keywords: online reviews, customer equity, brand trust

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Introduction

The rapid adoption and wide-scale use of Internet-based information is transforming markets around the globe. Internet technologies enable consumers to share their opinions and experiences of using goods and services with a large number of other consumers and potential consumers. When they do this online, they are engaging in a form of ‘electronic’ word of mouth communication referred to as eWOM (Hennig-Thurau et al. 2004). Online reviews (ORs) – the most frequently used form of eWOM communication (Schindler and Bickart 2005) – influence the consumer decision-making process.

Consumers and potential consumers access online reviews to reduce transactional risk, as well as doubts about firms and their offerings, prior to initiating a consumer relationship (Hennig-Thurau and Walsh 2003; Lee and Ma 2012). Consumers now gather and share product and service information amongst themselves is a dramatic change from previous decades. As a consequence of the rising use of eWOM, firms are no longer the sole source of communication about themselves, and are thus at risk of losing control of the messages that consumers and potential consumers receive about their products, services and brands.

That firms now operate in an overall climate of general mistrust by consumers of business and its products exacerbates their difficulties with image control (Lantieri and Chiagouris 2009). According to the 2013 Edelman Trust Barometer, based on a sample of 26 000 respondents representing the global general population, the public’s overall ‘trust in business’ was measured at 58 per cent, which means 42 per cent were rated as ‘not a truster’ (Edelman 2013). This statistic is highly relevant to this study, since consumer banking relationships were the backdrop for this research, and financial services were the least trusted industry globally, with 54 per cent of respondents rating them as not trustworthy.

In response to the crisis in trust and loss of control, some firms have attempted to harness this new communication channel with varying and unreliable results. These responses run the gamut from overwhelming consumers and creating scepticism (Sher and Lee 2009), to outright deception and documented fraud through intentional manipulation of online reviews (Hu et al. 2012; Dellarocas 2006). Hennig-Thurau (2010) concluded that the enormous rise in new media is highly disruptive to the management of relationships with consumers.

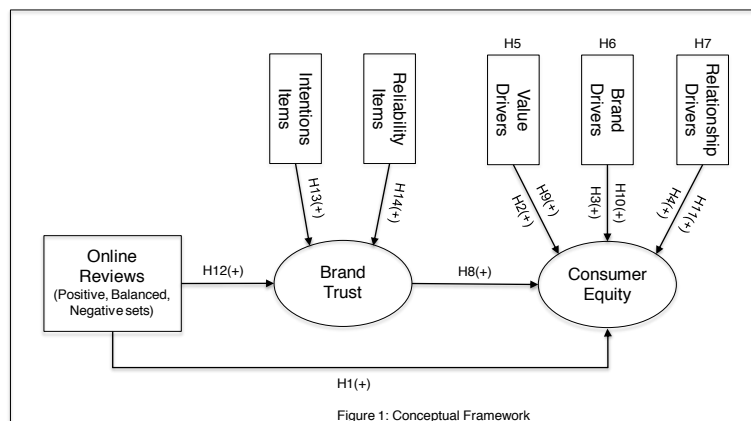
The rationale for this study is based on the argument that by adopting the customer equity (CE) perspective when examining the influence of ORs, a firm can improve its marketing productivity over the long-term. This is because, when the influence of ORs is studied for its relative impact on the three drivers of CE, management acquires new insight on the effects that ORs have on the value of its ‘customer asset’ and thus shareholder value (Luo 2009; Tirunillai and Tellis 2012). Many previous studies of OR focus on short-term measures and outcomes such as purchase intent (Cheung and Thadani 2012). This study is different to existing literature because its contribution focuses on the consequential effects that positive and negative ORs have on factors associated with CE, a relatively long-term measure of firm performance.

Research questions

There is an urgent need for management to better understand the impact that ORs have on its consumer relationships and the role of BT, so that they can provide a strategically informed, evidence-based response to the phenomenon. To address this research problem, four specific research questions were posed. First, what is the effect of the valence of ORs on the three observable drivers of CE (value equity, brand equity and relationship equity)? Second, what is the relative impact of the valence of ORs on the three observable drivers of CE? Third, what is the effect of BT on the three observable drivers of CE? And fourth, what is the effect of the valence of ORs on BT?

Conceptual framework

The conceptual framework underpinning this study is shown below (Figure 1). It depicts a composite latent variable model that identifies the constructs and describes the proposed relationships between the independent variable (ORs), the mediating variable (BT) and the dependent variable (CE).



In the context of implementing the online experiment, an additional dependent variable typically referred to as the criterion variable is used. This variable measures the difference between the pre-experimental treatment scores and the post-experimental treatment scores for the three customer equity drivers (CEDs) and are referred to as ‘change scores’.

Customer equity (CE)

Customer equity is a theoretical framework that represents a combination of the value of a firm’s current customer assets and the value of the firm’s potential customer assets. It is an aggregate measure of consumer profitability, and is defined by Rust et al. (2004) as the total of the discounted customer lifetime value (CLV) summed over all of the firm’s current and potential consumers. The three CEDs that comprise CE and are: (1) value equity drivers (VEDs) which are an objective measure of a consumer’s overall assessment of the utility of a product or service based on perceptions of what is received and what is given (Zeithaml 1988), (2) brand equity

drivers (BEDs) which reflect the customer's subjective and intangible assessment of a firm's brand, above and beyond its objectively perceived value, and (3) relationship equity drivers (REDs) which reflect the tendency of the customer to stick with the brand, above and beyond the customer's objective and subjective assessments (Lemon, Rust, and Zeithaml 2001). The measurement items for the CE construct are adapted from the survey items used by Rust et al. (2004) to measure the CEDs.

Brand trust

Brand trust (BT) is the willingness of the average consumer to rely on the ability of the brand to perform its stated function (Chaudhuri and Holbrook 2001). The measurement items for BT were based on a two-dimension measurement model (reliability items and intentions items) developed and validated by Delgado-Ballester et al. (2003; 2004). Each of the two dimensions has four items.

Online reviews

Online reviews are peer-generated product evaluations posted on marketer or third party websites (Mudambi and Schuff 2010) and are an increasingly popular and important new information channel (Chen and Xie 2008). These consumer opinions can potentially be seen by millions, are available for long periods of time, and may be encountered by purchasers at precisely the time they are searching electronically for information about a firm and its products or services (Ward and Ostrom 2002). A study by Schindler and Bickart (2005) confirms that the influence of ORs is broadly spread across the entire consumer decision-making process.

Hypotheses

Online reviews and customer equity

Notable in the literature are the varying effects that the valence of ORs have on consumer decision-making (e.g. Kim & Gupta, (2012) Ludwig et al., (2013) Zhang et al., (2010)). Drawing upon attribution theory, (Kelley 1973) provides evidence of the influence of message valence on consumer decision-making. Kelley notes that the consensus principle in an attribution has been shown to afford a basis for confidence in one's judgment. In other words, support from other individuals tends to increase adherence to one's opinions, and disagreement with others tends to reduce certainty and increase the likelihood of change.

Thus, subject to the perception of a participant and their prior beliefs, exposure to negative or positive stimuli from others can influence a participant's behaviours, attitudes and judgments. Mizerski and Green (1978) conclude that in the process of attributing the causes for events (e.g. product experience, WOM information or advertising), beliefs about the stimulus product are formed, which may then prompt the development of affect. Furthermore, Mizerski (1982) reported evidence that subjects receiving unfavourable information led to stronger affect and stronger beliefs in subjects' post-test measures.

Online reviews can contain persuasive message content that can be perceived by the 'receiver' as objective, subjective, affective or any combination of the three. That is, the message can appeal to the value equity facet of CE, the brand equity facet of CE, or the relationship equity facet of CE. Alternatively, it can be a combination of each or an appropriation of all the drivers together in one single message (as determined by

the content in each message). The resulting effects on CE – be they persuasive or pointless – currently go unmeasured and are relatively unknown. Hence, H1 to H4 were used to address the first research question.

- H1. There is a positive relationship between the valence of ORs and CE.
- H2. There is a positive relationship between the valence of ORs and the VEDs of CE.
- H3. There is a positive relationship between the valence of ORs and the BEDs of CE.
- H4. There is a positive relationship between the valence of ORs and the REDs of CE.

Relative impact of the three drivers of customer equity

Determining the varying effects of the valence of ORs on the CEDs (H1–H4) is a valuable but merely initial contribution. By using the findings from the first research question, it is then possible to determine the relative impact of each of the CEDs. The value of doing so is that the posited varying effects can be analysed to determine how marketers can strategically allocate limited tactical resources amongst the three CEDs so as to maximise the return on equity from the firm's 'consumer asset'. This view is supported in the findings of Kumar and Shah (2009) and Kumar and George (2007), who conclude that, in the disaggregate-level approach, customer lifetime value (CLV) is maximised by implementing consumer-level strategies such as optimal resource allocation.

Lemon et al. (2001) note that in order to adopt the CE approach, a firm will need to assess which of the three CEDs is most important to their specific business situation and suggest that VEDs are the keystone of the consumer's relationship with the firm. If the firm's products and services do not meet the consumer's needs and expectations, even the best brand strategy and the strongest retention and relationship marketing strategies will be insufficient. Likewise, Vogel et al. (2008) reported the results of their study which also found that VEDs were the most important drivers in establishing future sales with BEDs being second. It is of critical importance to determine which of the CEDs have the largest impact on CE, as posed in the second research question. Based on the previous discussion, it is reasonable to expect that the VEDs should have the highest impact on overall CE, while the BEDs should have the second highest impact on CE. Hence, H5–H7 were used to address the second research question.

- H5. VEDs have the highest impact on CE.
- H6. BEDs have the second highest impact on CE.
- H7. REDs have the third highest impact on CE.

Brand trust and customer equity

Trust is a principle aspect of any relationship; the level of its existence is a testament to a relationship's strength. In their study, Delgado-Ballester and Munuera-Alemán (2001) demonstrated the central role of BT in affecting consumers' commitment. An increase in consumer commitment would contribute to the creation of that 'stickiness' of the consumer to the firm that is paramount for relationship equity. This is consistent with the commitment-trust theory of relationship marketing (Morgan and Hunt 1994) that identifies trust as a key mediating variable in the desire to develop a stronger consumer-firm relationship over the long term, thereby influencing CE. In this research study, the effects of BT on CE will be tested at both the disaggregated

level (i.e. each of the three individual CEDs) and at the aggregate level (i.e. CE). Hence, H8–H11 were used to address the third research question.

- H8: There is a positive relationship between BT and CE.
- H9: There is a positive relationship between BT VEDs of CE.
- H10: There is a positive relationship between BT and the BEDs of CE.
- H11: There is a positive relationship between BT and the REDs of CE.

Online reviews and brand trust

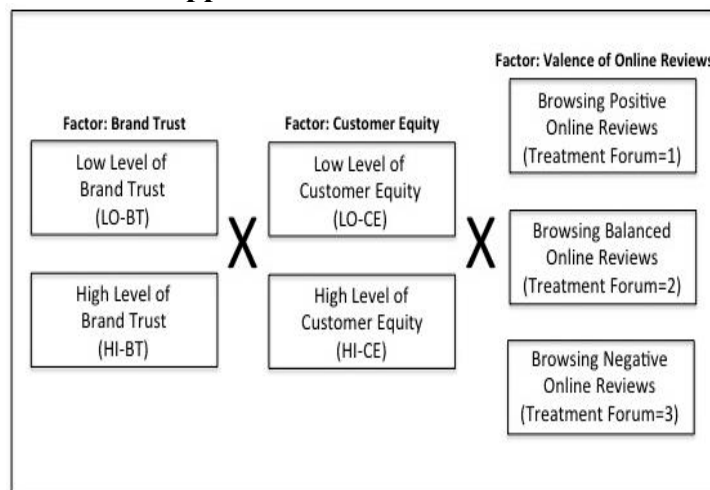
One of the motives for using ORs is risk reduction during the decision-making process (Burton and Khammash 2010). It is the possibility of reducing risk for consumers where trust becomes vitally important, specifically in many relational exchange situations to reduce the risk of a service outcome (Kantsperger and Kunz 2010). Cheng et al. (2013) found that the effect of online consumer review valence, as mediated by the BT reliability dimension, explained 82 per cent of the variance in the willingness to buy. These examples provide evidence of a possibility that a causal relationship exists between the variables. As yet, there is no convergence in the literature of a single agreed upon explanation. The expectations of a possible mediating effect, as well as varying degrees of influence, based on valence and prior levels of BT are anticipated. Hence, H12–H14 were used to address the fourth research question.

- H12. There is a positive relationship between the valence of ORs and BT.
- H13. There is a positive relationship between ORs and the intentions items of BT.
- H14. There is a positive relationship between ORs and the reliability items of BT.

Methodology

This study adopts a quantitative approach using a two (brand trust: low/high), by two (customer equity: low/high), by three (online reviews treatment sets: positive/balanced/ negative) factorial between-participants quasi-experimental design (Table 1).

Table 1: The 2x2 and 2x3 approach:



This method has been used in previous studies (Berger, Sorensen & Rasmussen, 2010). A financial services scenario was selected because evidence shows that CE has a high relative importance for the financial services industry (Bick 2009). The population of interest for this study was defined as: (a) US residents over the age of

18 years; (b) who are consumers of a chartered bank operating in the US; (c) who are 'aware' or 'very aware' of online review websites; and (d) have visited online review websites in the past. The sampling frame was the pre-recruited US online panels managed by a commercial global sampling solutions provider (www.surveysampling.com).

Adopting a restricted probability sampling design using the stratified random sampling technique, potential participants were randomly selected from the sampling frame and invited via e-mail to review the participant information; should they then wish to proceed, they were asked to provide informed consent. Potential participants were then shown instructions depicting the overall experimental process and were asked to complete the pre-treatment survey items. Based on those responses, four matched groups (BT: low/high, and CE: low/high) were created, and selected participants were randomly assigned to one of three treatment conditions using a trickle process of randomisation, while others who did not meet the criteria for inclusion to a sampling group exited the experimental system. Participants assigned to a treatment group were then introduced to the experimental task.

The experimental task

The experimental task was operationalised using a free simulation, in which participants were asked to imagine they were browsing online reviews at www.bankreviewsonline.com, an online user discussion forum that was purpose-built to conduct experimental research for this study. Upon completion of the experimental task, participants were instructed to proceed to the next step of the experiment where they were asked to complete the post-treatment survey items. The post-treatment survey items included a manipulation check. Following this, the same questions about the VEDs, BEDs and REDs were repeated. This data provided the ability to calculate the relative impact (i.e. direction of change, amount of change) that the experience of reading the ORs had on each participant's attitudes towards the three CEDs.

The experimental treatments (stimuli)

The experimental stimulus was drawn from real C2C-generated online reviews. The popular online review website www.yelp.com was studied, and a dataset of relevant online bank reviews (3178 records) was created and examined offline. After performing several data reduction techniques, a suitable subset was identified and presented in an online assessment format to a focus group of 21 marketing and business professionals. The final experimental treatment sets (stimuli) were created as a result of this process. A summary of the mean scores based on the results from the focus group test is shown below (Table 2).

Table 2: Summary of average mean scores resulting from the focus group pre-test

Treatment	Valence	Value	Brand	Relationship	VBR Score
Positive	1.37	1.69	1.77	1.69	5.15
Balanced	2.44	2.36	2.73	2.34	7.43
Negative	4.54	3.31	3.52	3.36	10.19

Notes: A valence score of 1 = very positive and 5 = very negative
A value, brand or relationship score of 1 = very strong and 5 = not evident
VBR Score = the sum of mean scores for value, brand and relationship drivers of CE

The number of online reviews contained in each of the three treatment sets was eight. The average word count for the ORs within each treatment set was 106 words for the positive, 92 words for the negative, 106 words for the balanced treatment sets.

Results

Data for 269 participants was gathered using an online survey. The response rate for participant recruitment was 2.34%. Age, gender and region of participants, when compared to the census data for the U.S. population, were closely aligned (U.S. Census Bureau 2012). All eight variables used in the analyses were subjected to a preliminary data screening process including outliers, univariate normality and Mahalanobis distances. In summary, no participants had to be removed as a result of the data screening process.

Reliability and validity

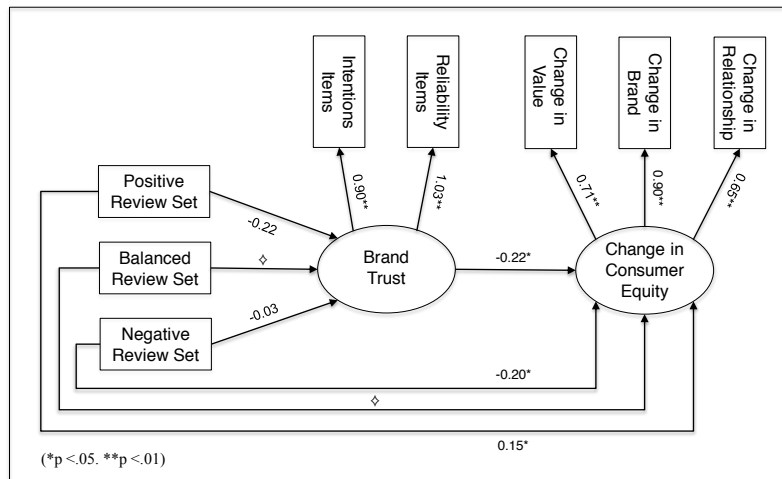
To measure the reliability, Cronbach's alpha was calculated on the eight variables. The tests showed that all variables reported good reliability, ranging from 0.86 to 0.95 after removal of three items discussed below.

As a test of the construct's validity the path estimates linking the construct to its indicator variables in the initial model we're examined (Figure 2). The 'rule of thumb' for the standardised path estimates is that they should be 'at least 0.5 but ideally 0.7 or higher' (Hair et al. 2010). The path estimate from change in CE to change in VEDs was 0.71; from change in CE to change in BEDs was 0.90; from change in CE to change in REDs was 0.65, from change in Intentions items to change in BT was 0.90, and from change in Reliability items to change in BT was 1.03. Therefore, all estimates for the assessment exceeded the minimum threshold.

As a further test of the construct's validity the size of the factor loadings for each measurement item was examined. Hair et al. (2010) explain that high loadings on a factor would indicate they converge on a common point (i.e., the latent construct). The 'rule of thumb' for convergent validity should be at least 0.5 but ideally 0.7 or higher. Although all factor loadings were within the minimum acceptable range, three items (CEB_1, CEB_2 and CER_2) were below the ideal threshold of 0.7, therefore they were removed from the dataset prior to proceeding with the data analyses.

Structural equation modelling

The initial model was run through Mplus to determine fit. The variable OR was dummy coded into positive and negative treatment sets, with the reference variable being the balanced treatment set. As a result, there are no standardised weights reported for the balanced treatment set; this is noted with the \diamond symbol (Figure 2). The results showed the initial model had a good fit ($\chi^2 [10] = 16.53$, $p = .085$, $RMSEA = .05$, $CFI = .99$, $TLI = .99$, $SRMR = .03$).



Hypotheses testing

Hypotheses 1 to H4 addressed the question: What is the effect of the valence of ORs on the three drivers (value, brand and relationship equity) of CE? Using the initial SEM model, negative ORs cause the VEDs, BEDs and REDs to go down, thereby negatively affecting CE. Positive ORs cause the BEDs to go up, thereby positively affecting CE; thus H1 was accepted, and H2, H3 and H4 were partially accepted.

Hypotheses 5 to H7 addressed the question: What is the relative impact of the valence of ORs on the three drivers (value, brand and relationship equity) of CE? An examination of the standardised regression weights from H2, H3 and H4 reveals that the negative treatment set had a significantly larger change on VEDs (-0.22**) compared to the balanced treatment set (reference variable). The positive treatment set had a significantly larger change in BEDs (0.16*) compared to the balanced treatment set (reference variable). Between BEDs and REDs, the negative treatment set had an equally strong relationship with both the change in REDs (-0.15*) and the change in BEDs (-0.15*) compared to the balanced treatment set (reference variable). Overall, H5, H6 and H7 were accepted.

Hypotheses 8 to H11 addressed the question: What is the effect of BT on the three drivers (value, brand and relationship equity) of CE? Using the initial SEM model, the path from BT to the change in CE was examined. The path was significant (standardised estimate = -0.22, $p = 0.002$), suggesting that as BT increases, the change in CE decreases. Hence, BT has a significant negative relationship with CE; thus H8, H9, H10 and H11 were rejected.

Hypotheses 12 to H14 addressed the question: What is the effect of the valence of ORs on BT? Using the initial SEM model, the paths from positive treatment set and negative treatment set to BT was examined. Neither weight estimates for those paths were significant, suggesting that there is no relationship between ORs and BT. Hence H12, H13 and H14 were rejected.

A summary of model fit by hypotheses is presented in Table 3.

Table 3: Summary of model fit by hypotheses:

model	X2	p	CFI	TLI	RMSEA
H1, H8, H12	16.53	.085	.99	.99	.05
H2, H9	6.16	.046	.99	.97	.09
H3, H10	3.82	.148	1.00	.99	.06
H4, H11	5.96	.051	.99	.97	.09
H5	n/a	n/a	n/a	n/a	n/a
H6	n/a	n/a	n/a	n/a	n/a
H7	n/a	n/a	n/a	n/a	n/a
H13	10.70	.098	.99	.97	.05
H14	8.39	.211	.99	.98	.04

Discussion

Addressing the first research question, this study confirms that there is a positive relationship between the valence of ORs and CE. There are several examples in the WOM and eWOM literature that draw upon attribution theory to explain their findings. Attribution theory is a theory about how people make causal explanations, and about how they answer questions beginning with ‘Why...?’ It deals with the information used to make causal inferences and how this information answers causal questions (Kelley 1973). In other words, the first task of an individual would be to make a causal judgment of an observed effect (i.e. action or outcome) by seeking to identify the most reasonable cause(s) attributed to that effect. The second task is for the individual to form inferences about the attribution based on their perception of either an internal or external cause, to which they have responded (Langdrige 2007). These inferences are called ‘causal attributions’.

Kelley and Michela (1980) present a general model of the attribution field, suggesting there are three antecedents (information, beliefs, motivation) and three consequences (behaviour, affect, expectancy). Through the course of conducting this online experiment, participants were exposed to experimental treatment sets (stimuli), where the valence of the ORs was manipulated (positive, balanced or negative). It is suggested that this exposure to the stimulus (‘information’) was the antecedent that triggered the attribution process within participants. The attribution process is where participants search for an effect’s cause. They then form beliefs and make judgments based on that decision, which may result in a cognitive outcome, such as an

attitudinal shift or overt behaviour, once the process has been integrated (Mizerski, Golden, and Kernan 1979).

Table 4: Information patterns for the three attributions

Source Attribution	Patterns of Information		
	Consensus	Distinctiveness	Consistency
Stimulus	High	High	High
Person	Low	Low	High
Situation	Low	High	Low

Adapted from: Orvis, Cunningham and Kelley (1975, p. 607, Table 1)

The model for patterns of information (Table 4) clarifies that not all combinations of information permit such simple predictions. Using the ‘logical properties’ in the table, the authors explain that ‘only one level of each kind of information can be related to only one of the three patterns, whereas the other levels can be related to the other two patterns’. As an example, ‘high consensus fits only the high-high-high (HHH) pattern, whereas low consensus fits both the low-low-high (LLH) and the low-high-low (LHL) patterns’ (Orvis, Cunningham, and Kelley 1975). In the present study, the experimental treatments were based on repeatedly positive (or negative or balanced) valence ORs which would suggest a level of high consensus. Using the model under a condition of high consensus, it can be reasoned that the causal attribution was a result of the stimulus (i.e. the ORs of banks in each treatment set).

Focusing the discussion on the second research question, high motivation and pragmatic concerns cause people to process relevant information more thoroughly. This is supported by Baumeister et al. (2001), who found that people cannot afford to process all information to an equally full extent, and that bad news is generally stronger than good. Hence, information pertaining to negative events should receive more thorough processing than information about positive events. This was reflected in people paying more attention to negative events, as well as in elaborating them more thoroughly or constructing more extensive cognitive interpretations.

Thus, the final outcome is the greater weighing of negative information in comparison to equally extreme positive information in the formation of evaluative judgments. Ample evidence of this bias can be found in the literature. For example, in a study of factors (valence: positive or negative) that mediate WOM effects on consumers’ judgment and persuasion, Herr et al. (1991) found that negative information is more informative than positive information in assisting consumers to categorise goods; this is because negative cues were found to be less ambiguous than positive or neutral cues. Ahluwalia (2002) notes that past research has obtained a robust negativity effect, typically under conditions of moderate to high involvement, which is characteristic of financial services provided by banks.

Understanding the fundamental differences between the three CEDs can also help to explain the effect of the valence of ORs. Distinctly, one is objective, one is subjective and one can be referred to as relational or emotive. As such, in order to adopt the CE

approach, a firm will need to make their own assessment of which of the three CEDs is most important to their specific business situation, and adjust their tactical marketing actions accordingly. For the stimulus in this study, specifically identified messages were selected because they contained a relatively equal balance of appeal corresponding to each of the three CEDs within each single OR. This was done with the goal of measuring the relative importance of each of the CEDs. Outside the experimental environment, the content of ORs will not be so carefully specified.

Addressing the third research question, BT was unexpectedly found to have a negative relationship with the CEDs. Trust is a principle aspect of any relationship and the level of its existence is a testament to the strength of such a relationship. As such, other explanations for the results need to be explored in order to understand the negative relationship, as this remains unexplained. One possible explanation of the findings could be that BT as a factor is not directly related to the change scores for each of the three CEDs. Surprisingly, based upon the SEM analysis of data collected for this study, no significant relationship was found between CE and BT. This is contrary to the related current literature.

In this study, the dependent variable was a longer-term measure compared with the nearer-term outcome of willingness to buy. Trust is not static. Lewicki et al. (2006) report that the literature portrays trust as building incrementally over time, in a process where individuals carefully scrutinise all trust-relevant information so as to ensure trusting choices are made. They also note that individuals can quickly withdraw their trust should it be misplaced. Such a long-term outcome as brand trust may prove to be difficult to measure in a cross-sectional study, where the influence of ORs as an input of trust could not adequately be captured in the present operationalisation of the conceptual framework. Temporal issues do play a role in matters of trust and CE as individuals have been shown to change their attitudes and opinions based on new experiences or contextual situations that occur over time.

Conclusion

A major contribution of this study is the effect that positive and negative ORs have on CE, a relatively longer-term measure of firm performance that puts the consumer first. By adopting a CE approach, the firm can maximise its investment return from its 'marketing assets', thereby improving shareholder value.

Limitations

The findings of this research are limited to the effects of eWOM communication in the form of online reviews published in a textual format on a website. Caution must be exercised when attempting generalisations about the effects of eWOM communication across varying platforms and formats without adequate justification. Another limitation of the work is the fact that the data collected from the quasi-experiment is based on participants' measured responses to stimuli from manipulated treatments, as these can only hypothetically affect their perception of the BT and CEDs, thus forming the basis of their relationship with that specific service provider (bank). It would be difficult to substantiate the external validity of the findings in a real-life setting where participants' reactions may differ from that of the quasi-experimental environment.

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